ESSAYS ON INSIDER TRADING AND ENTERPRISE RISK MANAGEMENT

by

PEI-HAN CHEN

(Under the Direction of David L. Eckles)

ABSTRACT

The dissertation investigates the informativeness of insider trading. Two primary questions are addressed. The first question is, are insider stock transactions informative of future stock price movements? An event study approach and an ex-post regression model are employed to examine the short-term market response to insider stock transactions traded at different levels of past stock performance based on insider trading data over the period 1996 to 2013. The dissertation is the first study to identify an "insider smile" suggesting that stock purchases by insiders earn greater abnormal returns following significant decreases and increases in stock prices; however, insiders earn only small abnormal returns from their stock purchases following small changes in stock prices. The results support that insiders are both contrarian investors and possessors of superior information about firm's future stock price movements. Also, insiders in firms with higher levels of information uncertainty (smaller firm size and higher stock volatility) tend to earn greater abnormal returns from their stock purchases.

The second question is, does enterprise risk management have effects on abnormal returns of insider trading? On the one hand, insiders in a firm with an ERM program are assumed to have better knowledge about operations and risks of the firm; thus, these insider stock transactions would earn greater abnormal returns. On the other hand, an ERM program may

reduce information uncertainty of a firm and information asymmetry between insiders and outside investors. In this case, insiders in ERM firms would earn smaller abnormal returns from their stock transactions than insiders in non-ERM firms. The results show some evidence that ERM has negative (positive) effects on abnormal returns of insider stock purchases (sales) particularly for firms with higher levels of information uncertainty, which supports that an ERM program can benefit a firm from reducing information asymmetry between insiders and outside investors.

INDEX WORDS: Insider Trading, Enterprise Risk Management, Event Study, Information Asymmetry, Information Uncertainty

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CHAPTER ONE: LITERATURE REVIEW

1.1 Insider Trading

According to the Securities Exchange Act of 1934, insiders refer to officers, directors, and large shareholders who own 10 percent or more of their company's shares. Insider trading activities are regulated at both the federal level (e.g., the Securities Exchange Act of 1934 (SEA)) and with company-level policies (e.g., blackout windows) (Bettis, Coles, and Lemmon, 2000). Section 16(a) of the SEA requires insiders to disclose their transactions by the tenth day of the calendar month after the trading month. Since the enactment of the Sarbanes-Oxley Act of 2002, insiders are required to report a change in ownership within two business days following the execution of their transactions. Some firms with blackout window policies only allow insiders to make trades during certain periods after quarterly earnings announcements (e.g., three to twelve days) (Bettis, Coles, and Lemmon, 2000). Also, Section 16(b) of the SEA states that insiders are not allowed to make short-swing profits within six months of their stock transactions.

Insider trading activities are not inherently illegal, but trades based on material, nonpublic information are considered illegal (although there is no clear definition of material, nonpublic information by the U.S. Congress or the Securities and Exchange Commission, see Seyhun, 1998). However, insiders can trade their securities legally on the basis of their understanding of the long-term outlook for their firms and public information such as significant decreases or increases of stock prices (Seyhun, 1998).

The informativeness of insider trading is widely discussed in prior literature. Information-related insider trading may be in response to all factors that affect stock returns such as firm-specific, industry-wide, or economy-wide factors (Seyhun, 1988). Abnormal returns following insider stock transactions indicate that insiders possess information that is not impounded in stock prices when insiders make trades (e.g., Lorie and Niederhoffer, 1968; Jaffe, 1974; Finnerty, 1976; Seyhun, 1986; Rozeff and Zaman, 1988; Ke, Huddart, and Petroni, 2003). Lorie and Niederhoffer (1968) suggest that insider trading can be profitable based on the monthly data of insider trading from 105 New York Stock Exchange companies over the period 1950 to 1960. Jaffe (1974) shows that insider trades contain information and insiders can earn profits from their stock transactions.

Also, Finnerty (1976) finds that insider purchase portfolios earn above average returns particularly for the first six months, and insider sale portfolios obtain below average returns, which suggests that short-run insiders can outperform the market and do not support the strong-form efficient market hypothesis. Jeng, Metrick, and Zeckhauser (2003) find that insider purchase portfolios may earn abnormal returns of more than 6% per year, but insider sale portfolios are not informative of future abnormal returns. Cohen, Malloy, and Pomorski (2012) suggest that opportunistic traders are more informed about a firm's future than routine traders and have the predictive power of firm's stock returns, news, and events. However, Eckbo and Smith (1998) show that insiders may actually earn zero or negative abnormal returns based on a sample of insider trades on the Oslo Stock Exchange from 1985 to 1992.

There is a debate whether insiders make trades based on contrarian investment strategies or based on their superior knowledge about firm's future performance. Several studies show that insiders are contrarian investors, and their stock transactions are informative of future

movements in stock prices (e.g., Seyhun, 1986; Seyhun, 1990; Chowdhury, Howe, and Lin, 1993; Rozeff and Zaman, 1998; Lakonishok and Lee, 2001; Jenter, 2005). Seyhun (1986) shows evidence that insiders may predict future stock price movements and earn abnormal returns of 3% for stock purchases and -1.7% for stock sales during the 100 days following their stock transactions. Seyhun (1990) examines insider trading activities around the Crash of 1987 and finds evidence that insiders who purchase their companies' stocks following significant declines in stock prices during the crash tend to earn greater positive post-crash returns.

Rozeff and Zaman (1998) suggest that insider purchases of value stocks increase as stocks change from growth categories to value categories, and insider stock purchases are greater (smaller) after low (high) stock returns. Lakonishok and Lee (2001) show that insiders in aggregate are contrarian investors and may predict returns in smaller firms. They show that insider purchases in small firms are informative of future stock price movements while insider sales seem to have no predictive power. Lakonishok and Lee (2001) suggest that firm size may influence the magnitude of insider trading activities, and larger firms are found to be priced more efficiently than smaller firms. Jenter (2005) supports Lakonsihok and Lee (2001) by showing that top managers have contrarian views on firm value and excess returns to insider trades conditionally on firm size and market-to-book effect are not significantly different from zero. Rozeff and Zaman (1988) also show that insiders and outsiders do not earn substantial profits after controlling for firm size, earnings to price ratio, and transaction cost. Insiders in small firms are net buyers and insiders in large firms are net sellers (Seyhun, 1986; Rozeff and Zaman, 1988; Jenter, 2005; Aktas et al., 2008; Jiang and Zaman, 2010).

Seyhun (1988), Ke, Huddart, and Petroni (2003), and Jiang and Zaman (2010) suggest insiders possess superior information to predict market-wide stock price movements. Seyhun

(1988) suggests that public available information about aggregate insider trading can predict future stock market returns based on the data from 1975 to 1981; that is, an increase in current net aggregate insider stock purchases is associated with an increase in future excess returns to the market portfolio two months later. Ke, Huddart, and Petroni (2003) support the superior information hypothesis by showing that net insider stock sales increase nine months to two years prior to the earnings declines based on quarterly insider data from 1989 to 1997. They also suggest that insiders in growth firms are more likely to have foreknowledge about the next earnings announcement.

Jiang and Zaman (2010) suggest insiders possess superior information to predict market-wide stock price movements using a first-order vector autoregressive (VAR) model based on quarterly insider trading data from 1978 to 2000. Their results support the superior information hypothesis by showing that there is a positive relation between unexpected returns (i.e., cash-flow news and discount rate news) and the lagged two quarter's and lagged three quarter's insider net purchases. Their results reject the contrarian hypothesis by showing that prior three quarters' expected market excess returns do not predict insider net purchases.

Piotroski and Roulstone (2005) suggest that insiders are both contrarians and possessors of superior information based on firm-year insider trading data from 1992 to 1999. Their results suggest that insider stock purchases are negatively related to recent returns and positively related to the firm's book-to-market ranking, which supports the insider contrarian hypothesis. Their results also support the insider superior information hypothesis by showing that insider stock purchases are positively related to future firm performance. Finally, they find that insiders in firms with higher levels of information uncertainty are more likely to have superior information about firm's future performance.

1.2 Enterprise Risk Management

According to Kleffner, Lee, and McGannon (2003), "ERM is the management of operational and financial risks simultaneously in order to maximize the cost-effectiveness of risk management within the constraints of the organization's tolerance for risk." Firms with ERM programs combine all risk management activities into one central risk function that integrates decision making across all risk classes (e.g., financial risks, hazard risks, operational risks, and strategic risks), facilitates the identification of interdependencies between risks and provides better risk identification, and reduces information asymmetries among units (e.g., Liebenberg and Hoyt, 2003; Hoyt and Liebenberg, 2011).

Prior literature examines the prevalence and determinants of ERM programs (e.g., Colquitt, Hoyt, and Lee, 1999; Hoyt, Merkley, and Thiessen, 2001; Kleffner, Lee, and McGannon, 2003; Liebenberg and Hoyt, 2003; Beasley, Clune, and Hermanson, 2005; Pagach and Warr, 2011; Altuntas, Berry-Stölzle, and Hoyt, 2011). The earliest evidence of ERM activities among U.S. insurers is in 1995 (Eckles, Hoyt, and Miller, 2014). Firms that are more volatile are more likely to adopt ERM programs (Pagach and Warr, 2011). Also, firms with higher leverage ratios tend to appoint a CRO, which suggests that firms adopt ERM to reduce the information asymmetry regarding firm's risks (Liebenberg and Hoyt, 2003). Further, larger firms tend to have a greater ability to adopt ERM due to greater resources (Colquitt, Hoyt, and Lee, 1999; Beasley, Clune, and Hermanson, 2005; Pagach and Warr, 2011). Beasley, Clune, and Hermanson (2005) find that firms in the banking, education, and insurance industries are more likely to adopt ERM. The financial and energy industries may lead the development of ERM (Hoyt, Merkley, and Thiessen, 2001).

Several studies suggest that ERM can benefit a firm from several ways including reducing external capital costs, decreasing stock volatility, increasing capital efficiency, and enhancing firm value (e.g., Cumming and Hirtle, 2001; Meulbroek, 2002; Kleffner, Lee, and McGannon, 2003; Beasley, Pagach, and Warr, 2008; Pagach, and Warr, 2010; Hoyt and Liebenberg, 2011; Eckles, Hoyt, and Miller, 2014; Grace et al., 2015). Meulbroek (2002) suggests that an ERM program can benefit firms from a wide range of investment opportunities by providing a more accurate risk-adjusted rate, and an ERM program can also help firms reduce the expected costs of regulatory scrutiny and external capitals by improving a firm's risk management disclosure.

Further, ERM can help a firm diversify risks and reduce return volatility (Kleffner, Lee, and McGannon, 2003; Beasley, Pagach, and Warr, 2008; Pagach, and Warr, 2010; Eckles, Hoyt, and Miller, 2014). For example, Eckles, Hoyt, and Miller (2014) examine the impact of enterprise risk management on the marginal cost of reducing risks in the insurance industry based on a Heckman two-step model. Their results show that firms adopting ERM tend to experience a reduction in stock return volatility and an increase in operating profits per unit of risk (i.e., ROA/return volatility). Thus, firms that are more volatile are more likely to benefit from ERM programs (Hoyt and Liebenberg, 2011).

Finally, ERM programs are value enhancing (e.g., Hoyt and Liebenberg, 2011; Baxter et al., 2013; Grace et al., 2015). Hoyt and Liebenberg (2011) employ a maximum-likelihood treatment effects model to simultaneously model the determinants of ERM and the effects of ERM on firm value. Their results show that insurers having an ERM program tend to be valued approximately 20% higher than other insurers. Baxter et al. (2013) find that high-quality ERM programs are positively associated with the operating performance of a firm in the banking and insurance industries based on S&P ERM rating data from 2006 to 2008. Grace et al. (2015) employ a

frontier efficiency analysis to examine the value of ERM investments by identifying the components of an ERM program and investigating the impact of each ERM component on firm value. Their results suggest that ERM improves efficiency (i.e., cost efficiency and revenue efficiency) and return on assets of an insurer based on the Tillinghast Towers Perrin ERM survey data for 2004 and 2006.

1.3 Short Summary of Each Paper

The short summary of every paper discussed in this chapter is as follows. Papers are alphabetically ordered by the surname of the first author.

(1) Aktas, De Bodt, and Van Oppens (2008)

Aktas, De Bodt, and Van Oppens (2008) examine whether legal insider trading contributes to market efficiency using an event study approach and a fixed-effect panel regression model based on data from January 1995 to September 1999. They analyze whether insider trades are information-motivated by estimating the correlation between daily returns and the daily relative order imbalance (OIB). The relative OIB is measured by the ratio of the difference between number of insider purchases and number of insider sales to number of total trades. The insider trading data were obtained from the Securities and Exchange Commission (SEC) Ownership Reporting System (ORS) data files. They focus on open- and private-market insider stock purchases and sales. Their results show that even though financial markets do not respond strongly in terms of abnormal returns to insider trades, price discovery in the market is hastened on insider stock transaction days. In particular, financial market only responds weekly to insider stock purchases, and insiders do not significantly modify the trade imbalance with their stock transactions. However, there is a significant change in price sensitivity to relative order

imbalance due to abnormal insider trades. That is, a positive relative order imbalance (i.e., number of insider stock purchases is greater than number of insider stock sales) has a positive impact on stock returns.

(2) Altuntas, Berry-Stölzle, and Hoyt (2011)

Altuntas, Berry-Stölzle, and Hoyt (2011) examine the implementation of ERM components based on the survey data of 95 German property-liability insurance companies. They investigate five ERM components: "(1) processes to identify all relevant risk categories and exposures; (2) quantitative models to measure and evaluate these risks; (3) tools like risk limits to manage them efficiently; (4) an organizational culture of risk awareness; (5) a management approach that integrates ERM and all of its components into operational and strategic decision making." Their survey data show that there is an increasing trend of the ERM implementation by German property-liability insurers (i.e., 32 percent of insurers have a risk strategy in 2007 and 89 percent of insurers have a risk strategy in 2009). Similarly, more insurers use an overall corporate risk model in recent years.

(3) Baxter, Bedard, Hoitash, and Yezegel (2013)

Baxter, Bedard, Hoitash, and Yezegel (2013) examine the determinants and the anticipated benefits of high-quality ERM programs in the banking and insurance industries. They first investigate company characteristics associated with variations in S&P ERM ratings. They then investigate the relationship between S&P ERM ratings and firm performance and market response. The ERM quality data were based on a sample of 165 firm-year observations obtained from the S&P ERM rating data from 2006 to 2008. Their results show that firms with a larger size and higher levels of diversifications tend to have higher-quality ERM programs. Also, high-quality ERM programs are positively associated with the operating performance of a firm.

(4) Beasley, Clune, and Hermanson (2005)

Beasley, Clune, and Hermanson (2005) examine factors associated with the extent of the ERM implementation based on the survey data of chief audit executives from 123 organizations in 2004. They employ an ordinal logistic regression model and consider a range of ERM adoption levels (i.e., complete ERM, partial ERM, planning to implement ERM, investigating ERM without any decision made, and no ERM plan). Their results show that several organizational factors are positively associated with the extent of a firm's stage of ERM deployment including the presence of a Chief Risk Officer (CRO), independence of the board of directors (i.e., the percentage of board members who are independent), management expectations for ERM (i.e., the extent of CEO and CFO calls for internal audit involvement in ERM), auditor quality (i.e., Big Four auditors), firm size (i.e., annual revenues), industry type (i.e., banking, education, and insurance), and country of domicile (Non-US based organization).

(5) Beasley, Pagach, and Warr (2008)

Beasley, Pagach, and Warr (2008) examine stock market reactions to announcements of appointments of Chief Risk Officer (CRO) overseeing the ERM processes based on the data of 120 announcements from 1992 to 2003. The CRO announcement data were obtained from keyword searches of "announced," ''named," or ''appointed'' in conjunction with position descriptions of ''chief risk officer'' or ''risk management'' from the search engine Lexis-Nexis (Liebenberg and Hoyt, 2003). The cumulative abnormal return is calculated based on Fama-French three factor market model estimated over the –255-to –46-daywindow prior to the CRO announcement. The market returns is based on the CRSP equal-weighted index. They then employ a cross-sectional regression model to examine the relationship between abnormal returns of CRO appointment and firm-specific characteristics.

Their event study results show that the two-day stock market response to ERM adoptions is not significant. However, benefits and costs of ERM adoptions are firm specific. The cross-sectional analysis results show that the magnitude of market response to ERM adoptions is associated with firm size, earnings volatility, leverage, and cash reserves in non-financial firms. Abnormal returns of CRO appointment announcements are positively associated with firm size and earnings volatility and negatively associated with cash on hand relative to liabilities and leverage. These results are consistent with Stulz (1996, 2003) that firms with greater risks of lower-tail earnings outcomes are more likely to benefit from ERM.

(6) Bettis, Coles, and Lemmon (2000)

Bettis, Coles, and Lemmon (2000) examine company-level regulations of insider trading restrictions (i.e., blackout window) over the period January 1992 to June 1997. Blackout window policies only allow insiders to make trades during certain periods after quarterly earnings announcements (e.g., three to twelve days). The company-level regulation data is based on a survey of 403 member firms of the American Society of Corporate Secretaries: 284 firms with company-mandated blackout periods and 119 firms without blackout periods. They focus on insider trades made by directors and officers. The insider trading data were obtained from the Primark Financial Information Division. They employ a cross sectional analysis of firms with different types of policies. They also use a longitudinal analysis to compare trading windows with blackout periods within firms. Their results show that the bid-ask spread shrinks during blackout windows. Also, the profitability of insider trading during blackout windows are slightly lower than that during the allowed trading windows.

(7) Chowdhury, Howe, and Lin (1993)

Chowdhury, Howe, and Lin (1993) examine the relationship between aggregate insider trading and stock market returns based on a vector autoregressive (VAR) model. The VAR examines the interdependencies among stock market returns, aggregate insider stock purchases, and aggregate insider stock sales in a multiple equation framework. This method compares Granger causality between insider stock transactions and stock market returns. This research focuses on weekly open-market aggregate insider stock transactions by corporate insiders from 1975 to 1986. The insider trading data were obtained from the Securities and Exchange Commission (SEC) Ownership Reporting System (ORS) data tapes. Aggregate insider trading is measured by the weekly aggregate net number of insider stock purchases (sales) across firms. They also use dollar volume of insider stock purchases (sales) as robustness checks. The market return is measured by the weekly equal-weighted CRSP market index return.

The results suggest that insiders may not be able to observe the mispricing of stocks and aggregate insider trading tend to be not informative of future market returns over the following eight weeks. Insider stock purchases are more informative of future stock price movements than insider stock sales. However, the predictive ability of insider stock purchases for subsequent market returns seems to be slight. Also, the mispricing of stocks is less likely to be associated with unanticipated macroeconomic factors. Insiders are generally contrarian investors who purchase stocks as stock price decreases and sell stocks as stock price increases.

(8) Cohen, Malloy, and Pomorski (2012)

Cohen, Malloy, and Pomorski (2012) employ a pooled ordinary least squares regression model to examine whether opportunistic traders are more informed about a firm's future than routine traders based on the monthly data obtained from the Thomson Reuters Insider Filing

database from 1986 to 2007. They divide insiders into two groups, routine insiders and opportunistic insiders, according to insiders' past three year stock trading history. The empirical results show that stock returns to the opportunistic trades continue to rise for around six months, followed by the opportunistic trading month and then level off; while stock returns associated with routine traders essentially equal zero. They also employ several robustness checks which suggest that insider trades by opportunistic traders are much more informative about future firm-level returns than those by routine traders for both NYSE and NASDAQ stocks, for both large and small stocks, for both high- and low-intensity stocks, and for both inside and outside pre-defined blackout windows.

Further, opportunistic insider trades may be strongly predictive of future information events and headline news events based on data of firm-level information events from 1989 to 2000. Their results show that institutions tend to follow the trades of past opportunistic insider traders (especially opportunistic buys), and provide liquidity to contemporaneous routine insider traders (routine buys). Geographic localness of an opportunistic insider may be a strong significant predictor of future firm-level information events. Opportunistic insiders tend to be local non-senior directors, have longer tenures, and come from firms with high geographical business concentration, poor governance, and a large number of products. Finally, they investigate the relation between SEC activities and opportunistic insider trading and find that opportunistic insider trades are sensitive to the releases from the SEC regarding illegal insider trading cases, which implies that opportunistic traders dampen their trading activities when the potential costs of illegal trading increase.

(9) Colquitt, Hoyt, and Lee (1999)

Colquitt, Hoyt, and Lee (1999) examine characteristics and extent of integrated risk management based on the survey data of 379 firms in October 1997. The data were obtained from the Business Insurance 1995/1996 Directory of Insurance Buyers of Insurance, Benefit Plans and Risk Management Services. They first investigate the extent to which risk managers are involved in both pure and financial risk management of a firm. They then collect information on the nonoperational risks handled by risk managers and the techniques used for a broader set of risks. Finally, they evaluate the effects of firm size, industry, and training of risk managers on participation in integrated risk management activities. Their survey suggests that risk managers are increasing becoming involved in the management of both pure risks and a broader set of risks. Also, the level of risk management integration can be affected by firm size, industry type, and background and training of risk managers.

(10) Cumming and Hirtle (2001)

Cumming and Hirtle (2001) discuss challenges of risk management in diversified financial companies. The costs of consolidated risk management include costs of integrating and analyzing risk information from diverse businesses (i.e., information costs), regulatory barriers to moving capitals and liquidity within a firm, and conceptual and technical issues as to aggregation across business lines and the associated risks. The value of information increases as the volatility and complexity of the market environment increases. Therefore, a firm should consider costs and benefits of the consolidated risk management before the enactment of enterprise risk management.

(11) Eckbo and Smith (1998)

Eckbo and Smith (1998) show that insiders may actually earn zero or negative abnormal returns based on a sample of insider trades on the closely held Oslo Stock Exchange from 1985 to 1992. They define insiders based on the 1985 amendment to the Norwegian Securities Trading Act. Insiders refer to CEOs, top managers, members of the board of directors and supervisory boards, auditors, investment advisors, and close family members of these individuals. They first employ a conditional event-study method and a conditional Jensen's alpha approach which require the explicit specification of an expected return model relating the risks and returns on a benchmark portfolio. They then use a performance measure which does not need to specify an expected return model. This method measures the conditional covariance between monthly insider trading portfolios and subsequent portfolio returns. As for insider portfolios, they aggregate insider stock holdings each month and track the performance of these portfolios through time. Their results show that net insider stock purchases generally exhibit statistically insignificant abnormal stock returns in the month of trades and over the following six months, and net insider stock sales exhibit statistically positive abnormal returns in the month of trades. They also find some evidence that the average mutual fund outperforms the insider portfolio on the same stock exchange.

(12) Eckles, Hoyt, and Miller (2014)

Eckles, Hoyt, and Miller (2014) examine the impact of enterprise risk management on the marginal cost of reducing risks in the insurance industry. They focus on 354 publicly-traded insurers from 1990 to 2008, and 69 of these firms adopted ERM between 1995 and 2008. They follow Hoyt and Liebenberg (2011) to identify the ERM adoption of a firm; that is, they use keyword searches of "Chief Risk Officer," "Enterprise Risk Management," "Enterprise Risk

Officer," "Strategic Risk Management," "Integrated Risk Management," "Holistic Risk Management," and "Consolidated Risk Management" from several search engines such as Factiva and LexisNexis.

They employ a Heckman two-step model to examine the relationship between firm risks and ERM. They use the log of annualized standard deviation of daily stock returns over the previous three years to proxy firm risks. As for ERM, they use an indicator for firms which have ever adopted ERM during the sample period (i.e., ERM firm) and also use an interaction term of ERM firm and the ERM adoption year. The ERM adoption year is an indicator variable with a value of one for all years after and including the year of the first evidence of ERM of a firm. Similarly, they use the same method to examine the relationship between operating profits per unit of risk (i.e., ROA/return volatility) and the ERM adoption. Their results show that firms adopting ERM tend to experience a reduction in stock return volatility and an increase in operating profits per unit of risk.

(13) Finnerty (1976)

Finnerty (1976) examines the strong-form market efficiency hypothesis based on insider trading data from 1969 to 1972. The strong-form market efficiency hypothesis suggests that stock price reflects all public and private information. The insider trading data were obtained from the Official Summary of Stock Transactions for NYSE firms. They look at monthly excess returns of insider purchase portfolios and insider sale portfolios, respectively. The excess returns are calculated based on the Capital Asset Pricing Model (CAPM). The results show that insider purchase portfolios earn above average returns particularly for the first six months, and insider sale portfolios obtain below average returns. Therefore, the results suggest that short-run insiders can outperform the market and do not support the strong-form efficient market hypothesis.

(14) Grace, Leverty, Phillips, and Shimpi (2015)

Grace, Leverty, Phillips, and Shimpi (2015) examine the value of ERM investments by identifying the components of an ERM program and investigating the impact of each ERM component on firm value. They employ a frontier efficiency analysis to examine the effects of ERM investments on efficiency (i.e., cost efficiency and revenue efficiency) and returns on assets of an insurer using a sample of 532 firm-year observations in the property-liability and life insurance industries. The ERM data were obtained from the Tillinghast Towers Perrin ERM survey data for 2004 and 2006. Their results suggest that several specific ERM components can create firm value. First, a simple economic capital model (ECMs) can benefit an insurers; however, an advanced or sophisticated ECM dose not add value to an insurer in the short run. Second, a dedicated entity responsible for firm-wide risk management in an insurance company is positively associated with greater efficiency and returns on assets. Also, requiring the dedicated risk managers to report to CEOs or CFOs also enhance efficiency and returns on assets. Further, a market value-based financial matric and risk management incentive compensation also help improve firm performance. Finally, a firm's confidence that risk is reflected in their business decisions is associated with a higher level of efficiency and returns on assets.

(15) Hoyt, Merkley, and Thiessen (2001)

Hoyt, Merkley, and Thiessen (2001) provide an overview of chief risk officer (CRO) including background information of CROs and characteristics of firms that have a CRO. The research is based on the survey data of 21 organizations that employ a CRO. Their survey results show that the creation of CROs is driven by several factors: "(1) the centralization and co-ordination of all risk management activities; (2) the introduction and development of an

integrated risk management framework; (3) the improvement of risk communication to management, the Board, and others." The previous positions of a CRO include accounting, audit, consulting, risk management, and strategic planning. Also, financial and quantitative skills are critical for a CRO. The responsibilities of a CRO include overseeing the risk identification and assessment process for a firm and conveying risk information to relevant shareholders. The assessment of CRO performance is primarily based on qualitative measures. The survey results also suggest that the financial and energy industries may lead the development of CROs.

(16) Hoyt and Liebenberg (2011)

Hoyt and Liebenberg (2011) examine the value of enterprise risk management and show evidence that ERM is associated with a firm value increase by approximately twenty percent. They use a maximum-likelihood treatment effects model based on the data of 117 publicly traded insurers from 1998 to 2005 (687 firm-year observations). They identity ERM activities of a firm based on keyword searches from financial reports and several search engines such as Factiva and Thomson. ERM keywords include "chief risk officer," "enterprise risk management," "risk committee," "strategic risk management," "consolidated risk management," "holistic risk management," and "integrated risk management." They employ an indicator variable to identify whether a firm employs ERM in any given year over the sample period. For example, if a firm adopts ERM in 2004, the ERM indicator variable will be assigned with a value of one for year 2004 and the following years. They use Tobin's Q to proxy firm performance, which is measured by the sum of market value of equity and book value of liabilities divided by book value of assets. Tobin's Q is an appropriate firm value measure since it does not require risk adjustment or normalization, and it reflects market expectations which is free from managerial manipulation.

The maximum-likelihood treatment effects model considers potential selection bias of the ERM adoption. This model jointly estimates the decision to engage in ERM and the effects of ERM adoption decision on firm value in a two-equation system. It also enables the adjustment of standard errors for firm-level clustering to avoid understated standard errors. The determinants of Tobin's Q include firm size, leverage, sales growth, ROA, industrial diversification, international diversification, dividend payment indicator, insider share ownership, life insurer indicator, a firm's annual beta (calculated using the prior 60 month's excess returns), and year fixed effects. Also, the determinants of ERM include firm size, leverage, opacity (i.e., the ratio of intangible assets to book value of total assets), international diversification, industrial diversification, business diversification (i.e., a Herfindahl index of premiums written across all lines of business), institutional share ownership, life insurer indicator, reinsurance ratio, financial slack (i.e., the ratio of cash and marketable securities to total assets), volatility of earnings or stock returns (i.e., the coefficient of variation of earnings before interest and tax, and the natural logarithm of standard deviation of monthly stock returns for the prior year), market value change, and year fixed effects. Their results show that insurers engaged in ERM tend to be valued approximately 20 percent higher than other insurers. Also, several firm characteristics are associated with the ERM engagement, including firm size, leverage, opacity, institutional share ownership, life insurer indicator, reinsurance ratio, international diversification, and market value change.

(17) Jaffe (1974)

Jaffe (1974) examines the informativeness of insider trading based on firm-month level data of 200 large firms from 1962-1968. The insider trading data were obtained from the Official Summary of Insider Trading. They investigate the CAPM residuals of stocks following insider

trading events. Their results show that the residuals of stocks rise when intensive insider stock purchases increase and when intensive insider stock sales decrease, which suggests that insiders possess special information.

(18) Jeng, Metrick, and Zeckhauser (2003)

Jeng, Metrick, and Zeckhauser (2003) examine the informativeness of insider trading based on a performance-evaluation methodology. Their study focuses on open market stock purchases and sales by officers and directors based on the insider trading data obtained from the SEC Form 4 filing from 1975 to 1996. They look at the 6-month abnormal returns of valued-weighted insider purchase portfolios and insider sale portfolios, respectively. The abnormal returns are calculated based on three methods: the CAPM model (Sharpe, 1964; Lintner, 1965), the four-factor model (Carhart, 1997), and the characteristic-selectivity measure (Daniel et al., 1997). The CAPM model only considers market risks. The four-factor model considers the effects of firm size, momentum (i.e., past stock returns), and value of a firm (i.e., market to book ratio) in addition to market risks. The characteristic-selectivity measure matches each insider stock transaction with a portfolio of similar stocks and then calculates an excess return relative to this portfolio on each day.

Their results show that insider stock purchase portfolios outperform the market but the insider stock sale portfolios earn returns very close to the market. In particular, insider purchase portfolios may earn abnormal returns of more than 6% per year, but insider sale portfolios are not informative of future abnormal returns. Therefore, insider stock purchases are more likely than insider stock sales to be information-driven. Also, they do not find evidence that top executives tend to earn greater abnormal returns form their stock transactions than other types of

insiders. Finally, they do not find evidence that firm size significantly affects abnormal returns of insider stock transactions.

(19) Jenter (2005)

Jenter (2005) examines whether insiders are contrarians and trade their firm's stocks based on misevaluation of the firm. The insider data were obtained from the Standard and Poor's ExecuComp database which provides managers' compensation information on managerial equity ownership, option holdings, equity and option grants, and several other compensation items. The insider trading is measured by the annual dollar value of net number of insider stock purchases or sales (i.e., the net number of shares purchased or sold during a year multiplies the stock price at the end of the fiscal year) from 1993 to 2000. Jenter employs firm size and book-to-market adjusted excess returns (i.e., each firms is matched to its corresponding Fama-French firm size and book-to-market portfolios before the excess returns are calculated). The results suggest that top managers have contrarian views on firm value and the mispricing of stock prices is an important determinant of manager's decision making. Managers in growth firms tend to sell more stocks than managers in value firms. Also, excess returns to insider trades conditionally on firm size and market-to-book effects are not significantly different from zero.

(20) Jiang and Zaman (2010)

Jiang and Zaman (2010) suggest insiders possess superior information to predict market-wide stock price movements. Jiang and Zaman (2010) suggest that there are three sources driving the relationship between market returns and insider trading based on Campbell's (1991) decomposition of the realized return on equities: one-period expected returns, the changes in expectations of future cash flows (cash-flow news), and changes in the expectations of future discount rate (discount rate news). If insider trading is informative due to superior information,

insider trading is positively related to unexpected cash-flow news and unexpected discount rate news. If insider trading is informative because of contrarian strategy, insider trading is negatively related to lagged expected returns.

They first employ a first-order vector autoregressive (VAR) model to estimate expected returns, cash-flow news, and discount rate news. They then regress realized market excess returns (the CRSP value-weighted return minus 3-month T-Bill rates) and its three components (one-period expected market excess returns, cash-flow news, and discount rate news) respectively on aggregate insider trading. The aggregate insider trading is measured by the average of net purchase ratio across firms based on quarterly insider trading data from January 1978 to December 2000. The net purchase ratio of a firm is measured by the ratio of the difference between total number of insider purchases and total number of insider sales to total number of insider purchases and sales over the quarter. The insider trading data were obtained from the Securities Exchange Commission (SEC) Ownership Reporting System (ORS).

Their results suggest that there is a positive relation between unexpected returns (i.e., cash-flow news and discount rate news) and the lagged two quarter's and lagged three quarter's insider net buying particularly, which supports the superior information hypothesis. In addition, they regress aggregate insider trading on prior three quarters' realized market excess returns and its three components, respectively. Their results reject the contrarian hypothesis by showing that prior three quarters' expected market excess returns do not predict insider net buying. Further, they consider the effects of information uncertainty on insider trading. Information uncertainty is measured by firm size and number of analysts following a firm. Their results suggest that insiders in small firms and insiders in fewer analysts following firms are more likely to predict

market returns based on their superior information since these firms are assumed to have higher levels of information uncertainty.

(21) Ke, Huddart, and Petroni (2003)

Ke, Huddart, and Petroni (2003) employ a fixed-effects regression model of insider trading on future accounting disclosures to examine the superior information hypothesis. They use three measures of insider trading and get similar results: (1) the ratio of net number of open market insider stock purchases to number of active insiders of a firm; (2) the ratio of dollar value of net purchases in a quarter to total dollar value of all insider trades over the entire sample period; (3) the ratio of net number of purchases in a quarter to total shares traded by insiders over the entire sample period. They only look at insider trades made by directors and officers. They use several indicator variables to proxy future earnings declines. The insider trading data were obtained from the First Call/Thomson Financial Insider Research Services Historical Files (1989-1993) and the daily newswire of the Dow Jones News Retrieval Service (1994-1997). They collected earnings data and other firm financial characteristics data from the CRSP and the Compustat database. Their results support the superior knowledge hypothesis by showing that net insider stock sales increase nine months to two years prior to the earnings declines based on quarterly insider data from 1989 to 1997. They also suggest that insiders in growth firms are more likely to have foreknowledge about the next earnings announcement. However, they find little evidence of a higher frequency of net insider stock sales in the two quarters immediately before the earnings declines, which may be possibly due to litigation jeopardies.

(22) Kleffner, Lee, and McGannon (2003)

Kleffner, Lee, and McGannon (2003) examine characteristics associated with ERM adoption and the effects of corporate governance on the use of ERM based on the survey data of 118

Canadian Risk and Insurance Management Society members in June 2001. Their results show that reasons for ERM adoption include the influence of risk managers, encouragement from the board of directors, and compliance with the Toronto Stock Exchange (TSE) guidelines. They also find that there is an increasing trend of ERM adoption of firms, which may be driven by several factors such as the development of company-wide guidelines for risk management, an increased awareness of nonoperational risks by operational risk management personnel, an increased awareness of operational risks by nonoperational risk management personnel, more coordination with different areas responsible for risk management, and more involvements and interactions in the decision making of other departments.

(23) Lakonishok and Lee (2001)

Lakonishok and Lee (2001) examine the informativeness of insider trading activities from 1975 to 1995. They investigate how the market responds to insider trading and whether the response depends on firm characteristics. They also examine whether aggregate insider trading activities can predict future stock price movements. The insider trading data used in this study are the open- and private-market insider stock purchases and sales obtained from the Securities and Exchange Commission Ownership Reporting System data file. The insider trading is measured by the net purchase ratio (i.e., the ratio of net insider stock purchases to total insider stock transactions) over the prior six-month interval. They also classify the insider trading sample into three groups based on firm size. They look at the cumulative abnormal returns over the five-day period starting from the transaction date or the reporting date. The abnormal return is measured by the difference between a firm's stock return and the daily equal-weighted CRSP index return. They also predict market returns for one-month, three-month, six-month, and twelve-month horizons. The results show that insiders in aggregate are generally contrarian

investors and may predict returns in smaller firms; that is, insider purchases in smaller firms are informative of future stock price movements particularly for longer-horizon market returns. However, insider stock purchases in larger firms and insider stock sales are not informative of future stock price movements. Also, abnormal returns around the reporting dates of insider stock transactions are close to zero.

(24) Liebenberg and Hoyt (2003)

Liebenberg and Hoyt (2003) examine the determinants of enterprise risk management. They use a Chief Risk Officer (CRO) appointment to proxy an enterprise risk management adoption. They employ a logistic regression model and control the effects of firm size and industry. They obtain the CRO appointment information of 26 U.S. firms by performing extensive searches on LexisNexis, Dow Jones, and PR Newswire. They then match these 26 CRO firms with non-CRO firms by firm size and 4-digit SIC code for each year in which a CRO was announced. The results show that firms with higher a leverage ratio are more likely to appoint a CRO, which suggests that firms adopt ERM to reduce information asymmetry regarding the firm's current and expected risk profile.

(25) Lorie and Niederhoffer (1968)

Lorie and Niederhoffer (1968) suggest that insider trading can be profitable based on monthly data of insider trading from 105 New York Stock Exchange companies over the period 1950 to 1960. Insider trading data were obtained from the Official Summary of Insider Trading which is the monthly report of insider transactions. They examine insider trading before the large price change in stocks (i.e., eight percent or more) based on three methods. First, they analyze the last transaction in the six months before stock price changes. Second, they look at the number of insider purchases and sales in the six months prior to stock price changes. Finally, they

examine the volume of insider purchases and sales in the six months prior to stock price changes. Their results suggest that insiders have superior knowledge about future stock price movements, and intensive insider stock purchases (i.e., when there are at least two more buyers than sellers in one month) outperform the market in the next six months. Also, intensive insider stock sales underperform the market in the following six months. Therefore, insiders tend to purchase stocks more often than usual before large stock price increases and to sell stocks more than usual before large stock price decreases.

(26) Meulbroek (2002)

Meulbroek (2002) suggests that integrated risk management is a strategic measure which considers all the risks faced by a firm and implements three risk management objectives (i.e., modifying a firm's operations, adjusting its capital structure, and employing targeted financial instruments). Managers need to consider earnings volatility and firm value fluctuations to decide the optimal risk management policy. The author also suggests that integrated risk management can facilitate risk management by shareholders, reduce financial distress costs, lower the risk faced by key undiversified investors (i.e., managers who have most of their wealth invested in their company's stocks), reduce taxes, reduce monitoring costs by performance evaluation improvements, and provide internal funds for investment.

(27) Pagach and Warr (2010)

Pagach and Warr (2010) examine the effects of ERM adoption on long-term firm performance based on data of 106 publicly-traded firms that announce a chief risk officer appointment from 1992 to 2004. The CRO announcement data were collected by keyword searches of "announced," "named," or "appointed," in conjunction with position descriptions such as "chief risk officer" or "director of risk management" from the LexisNexis database. They

examine changes in financial characteristics of a firm before and after the CRO appointment. They also use an industry matched sample and a logit model to compare firms with CRO hiring announcements and firms without CRO announcements. Their results show that some firms reduce the stock volatility after they adopt ERM. The stock volatility is measured by the standard deviation of a firm's daily returns over the year prior to the hiring of a CRO. However, their results do not show evidence that ERM adoption increases firm value (i.e., ROE).

(28) Pagach and Warr (2011)

Pagach and Warr (2011) examine the characteristics of a firm that hires a CRO using a Cox proportional hazard model based on the data of 138 announcements of senior risk officer appointments made from 1992 to 2005. Among these 138 publicly traded companies with senior risk officer appointment announcements in the sample, seventy-seven companies are from the financial sector (SICC 6000s) and eighteen firms are from the utility sector (SICC 4900s). They use the CRO appointment to proxy enterprise risk management. They collected CRO data from the LexisNexis database by searching keywords "announced," "named," and "appointed," with the position description "chief risk officer," "vice president-ERM," "director-ERM," "chief-ERM," "senior-ERM," "executive-ERM," "head-ERM," "manager-ERM," and "managing director-ERM."

They use a Cox proportional hazard model which is a semiparametric model and considers time effects. In the model, the likelihood of the event is not related to elapsed time. The dependent variable, a CRO hiring announcement, equals to zero for the years prior to a CRO hiring. Once the CRO announcement is released, the observation drop out of the data set for the years following the announcement. The independent variables, firm characteristics, are estimated as of the beginning of the fiscal year in which the CRO is hired.

Characteristics of a firm include financial characteristics, asset characteristics, market characteristics, and CEO stock and option-based compensation. Financial characteristics include a firm's leverage, cash ratio, operating cash flow volatility, and tax convexity. Firms with greater leverage, lower cash ratios, greater operating cash flow volatility, and more convex tax liabilities are assumed to be more likely to benefit from ERM. Asset characteristics include asset opacity and growth options (i.e., market-to-book ratio and sales growth). Firms with opaque assets and higher growth options tend to benefits from ERM since these firms have greater costs of financial distress and higher levels of uncertainty. Market characteristics include the volatility of a firm's stock price to proxy a firm's operational volatility. CEO stock and option-based compensation variables include Vega and Delta based on the approach of Rogers (2002) and Core and Guay (2002) to measure CEO risk-taking incentives. Vega measures a CEO's incentive to increase risks and Delta measures a CEO's incentive to maximize stock prices. Their results show that firms that are larger, more volatile (i.e., cash flow volatility and stock volatility), and have greater institutional ownership (i.e., the percentage of shares held by institutions) are more likely to hire a CRO. Also, firms tend to hire a CRO when the CEO has an incentive to take risks (i.e., option-based compensation). Finally, banks with lower Tier 1 capitals tend to hire a CRO.

(29) Piotroski and Roulstone (2005)

Piotroski and Roulstone (2005) suggest that insiders are both contrarians and possessors of superior information based on firm-year insider trading data from 1992 to 1999. They use book-to-market ratios and recent excess returns to proxy contrarian beliefs. The recent excess returns refer to a firm's 12-month buy-and-hold return less the 12-month buy-and-hold value-weighted market index return during the fiscal year. They measure the insider's information advantage about the firm's future cash flows by future firm performance (i.e., next fiscal year's annual

market-adjusted stock return, next fiscal year's annual earnings innovation, and the contemporaneous annual earnings innovation). The earnings innovation is measured by the yearly change of ROA (i.e., the ratio of net income to total assets). The insider trading is measured by a firm's yearly insider purchase ratio (i.e., the ratio of number of buys to number of buys and sales). The insider trading data were obtained from the Thomson Financial First Call Insiders Data, and the data of stock returns and firm characteristics were obtained from the CRSP and Compustat database.

Their results suggest that insiders are both contrarian investors and processors of superior information. Insider stock purchases are negatively related to recent returns and positively related to a firm's book-to-market ranking, which supports the insider contrarian hypothesis. Their results also support insider superior information hypothesis by showing that insider stock purchases are positively related to future firm performance. Finally, they also find that insiders in firms with higher levels of information uncertainty (i.e., smaller firm size and no earnings forecast by analysts on I/B/E/S during the prior fiscal year) are more likely to have superior information about firm's future performance.

(30) Rozeff and Zaman (1988)

Rozeff and Zaman (1988) examines market efficiency by studying insider trading profits and outsider trading profits after controlling for the effects of firm size and earnings to price ratio based on the monthly aggregate insider trading data from 1973 to 1982. Abnormal returns earned by insiders contradict the strong form market efficiency, and profits earn by outside investors who imitate insider trades violate the semi-strong form market efficiency.[1] They focus on

[1] There are three forms of market efficiency: strong form, semi-strong form, and weak form market efficiency. Strong form market efficiency suggests all private and public information is fully reflected in stock prices; semi-strong form market efficiency states all public information is reflected in stock prices; weak-form market efficiency suggests stock prices reflect all past public information.

intensive insider trading which requires that at least three insiders take the same action and no insiders take an opposite action in a given month. They use a market model to measure the excess returns of insider trading and outsider trading. The insider trading data were obtained from the Official Summary of Security Transactions and Holdings published monthly by the Securities and Exchange Commission (SEC). Stock prices, firm characteristics, and earnings data were collected from the CRSP and the Compustat database. Their results show that insiders and outsiders do not earn substantial profits after controlling for firm size, earnings to price ratio, and transaction costs.

(31) Rozeff and Zaman (1998)

Rozeff and Zaman (1998) employ a general regression model to examine market overreaction by investigating the number of open market stock transactions by insiders in response to value-stock portfolios and growth-stock portfolios based on firm-year level data over the period of 1978-1991. According to Rozeff and Zaman (1998), "fundamental value refers to a price toward which market price tends in a predictable way." Stocks are undervalued as their prices lie below their fundamental values, and stocks are overvalued as their prices lie above their fundamental values. They assume insiders purchase value stocks when stock prices of value stocks lie below their fundamental values. Their results suggest that insider purchases of value stocks increase as stocks change from growth categories to value categories. Insider stock purchases are greater after low stock returns and insider stock purchases are fewer after high stock returns, consistent with the market overreaction hypothesis.

(32) Scott and Xu (2004)

Scott and Xu (2004) examine the information content of insider stock sales based on the percentage of insiders' holding data from 1987 to 2002. They hypothesize that large insider sales

are associated with negative future returns since these trades carry information of a firm's future operation, and small sales are associated with positive future returns since these trades are for liquidity and diversification purpose. Insider trading is measured by the ratio of shares sold to the shares owned by an insider. They focus on quarterly aggregate open-market insider sales by CFOs, chairs of the board, chief financial officers, presidents, and vice presidents. The insider trading data were obtained from Thomson Financial and Washington Services. The future stock return is measured by the excess return which is the difference between the stock return and the average return of all stocks in the universe in each quarter. Their results suggest that insider sales of different volumes carry different information: large sales tend to be driven by overvaluation of stocks, and small sales tend to be for liquidity and diversification reasons.

(33) Seyhun (1986)

Seyhun (1986) examines the profitability of insider trading based on insider stock transactions of 760 firms from 1975 to 1981. He calculates abnormal stock returns based on a market model using the value-weighted NYSE and AMEX portfolio returns. The market model considers firm size effects since this method is based on the joint normality of the distribution of stock returns and the prediction errors have an expected value of zero for firms of any size. His research shows evidence that insiders may predict future stock price movements and earn abnormal returns of 3% for stock purchases and -1.7% for stock sales during the 100 days following their stock transactions. Also, the regression results show that insiders in small firms tend to earn greater abnormal returns than insiders in large firms. Prior studies show that there is a negative monotonic relation between firm size and the bid-ask spread. Thus, this results support that there is a positive relation between the bid-ask spread and the expected loss of informed insiders and suggest that informed traders impose significant costs on uninformed

traders. Finally, the results suggest that insiders who are expected to have better knowledge about firm's operations (e.g., chairmen of the boards, directors, and officer-directors) are more likely to predict future abnormal stock prices than other types of insiders such as officers or large shareholders.

(34) Seyhun (1988)

Seyhun (1988) suggests that public available information about aggregate insider trading can predict future stock market returns based on the data from 1975 to 1981. He focuses on open market insider purchases and sales since these types of stock transactions are more likely to be taken as a result of special insider information. He employs a regression model to examine the relationship between aggregate insider trading and returns to the stock market. The dependent variable is the excess return to the market portfolio (i.e., the difference between the monthly market portfolio return and the one-month Treasury bill return). The monthly return to market portfolio is based on the equal-weighted and the value-weighted portfolios of all stocks from the New York Stock Exchange and the American Stock Exchange. The independent variables are the contemporaneous and lagged standardized aggregate net number of insider trades. He measures standardized aggregate net number of insider trades by the following procedures. First, he calculates the net number of insider stock purchases for each firm in each calendar month from January 1975 to October 1981. He then classifies the sample into five groups based on their firm size. Finally, he calculates the standardized aggregate net number of insider stock purchases for each firm-size group. The standardized aggregate net number of insider stock purchases is computed by subtracting the mean and dividing by the sample standard deviation of net number of transactions over the 82 months during the sample period. Insider trading data were collected

from the Securities and Exchange Commission (SEC) and stock return data were obtained from the CRSP database.

The results show that insiders in firms with similar firm size tend to make trades at the same time, which suggests that firm size is a significant factor in determining the timing of insider trading activities. Also, an increase in current net aggregate insider stock purchases is associated with an increase in future excess returns to the market portfolio two months later. Finally, the magnitude of the relationship between future excess returns and aggregate insider trading is positively related to the market risk of a firm. These results support that the mispricing of a firm's securities observed by insiders may be due to unanticipated changes in economy-wide activities instead of firm-specific factors.

(35) Seyhun (1988) (January Effect)

Seyhun (1988) examines the seasonal pattern of aggregate insider trading to test the two potential explanations of the January effect of security returns in small firms. January effect refers to the unusually high, positive stock returns to small firms in January. The first explanation is that the January effect results from the price pressure due to predictable changes in the demand for stocks of small firms at the turn of the year (i.e., price-pressure hypothesis). Insiders are assumed to be net purchasers of stocks in small firms in December and January. The second explanation is that the January effect arises from the compensation for an increased risk of trading against informed traders (risk-premium hypothesis). The insider stock purchases and sales are predicted to increase in small firms in January.

He employs two measures for insider trading activities. First, insider trading is measured by the aggregate net number of insider stock purchases by executives across firms in each month. Second, insider trading is measured by the absolute number of insider stock purchases (i.e., the

absolute value of net number of insider stock purchases by executives across firms in each month). He also classifies the sample into five groups based on their firm size. The insider trading data were obtained from the Securities and Exchange Commission. Seyhun focuses on open-market insider stock purchases and sales from 1975 to 1981 since open-market trades are more likely to represent actions taken as a result of special insider information.

The regression results support the price-pressure hypothesis by showing that small firms tend to have more net insider stock purchases and large firms tend to have more net insider stock sales in December. The results do not support the risk-premium hypothesis by showing that insider stock purchases and sales in small firms do not significantly increase in January. Therefore, insiders in small firms may view the stock price increases in January as a profit opportunity. Also, the stock price increases in small firms in January cannot be interpreted as the compensation for greater expected losses against informed traders in January.

(36) Seyhun (1990)

Seyhun (1990) examines insider trading activities around the Crash of 1987 and finds evidence that insiders who purchase their companies' stocks following significant declines in stock prices during the crash tend to earn greater positive post-crash returns. Seyhun employs a time series regression analysis to examine the relationship between insiders' stock transactions and their firms' future stock price movements around a single event, the Crash of 1987. This study focuses on open-market insider stock purchases and sales by insiders from January 1975 to November 1988. The insider data were obtained from the Securities and Exchange Commission. Insider trading is measured by the ratio of purchases to all insider stock transactions: (1) the ratio of number of purchases to number of all purchases and sales by insiders, and (2) the ratio of number of shares purchased to number of shares purchased and sold by insiders. Seyhun

employs several indicator variables for various time periods around the stock market crash to examine the relationship between insider trading activities and the stock market crash. The results show that insiders tend to purchase their companies' stocks in record numbers following significant declines in stock prices during the crash, particularly for stocks with prices that fall below the average price in October 1987. Also, those stocks purchased by insiders to a greater extent during the Crash are more likely to earn greater positive returns after the Crash.

(37) Seyhun (1992)

Seyhun (1992) investigates the reasons why aggregate insider trading can predict future stock returns based on multi-month aggregate insider trading data from 1975 to 1989. He focuses on open-market insider stock purchases and sales based on the data obtained from the Securities and Exchange Commission. Insider trading is measured by the aggregate net number of purchases traded by insiders across firms in each month. He also divides the insider trading sample into five groups based on firm size. The future stock return is measured by future one-month, three-month, six-month, and twelve-month excess returns. Excess returns refer to the difference between continuously compounded monthly stock returns and one-month Treasury Bills returns.

Seyhun examines two hypotheses: the cash flow hypothesis and the fads hypothesis. The cash flow hypothesis suggests that insiders can predict economy-wide future cash flows in a firm before other market participants. Thus, insider trading can predict future real activities and future stock returns. There is a positive relationship between aggregate insider trading and future real activities (i.e., future growth rates of after-tax corporate cash flows, Index of Industrial Production, and Gross National Product). Also, insider trading is related to current dividend yields, term spread, and default spread since these variables are related to future real activities. The fads hypothesis suggests that stock prices can deviate from the fundamental values. If the

mispricing is market-wide, aggregate insider trading will predict future market returns; however, if the mispricing is firm-specific, aggregate insider trading should not forecast market returns. Also, the predictive ability of aggregate insider trading should not be eliminated when past stock returns, dividend yields, term spread, default spread, firm size, and market risk are included in the model. Both hypotheses suggest that insiders in different firms respond to economy-wide factors by trading their firms' stocks.

The results show that the twelve-month aggregate net number of open market purchases by insiders can predict up to 25 percent of variations in six-month-ahead aggregate stock returns and 60 percent of variations in one-year-ahead aggregate stock returns. Aggregate insider trading is positively correlated with future stock returns and negatively correlated with contemporaneous and immediate past stock returns, which suggests that insiders are contrarian investors and can predict future stock movements. The regression results also show that changes in business conditions (i.e., corporate cash flows, Index of Industrial Production, and Gross National Product) or movements away from the fundamentals can contribute to the predictive ability of aggregate insider trading.

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CHAPTER TWO: ESSAY ONE

FROM THE MOUTHS OF INSIDERS:

INSIDER TRADING AND ABNORMAL RETURNS

2.1 Introduction

This study investigates the informativeness of insider trading by examining abnormal returns of insider stock purchases and sales following different levels of past stock performance from 1996 to 2013. Information-related insider trading may be in response to all factors that affect stock returns such as firm-specific, industry-wide, or economy-wide factors (Seyhun, 1988). Abnormal returns following insider stock transactions indicate that insiders possess information that is not impounded in stock prices when insiders make trades (e.g., Lorie and Niederhoffer, 1968; Jaffe, 1974; Finnerty, 1976; Seyhun, 1986; Rozeff and Zaman, 1988; Ke, Huddart, and Petroni, 2003).

There is a debate whether insiders make trades based on contrarian investment strategies (insider contrarian hypothesis) or based on their superior knowledge about firm's future performance (insider superior information hypothesis). Several studies show that insiders are contrarian investors who purchase stocks after stock prices fall and sell stocks after stock prices rise (e.g., Seyhun, 1986; Seyhun, 1990; Chowdhury, Howe, and Lin, 1993; Rozeff and Zaman, 1998; Lakonishok and Lee, 2001; Jenter, 2005). However, Seyhun (1988), Ke, Huddart, and Petroni (2003), and Jiang and Zaman (2010) suggest insiders possess superior information to predict market-wide stock price movements. Jiang and Zaman (2010) also provide evidence that insiders are not contrarians by showing that prior three quarters' expected market excess returns

do not predict insider net purchases using a first-order vector autoregressive (VAR) model based on data from 1978 to 2000. Piotroski and Roulstone (2005) suggest that insiders are both contrarians and possessors of superior information based on firm-year insider trading data from 1992 to 1999. They also find that insiders in firms with higher levels of information uncertainty are more likely to have superior information about firm's future performance (information uncertainty hypothesis).

We employ an event study approach and an ex-post regression model to investigate whether insiders are able to execute timely purchases and sales based on their contrarian beliefs or superior information about firm's future performance. First, we examine abnormal returns of insider stock purchases and sales at different levels of prior stock returns in individual firms, respectively. The classification of stock return levels is based on cumulative daily stock returns three days before the transaction date to the transaction date (i.e., four-day past stock performance). We utilize event studies based on the Fama-French-Momentum Time-Series Model using the CRSP value-weighted (and equal-weighted) index. We also consider the effects of information uncertainty of a firm on the informativeness of insider trading. Firms with smaller size and higher stock volatility are assumed to have higher levels of information uncertainty. Also, stock transactions made during the period of 2008 financial crisis (i.e., December 2007 to June 2009) are assumed to have higher levels of information uncertainty.[2] We further employ an ordinary least squares (OLS) regression model with heteroscedasticity-consistent standard errors to examine the effects of insider type, firm's past stock performance, firm size, stock volatility, and 2008 financial crisis on abnormal returns of insider stock purchases and sales, respectively.

[2] According to the National Bureau of Economic Research, the 2008 financial crisis began in December 2007 and ended in June 2009.

Our empirical results identify the existence of what we refer to as an "insider smile" for insider stock purchases, which supports both the insider contrarian hypothesis and the insider superior information hypothesis. That is, not only do insider stock purchases earn greater positive abnormal returns following significant decreases in stock prices, but insider stock purchases also earn greater abnormal returns following significant increases in stock prices; however, insider stock purchases only earn small abnormal returns following small changes in stock prices. Our results also show that insiders earn greater negative abnormal returns through their stock sales following significant increases in stock prices. These results show that insiders are contrarian investors who purchase stocks after stock prices fall and sell stocks after stock prices rise. It also suggests that insiders have better insight on the degree to which the market has overreacted and supports the superior information hypothesis.[3]

In addition to supporting the contrarian hypothesis and the superior information hypothesis, our results provide some evidence that abnormal returns from insider stock purchases and sales vary over different levels of information uncertainty of a firm. Insiders in firms with higher stock volatility tend to earn greater positive (negative) abnormal returns from their stock purchases (sales). Further, we document a related firm-size effect, whereby abnormal returns following insider purchases are greater for small firms than for large firms, consistent with Chopra, Lakonishok, and Ritter (1992), Lakonishok and Lee (2001), and Piotroski and Roulstone (2005). Interesting, insiders in large firms with high stock volatility are more likely to obtain greater negative abnormal returns from their stock sales. Also, insider stock purchases made during the 2008 financial crisis period tend to earn greater positive abnormal returns; however, we do not find strong evidence that insiders earn negative abnormal returns from their stock sales during

[3] The market overreaction hypothesis suggests that investors tend to overweight short-run developments of a firm resulting in a firm's stock price not fully reflecting its fundamental value (De Bondt and Thaler, 1985).

the recession. Results are robust to various event windows, with abnormal returns increasing as the event window is lengthened from 10 to 90 days.[4]

This paper provides several novel contributions and extends prior literature in several ways. First, our research is the first study to investigate the informativeness of insider trading by examining the abnormal returns of insider stock purchases and sales following different levels of past stock performance. We identify an "insider smile" which suggests that insider trades are based not only on contrarian beliefs (as after a stock price drop) but also on insider expectations of continued momentum in stock prices (as following a stock price increase). Second, prior studies investigate whether insiders are contrarians or possessors of superior information based on aggregate insider trading data (i.e., yearly, quarterly, or monthly data) in the 1990s. We use more recent insider trading data (1996-2013) at both firm-day level and insider-firm-day level data, which allows us to directly examine the short-term market response to each insider's stock transaction. Third, prior studies focus on the relationship between the number of insider trades and past market excess returns (future firm performance) to examine insider contrarian hypothesis (insider superior information hypothesis). We employ an event study approach and an ex-post regression model to investigate the short-term market response to insider stock transactions (i.e., ten to ninety day abnormal returns of insider stock purchases and sales) traded at different levels of past stock performance. This method allows us to directly examine whether insiders make stock transactions based on perceived mispricing of firms' securities or based on superior information (or both). Finally, our study supports the importance for proper insider

[4] According to the Section 16(b) of the Securities and Exchange Act of 1934, insiders are not allowed to make short-swing profits within six months of their stock transactions. Thus, short-term abnormal returns earned from insider stock transactions in our empirical studies only provide evidence that insiders make trades based on contrarian beliefs or superior information about firm's future performance.

trading regulation to assure stock price informativeness. Enforcement of insider trading laws is particularly important for firms with higher levels of information uncertainty.

2.2 Literature Review

A. Insider Trading

The insider trading activities we focus on are open market and private market transactions of stock purchases and sales. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares. This definition of insider is widely used in prior literature (e.g., Lakonishok and Lee, 2001; Jeng et al., 2003; Jiang and Zaman, 2010). Insiders with decision making authority such as CEOs, CFOs, and members of the executive committee potentially have superior knowledge about the long-term development of a firm and thus may be more informed about expected future stock price movements (Seyhun, 1986, 1990).

Insider trading activities are regulated at both the federal level (e.g., the Securities Exchange Act of 1934 (SEA)) and with company-level policies (e.g., blackout windows) (Bettis, Coles, and Lemmon, 2000). Section 16(a) of the SEA requires insiders to disclose their transactions by the tenth day of the calendar month after the trading month. Since the enactment of the Sarbanes-Oxley Act of 2002, insiders are required to report a change in ownership within two business days following the execution of their transactions. Some firms with blackout window policies only allow insiders to make trades during certain periods after quarterly earnings announcements (e.g., three to twelve days) (Bettis, Coles, and Lemmon, 2000).

Insider trading activities are not inherently illegal, but trades based on material, nonpublic information are considered illegal (although there is no clear definition of material, nonpublic

information by the U.S. Congress or the Securities and Exchange Commission, see Seyhun, 1998). However, insiders can trade their securities legally on the basis of their understanding of the long-term outlook for their firms and public information such as significant decreases or increases of stock price (Seyhun, 1998).[5] Our research design highlights stock transactions of top executives and incorporates all available insider trading activities from the Table One File of the Thomson Reuters Insider Filing Data Feed (IFDF) over the time period 1996 to 2013.[6]

B. Informativeness of Insider Trading

Prior literature shows mixed results of the informativeness of insider stock transactions (e.g., Lorie and Niederhoffer, 1968; Jaffe, 1974; Finnerty, 1976; Seyhun, 1986; Rozeff and Zaman, 1988; Eckbo and Smith, 1998; Lakonishok and Lee, 2001; Jeng, Metrick, and Zeckhauser, 2003; Scott and Xu, 2004; Cohen, Malloy, and Pomorski, 2012). For example, Jaffe (1974) suggests that insider trades contain information and insiders can earn profits from their stock transactions. Jeng, Metrick, and Zeckhauser (2003) find that insider purchase portfolios may earn abnormal returns of more than 6% per year, but insider sale portfolios are not informative of future abnormal returns. Scott and Xu (2004) suggest that insider sales of different volumes carry different information: large sales tend to be driven by overvaluation of stocks and small sales tend to be for liquidity and diversification reasons. Cohen, Malloy, and Pomorski (2012) suggest that opportunistic traders are more informed about a firm's future than routine traders and have predictive power of firm's stock returns, news, and events. However, Eckbo and Smith (1998)

[5] As well, top executives often obtain large holdings of their firm's stock as part of their executive compensation; thus, insider sale transactions may be motivated by reasons other than expectations about future stock price movements (e.g., liquidity and risk diversification). Thus, we expect that insider stock purchases are more informative of future stock price movements than insider stock sales.

[6] We are unable to distinguish between legal and illegal insider trading from the Thomson Reuters Insider Filing Data Feed (IFDF) due to data limitation.

show that insiders may actually earn zero or negative abnormal returns based on a sample of insider trades on the Oslo Stock Exchange from 1985 to 1992.

Whether insiders make trades based on contrarian investment strategies or based on their superior knowledge about firm's future performance is widely discussed in prior literature. Several studies show that insiders are contrarian investors, and their stock transactions are informative of future movements in stock prices (e.g., Seyhun, 1986; Seyhun, 1990; Chowdhury, Howe, and Lin, 1993; Rozeff and Zaman, 1998; Lakonishok and Lee, 2001; Jenter, 2005). For instance, Seyhun (1986) suggests that insiders generally are contrarian investors and shows evidence that insiders predict future stock price movements and earn abnormal returns of 3% for stock purchases and -1.7% for stock sales during the 100 days following their stock transactions. Seyhun (1990) examines insider trading activities around the Crash of 1987 and finds evidence that insiders who purchase their companies' stocks following significant declines in stock prices during the crash tend to earn greater positive post-crash returns. Rozeff and Zaman (1998) suggest that insider purchases of value stocks increase as stocks change from growth categories to value categories, and insider stock purchases are greater (fewer) after low (high) stock returns. Lakonishok and Lee (2001) suggest that insiders in aggregate are contrarian investors and may predict returns in small firms. They show that insider purchases in small firms are informative of future stock price movements while insider sales seem to have no predictive power. This suggests that firm size may influence the magnitude of insider trading activities, and larger firms are found to be priced more efficiently than smaller firms. Jenter (2005) supports Lakonishok and Lee (2001) by showing that top managers have contrarian views on firm value, and excess returns to insider trades conditionally on firm size and market-to-book effects are not significantly different from zero. Rozeff and Zaman (1988) also show that insiders and outsiders

do not earn substantial profits after controlling for firm size, earnings to price ratio, and transaction cost.

However, Seyhun (1988), Ke, Huddart, and Petroni (2003), Piotroski and Roulstone (2005), and Jiang and Zaman (2010) suggest insiders possess superior information to predict market-wide stock price movements. Seyhun (1988) suggests that public available information about aggregate insider trading can predict future stock market returns based on data from 1975 to 1981; that is, an increase in current net aggregate insider stock purchases is associated with an increase in future excess returns to the market portfolio two months later. Ke, Huddart, and Petroni (2003) support the insider superior knowledge hypothesis by showing that net insider stock sales increase nine months to two years prior to earnings declines based on quarterly insider data from 1989 to 1997. They also suggest that insiders in growth firms are more likely to have foreknowledge about the firm's next earnings announcement.

Also, Piotroski and Roulstone (2005) suggest that insiders are both contrarians and possessors of superior information based on firm-year insider trading data from 1992 to 1999. They use book-to-market ratios and recent excess returns to proxy contrarian beliefs. Recent excess returns refer to a firm's 12-month buy-and-hold return less a 12-month buy-and-hold value-weighted market index return during a fiscal year. They measure insider's information advantage about firm's future cash flows by future firm performance (i.e., next fiscal year's annual market-adjusted stock return, next fiscal year's annual earnings innovation, and contemporaneous annual earnings innovation). An earnings innovation is measured by a yearly change of ROA (i.e., ratio of net income to total assets). Insider trading is measured by a firm's yearly insider purchase ratio (i.e., ratio of number of purchases to number of purchases and sales). Their results suggest that insider purchase ratio is negatively related to recent returns and

positively related to firm's book-to-market ranking, which supports the insider contrarian hypothesis. Their results also support the insider superior knowledge hypothesis by showing that insider purchase ratio is positively related to future firm performance. Finally, they find that insiders in firms with higher levels of information uncertainty (i.e., smaller firm size and no earnings forecast by analysts on the IBES during the prior fiscal year) are more likely to have superior information about firm's future performance, which supports the insider information uncertainty hypothesis.

Finally, Jiang and Zaman (2010) suggest insiders possess superior information to predict market-wide stock price movements using a first-order vector autoregressive (VAR) model based on quarterly insider trading data from 1978 to 2000. Insider trading is measured by the insider net purchase ratio of a firm (i.e., the ratio of the difference between total number of insider purchases and total number of insider sales to total number of insider purchases and sales over the quarter). Their results support the insider superior information hypothesis by showing that there is a positive relation between unexpected returns (i.e., cash-flow news and discount rate news) and lagged two quarter's and lagged three quarter's insider net purchases. Their results reject the insider contrarian hypothesis by showing that prior three quarters' expected market excess returns do not predict insider net purchases.

2.3 Hypotheses

Based on the aforementioned prior research, we examine the informativeness of insider trading with three hypotheses:

H1 (Insider Contrarian): *For firms in which insiders purchase (sell) shares, abnormal returns are positively (negatively) related to the magnitude of stock price decline (increase).*

Insiders are contrarian investors, who purchase their firm's stocks as stock prices decrease and sell their firm's stocks as stock prices increase. Also, their stock transactions are informative of future stock price movements; that is, insider stock purchases (sales) earn greater positive (negative) abnormal returns following a significant stock price decrease (increase).

H2 (Insider Superior Information): *For firms in which insiders purchase (sell) shares, abnormal returns are positively (negatively) related to the absolute value of the magnitude of stock price change.*

Insiders are assumed to have better knowledge about firm's operations and risks, which creates information asymmetry of future stock price movements between insiders and outsiders. Thus, insiders earn greater abnormal returns from their stock transactions following significant changes in stock prices compared to outside investors.

H3 (Information Uncertainty): *Following stock price declines (or increases), abnormal returns of insider trading are greater for firms with higher levels of information uncertainty (smaller firm size and higher stock volatility).*

Higher levels of information uncertainty of a firm are associated with higher levels of information asymmetry between insiders and outsiders. Insiders in firms with smaller firm size and higher stock volatility are expected to earn greater abnormal returns from their stock transactions.

2.4 Data

Our event study sample is comprised of 261,128 firm-day observations for insider stock purchases and 591,104 firm-day observations for insider stock sales from 1996 to 2013.[7] The sample used in our ex-post regression model is comprised of 294,925 insider-firm-day observations for insider stock purchases and 716,920 observations for insider stock sales over the same time period.[8]

Insider stock transactions were obtained from the Table One File of the Thomson Reuters Insider Filing Data Feed (IFDF). Table One File contains all insider stock transaction information filed on Forms 3, 4, and 5.[9] We include data for trades coded as "P" for insider stock purchases and "S" for insider stock sales on Form 4. We only include data with a cleanse indicator "R" which indicates data verified through all cleansing checks for reasonableness. Daily security price, stock return, volume data, analyst earnings forecast data, and company financial information were obtained from the Center for Research in Security Prices (CRSP), the IBES summary database, and the Compustat database available from the Wharton Research Data Services (WRDS). The company financial information (i.e., equity, long-term debt, market to book ratio, net income, and total assets) obtained from the Compustat database is based on

[7] We choose year 1996 as a starting point of our sample due to a potential data problem of insider trading before year 1996. For example, there are only 1,849 firm-day observations for insider stock purchases in 1995 compared to 15,033 observations in 1996. Similarly, there are only 3,061 firm-day observations for insider stock sales in 1995 compared to 26,594 observations in 1996. As long as there is at least one insider buying (selling) the firm's stocks during the day, the firm is considered to have insider stock purchases (sales) and included in our sample.

[8] We aggregate insider stock transactions at insider levels. For example, if an insider makes more than one stock purchase transaction on that day, we aggregate his/her dollar value and number of shares traded and view it as one observation in our models. See Appendix 2-A for further details of the sample selection process.

[9] Form 3 includes details of initial statement of beneficial ownership. Form 4 includes details of statement of changes of beneficial ownership for non-derivative securities (Table One) and derivative securities (Table Two). Form 5 includes details of annual statement of change in beneficial ownership. Beginning on July 30th 2003, insiders are required to electronically file their Form 4 documents via the EDGAR system according to the Sarbanes-Oxley Act of 2002.

calendar quarter data.[10] [11] We only consider firms with market capitalization more than $1 million (Shon and Veliotis, 2013). We also exclude firms which do not have thirty consecutive past stock returns prior to the transaction date of insider trading since the main focus of our research is to examine the market response to insider trading activities after different levels of past stock performance and we calculate the stock volatility of a firm based on thirty consecutive past stock returns.

2.5 Methodology

We use an event study approach and an ex-post regression to investigate whether abnormal stock returns are associated with insider trading behavior.[12] First, we conduct event studies to examine short-term abnormal returns for insider stock purchases and sales, respectively. We classify the sample into sixteen subgroups according to different levels of past stock performance: eight subgroups for positive past stock returns and eight subgroups for negative past stock returns.[13] The classification of stock return levels is based on cumulative stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance).[14]

[10] Calendar quarters are determined based on the ending months of each fiscal quarter; that is, February, March, and April are in the first calendar quarter; May, June, and July are in the second calendar quarter; August, September, and October are in the third calendar quarter; November, December, and January are in the fourth calendar quarter (S&P, 2003).

[11] Company financial information used to calculate accrual quality (FLOS, 2005) and IBES data used to calculate information quality (Wade, Hoyt, and Liebenberg, 2015) for robustness checks are based on annual data.

[12] We also examine a 90-day holding period return of insider stock purchases and sales following different levels of past stock performance as robustness checks, respectively.

[13] We divide the insider stock transaction sample into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine abnormal returns of insider stock transactions traded at different levels of past stock performance: $RET \leq -75\%$, $RET \leq -50\%$, $RET \leq -25\%$, $-25\% < RET \leq -20\%$, $-20\% < RET \leq -15\%$, $-15\% < RET \leq -10\%$, $-10\% < RET \leq -5\%$, $-5\% < RET \leq 0\%$, $0\% < RET \leq 5\%$, $5\% < RET \leq 10\%$, $10\% < RET \leq 15\%$, $15\% < RET \leq 20\%$, $20\% < RET \leq 25\%$, $25\% < RET$, $50\% < RET$, and $75\% < RET$.

[14] We also classify stock return levels based on cumulative stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) as robustness checks. Results are similar and even more pronounced.

We conduct event study analyses of daily abnormal returns for each group. We employ four event windows from 10 to 90 days after the stock transaction: [+1, +10], [+1, +30], [+1, +60], and [+1, +90]. We define the event date as the transaction date of insider stock purchases or sales and the estimation window as the 255-day trading period which ends 46 days before the event date. Our estimation model is based on the Fama-French-Momentum Time Series model since insider trading activities and abnormal returns may differ across firm size, market to book ratio, and past stock returns (Fama and French, 1993; Carhart, 1997). We primarily use the CRSP value-weighted index as a measure of market returns (and the CRSP equal-weighted index for robustness).

We then employ an ordinary least squares regression model with heteroscedasticity-consistent standard errors to investigate the relationship between abnormal returns of insider trades and insider type, firm's past stock performance, firm size, stock volatility, and 2008 financial crisis. We run regression models for cumulative abnormal returns (CAR) of insider stock purchases and sales based on four event windows: [+1, +10], [+1, +30], [+1, +60], and [+1, +90], respectively. The cumulative abnormal return for each firm is calculated based on the Cross-Sectional Analysis using the Market Model. Our regression model is as follows:

$$\begin{aligned}\mathbf{CAR_{i,j,t}} = {} & \boldsymbol{\beta_0} + \boldsymbol{\beta_1}\ \mathbf{Insider\ type_{i,j,t}} + \boldsymbol{\beta_2}\ \mathbf{Past\ stock\ performance_{j,t}} \\ & + \boldsymbol{\beta_3}\ \mathbf{CEO_{i,j,t}} * \mathbf{Past\ stock\ performance_{j,t}} + \boldsymbol{\beta_4}\ \mathbf{Firm\ size_{j,t}} \\ & + \boldsymbol{\beta_5}\ \mathbf{Stock\ volatility_{j,t}} + \boldsymbol{\beta_6}\ \mathbf{2008\ financial\ crisis_t} \\ & + \boldsymbol{\beta_7}\ \mathbf{Insider\ trading\ characteristics_{i,j,t}} + \boldsymbol{\beta_8}\ \mathbf{Firm\ characteristics_{j,t}} \\ & + \boldsymbol{\beta_9}\ \mathbf{Insurance\ industry_{j,t}} + \boldsymbol{\beta_{10}}\ \mathbf{Banking\ industry_{j,t}} + \boldsymbol{\beta_{11}}\ \mathbf{January_t} \\ & + \boldsymbol{\beta_{12}}\ \mathbf{Fourth\ quarter_t} + \boldsymbol{\beta_{13}}\ \mathbf{Sector\ fixed\ effects} \\ & + \boldsymbol{\beta_{14}}\ \mathbf{Year\ fixed\ effects} + \boldsymbol{\varepsilon_{i,j,t}}\end{aligned}$$

The dependent variable, $CAR_{i,j,t}$, is the cumulative daily abnormal return for each insider's stock purchase and sale (i.e., insider i, firm j, and day t). Key independent variables include insider type, firm's past stock performance, firm size, stock volatility of a firm, and 2008 financial crisis. As for the insider type, insiders with greater decision making authority such as CEOs and CFOs may have better knowledge about their firms' operations and earn greater abnormal returns from their stock transactions compared to other insiders. We use five binary variables with the value of one to proxy CEOs, CFOs, directors, officers, and large shareholders, respectively.[15]

We use four binary variables for firm's past stock performance to proxy significant increases or decreases in firm's past stock returns: stock returns greater than 25%, stock returns between 20% and 25%, stock returns between -25% and -20%, and stock returns less than -25%. We classify past stock return levels of individual firms based on cumulative daily stock returns from three days before the transaction date to the transaction date of insider trades (i.e., four day past stock performance).[16] Our model also includes the interaction terms of CEOs and stock returns less than -25%, and CEOs and stock returns greater than 25% to examine whether CEOs have more superior information and earn abnormal returns from their stock transactions following significant changes in stock prices.

We divide the sample into three groups based on firm size (i.e., market capitalization) to examine a firm size effect of abnormal returns of insider stock transactions.[17] Based on the

[15] Based on data availability and insider classification from the Table One File of the Thomson Reuters Insider Filing Data Feed, we define directors as chairman of the board, director, and vice chairman, and we define an officer to be either the chief investment officer, chief operating officer, chief technology officer, executive vice president, officer, president, secretary, senior vice president, or vice president.

[16] We also classify stock return levels based on cumulative stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) as robustness checks.

[17] We divide the sample into three groups based on firm size: small firms with market capitalization less than or equal to $206,986,006 (33.33th percentile of the insider stock purchase and sale sample), medium firms with market

groups mentioned above, we use two binary variables to proxy firm size in our regression models (i.e., small firms and medium firms for insider stock purchase models; medium firms and large firms for insider stock sale models). As for event study analyses, we first divide the sample into three groups based on firm size and further classify each firm size group into 16 subgroups based on past stock performance. We then run the event study separately for each subgroup.[18]

In addition to examining the firm size effect of insider stock purchases and sales, we allow for a stock volatility effect. We divide the sample into three groups based on different levels of stock volatility.[19] In the regression model, we employ two binary variables for stock volatility of a firm (i.e., high stock volatility firms and medium stock volatility firms) which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction. We employ the same classification method used in the firm size event study analysis to examine the stock volatility effect of insider trading.[20] We also consider an interaction effect of firm size and stock volatility in regression models and event study analyses.

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capitalization between \$206,986,006 and \$1,102,269,828 (33.33th percentile to 66.66th percentile), and large firms with market capitalization greater than \$1,102,269,828 (66.66th percentile).

[18] As for event study analyses, we also divide the sample into ten groups based on firm size and run the event study separately for each group according to different levels of past stock performance as robustness checks: firm size group one (smallest firms) with market capitalization less than or equal to \$38,902,500 (10th percentile of the insider stock purchase and sale sample), firm size group two with market capitalization between \$38,902,500 and \$89,657,373 (10th-20th percentile), firm size group three with market capitalization between \$89,657,373 and \$170,049,877 (20th-30th percentile), firm size group four with market capitalization between \$170,049,877 and \$295,258,718 (30th-40th percentile), firm size group five with market capitalization between \$295,258,718 and \$486,289,242 (40th-50th percentile), firm size group six with market capitalization between \$486,289,242 and \$782,310,000 (50th-60th percentile), firm size group seven with market capitalization between \$782,310,000 and \$1,330,502,093 (60th-70th percentile), firm size group eight with market capitalization between \$1,330,502,093 and \$2,582,572,886 (70th-80th percentile), firm size group nine with market capitalization between \$2,582,572,886 and \$7,305,133,020 (80th-90th percentile), and firm size group ten (largest firms) with market capitalization greater than \$7,305,133,020 (90th percentile).

[19] We divide the sample into three groups based on stock volatility: low stock volatility firms with stock volatility less than or equal to 0.01983 (33.33th percentile of the insider stock purchase and sale sample), medium stock volatility firms with stock volatility between 0.01983 and 0.03460 (33.33th percentile to 66.66th percentile), and high stock volatility firms with stock volatility greater than 0.03460 (66.66th percentile).

[20] As for event study analyses, we also divide the sample into ten groups based on stock volatility and run the event study separately for each group according to different levels of past stock performance as robustness checks: stock volatility group one (smallest stock volatility) with stock volatility less than or equal to 0.01200 (10th percentile of the insider stock purchase and sale sample), stock volatility group two with stock volatility between 0.01200 and

We further consider a time period effect. We divide our sample into three groups based on different time periods to examine the time effect of abnormal returns of insider stock purchases and sales: insider stock transactions made between January 1996 to November 2007 (i.e., the time period before 2008 financial crisis), insider stock transactions made between December 2007 to June 2009 (i.e., the time period of 2008 financial crisis), and insider stock transactions made between July 2009 to December 2013 (i.e., the time period after 2008 financial crisis).[21] We then run event studies for each time period group based on different levels of past stock performance. Also, we use one binary variable to proxy the time period of 2008 financial crisis (i.e., insider stock transactions made between December 2007 and June 2009) in our regression models.

We include several control variables in our regression models since factors other than insider type, firm's past stock performance, firm size, stock volatility, and 2008 financial crisis may affect stock returns of insider trades. The control variables we consider are insider trading characteristics, firm characteristics, fourth-quarter effects, January effect, industry fixed effects, sector fixed effects, and year fixed effects. We use two variables to proxy insider trading characteristics: the ratio of number of insider shares traded to number of shares outstanding of a firm, and the number of shares traded by an insider.[22]

0.01549 (10^{th}-20^{th} percentile), stock volatility group three with stock volatility between 0.01549 and 0.01873 (20^{th}-30^{th} percentile), stock volatility group four with stock volatility between 0.01873 and 0.02213 (30^{th}-40^{th} percentile), stock volatility group five with stock volatility between 0.02213 and 0.02602 (40^{th}-50^{th} percentile), stock volatility group six with stock volatility between 0.02602 and 0.03074 (50^{th} -60^{th} percentile), stock volatility group seven with stock volatility between 0.03074 and 0.03687 (60^{th} -70^{th} percentile), stock volatility group eight with stock volatility between 0.03687 and 0.04566 (70^{th} -80^{th} percentile), stock volatility group nine with stock volatility between 0.04566 and 0.06190 (80^{th} -90^{th} percentile), and stock volatility group ten (highest stock volatility) with stock volatility greater than 0.06190 (90^{th} percentile).

[21] According to the National Bureau of Economic Research, the 2008 financial crisis began in December 2007 and ended in June 2009.

[22] We also use the ratio of dollar value of insider shares traded to market capitalization of a firm and the dollar value of shares traded by an insider to proxy insider trading characteristics as a robustness check.

Several firm characteristics may affect abnormal returns of stock transactions and insider trading activities as well (Lakonishok and Lee, 2001; Shon and Veliotis, 2013). Our model includes four variables to proxy firm characteristics: market to book ratio, loss, leverage, and return on assets (ROA). Market to book ratio is the ratio of market value of equity to book value of equity, loss variable equals one if net income is less than zero, leverage is defined as the ratio of long-term debt to equity, and ROA refers to the ratio of net income to total assets.[23]

Finally, we consider fourth-quarter effects, January effect, industry fixed effects, sector fixed effects, and year fixed effects. Seyhun (1998) finds seasonal patterns in insider trading consistent with seasonal variations in stock returns: insider purchases peak in the last quarter of a year, particularly for the month of October and December. Abnormal returns of stock transactions are larger particularly for small firms in January (Keim, 1983; Seyhun, 1988). Thus, we include fourth quarter and January binary variables in our model. To control industry and sector effects, we use two binary variables to proxy highly regulated industries (i.e., insurance and banking) and employ eleven binary variables to proxy twelve sectors based on the sector classification from the IFDF database (i.e., finance, healthcare, consumer non-durables, consumer services, consumer durables, energy, transportation, technology, basic industries, capital goods, public utilities, and miscellaneous). We also include seventeen binary variables to consider year fixed effects.

[23] We also use the ratio of long-term debt to total assets to proxy leverage as a robustness check. Further, we include accrual quality and information quality of a firm in our regression model as robustness checks. We calculate accruals quality based on Francis, LaFond, Olsson, and Schipper (2005) and use it to proxy information risk of a firm (Eckles, Halek, and Zhang, 2013). As for information quality, we follow Wade, Hoyt, and Liebenberg (2015) and calculate dispersion (DISP) based on Diether, Malloy, and Scherbina (2002).

2.6 Empirical Results

Our empirical study results identify the existence of what we refer to as an "insider smile" which illustrates a symmetric effect in that not only are abnormal returns increasing in the size of the recent stock price decrease, but abnormal returns also are increasing in the size of the recent stock price increase, given that insiders have purchased. Our event study and ex-post regression model results indicate that positive (negative) abnormal returns are observed after insider purchases (sales), particularly after stocks have had significant decreases (increases) in price. Both models generally support the insider contrarian hypothesis (H1) that insiders purchase (sell) their firm's stocks after significant declines (increases) in price suggesting that they believe stock prices will reverse. Our results also support the insider superior information hypothesis (H2) that insiders have better information about their firm's operation and view substantial changes in stock prices as market overreaction. Further, both models show that insiders in high stock volatility firms tend to earn greater positive (negative) abnormal returns from their stock purchases (sales), and insiders in small firms are more likely to earn greater positive abnormal returns from their stock purchases. Also, insider stock purchases made during the period of 2008 financial crisis tend to have greater abnormal returns than trades made in other time periods. These results support the information uncertainty hypothesis (H3) that insiders in firms with higher levels of information uncertainty tend to have better knowledge about firm's future performance. Therefore, our results suggest that insiders make trades based on both their contrarian beliefs and superior information about firm's future performance.

Figure 2-1 illustrates an "insider smile" suggesting that stock purchases by insiders earn greater abnormal returns following significant decreases and increases in stock prices; however, insiders earn only small abnormal returns following small changes in stock prices. Also, Figure

2-1 and Figure 2-2 show event study results and provide evidence on H1 and H2 for insider stock purchases and insider stock sales, respectively. For firms in which insiders purchase (sell) shares, larger prior declines (increases) in stock prices are associated with larger future positive (negative) abnormal returns, consistent with H1 and H2, providing evidence of insiders' contrarian strategy and of insiders' ability to sense such times.[24] Similarly, for firms in which insiders purchase shares, larger prior increases in stock prices are associated with larger future abnormal returns, consistent with H2, indicating that insiders are more than simply contrarian investors and carry better knowledge about firm's future performance. Though we note that other events are more likely to be included, we do show in Figure 2-1 and Figure 2-2 that, for firms in which insiders purchase (sell) shares, abnormal returns are positively (negatively) related to the length of the event window. Again, though bias may be present in longer event windows, a consistent pattern is seen across event windows.

Table 2-1 and Table 2-2 accompany Figure 2-1 and Figure 2-2, respectively, and provide details of the event study results.[25] We find that insider stock purchases earn a greater positive abnormal return (in particular, approximately a 22% to 25% abnormal return over a 90-day event window) following a more-than-25% stock price decrease or increase compared to abnormal returns (approximately a 4% abnormal return over a 90-day event window) following small changes in stock prices—i.e., what we refer to as an "insider smile."[26] This result suggests that insiders make greater profits from their stock purchases particularly following significant

[24] Especially for larger stock price decreases, outsiders may find it challenging to understand how the firm will fare and what strategies management will employ in reaction. Insiders are more informed and also have an incentive to signal to outsiders their confidence in the firms' ability to weather the storm, thus encouraging buying by outsiders as the firms shares positive news about the firm over time.

[25] Our estimation model is based on the Fama-French-Momentum Time Series model using the CRSP value-weighted index as a measure of market returns. We also employ models using the CRSP equal-weighted index as robustness checks and get similar empirical results.

[26] We do not find survival bias issue for insider stock purchases at stock price drops more than 25%; that is, all firms which have ever experienced a more than 25% stock price drop survived at least 90 days after insider stock transactions in our sample.

changes in the firm's stock price. In addition, insider stock sales have a greater negative abnormal return (i.e., approximately a -17% abnormal return over a 90-day event window) following a more than 25% increase in stock prices compared to trades made following a small change in stock prices. This result implies that insiders sell their firm's stocks before significant price drops, particularly after stocks have had significant increases in price. These results provide evidence that insiders are both contrarian investors and superior information possessors, and insider transactions are informative of future stock price movements.[27]

Figure 2-3 and Figure 2-4 provide some evidence on H3 (Firm Size).[28] Figure 2-3 shows that, for firms in which insiders purchase shares, abnormal returns are negatively related to firm size. In particular, insiders in small firms generally can earn greater abnormal returns from their stock purchases (i.e., a 35% abnormal return over a 90-day event window) when past stock returns decrease by more than 25%. However, insider in large firms can only earn a relatively small abnormal return from their stock purchases (i.e., a 5% abnormal return) over the same range. Interesting, Figure 2-4 illustrates that insiders in large firms tend to obtain greater negative abnormal returns from their stock sales particularly when past stock returns experience significant changes.

Figure 2-5 and Figure 2-6 also provide evidence on H3 (Stock Volatility).[29] Figure 2-5 shows that abnormal returns from insider stock purchases are greater for high stock volatility firms than

[27] We also examine a 90-day holding period return (HPR) of insider stock purchases and sales as robustness checks, respectively. Our results of 90-day HPR of insider stock purchases are consistent with event study results. See Appendix 2-B for further details of the HPR results.

[28] Appendix 2-C accompanies Figure 2-3 and provides details of the event study results for insider stock purchases with a firm size effect. We also examine insider stock purchases based on 10 firm size groups. See Appendix 2-D for further details. Appendix 2-E accompanies Figure 2-4 and provides details of the event study results of insider stock sales with a firm size effect. We also examine insider stock sales based on 10 firm size groups. See Appendix 2-F for further details.

[29] Appendix 2-G accompanies Figure 2-5 and provides details of the event study results for insider stock purchases with a stock volatility effect. We also examine insider stock purchases based on 10 stock volatility groups. See Appendix 2-H for further details. Appendix 2-I accompanies Figure 2-6 and provides details of the event study

for low stock volatility firms, across all past stock price movements. That is, insiders in high stock volatility firms can earn a more-than-10% abnormal return over a 90-day event window across all past stock price movements; however, insiders in low stock volatility firms may not earn abnormal returns from their stock purchases over the same range. Figure 2-6 illustrates that insider stock sales in high stock volatility firms can generally obtain grater negative abnormal returns than in low stock volatility firms. This is consistent with the notion that insiders in higher stock volatility firms tend to be more informed about firm's operation and future performance.

Figure 2-7 and Figure 2-8 show the interaction effect of firm size and stock volatility of a firm and also provide evidence on H3.[30] These two figures show the event study results for insider stock purchases and sales in high stock volatility firms with different firm sizes, respectively. Small firms with high stock volatility are assumed to have the highest level of information uncertainty. Figure 2-7 illustrates that insider stock purchases in small firms with high stock volatility earn a greater positive abnormal return (i.e., a 13% to 36% abnormal return over a 90-day event window) particularly following a more-than-25% stock price increase/decrease compared to trades made in other firms. Interesting, Figure 2-8 shows that insiders in large firms with high stock volatility obtain greater negative abnormal returns from their stock sales than in other firms. These results generally support the information uncertainty hypothesis that insiders in firms with higher levels of information uncertainty can take advantage of this asymmetric information and earn abnormal returns from their stock trades.

We also examine and control for insider stock purchases and sales across time periods. Figure 2-9 and Figure 2-10 show the event study results of insider stock purchases and sales in

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results of insider stock sales with a stock volatility effect. We also examine insider stock sales based on 10 stock volatility groups. See Appendix 2-J for further details.

[30] Appendix 2-K and Appendix 2-L accompany Figure 2-7 and Figure 2-8 and provide details of the event study results, respectively.

different time periods (i.e., before, during, and after 2008 financial crisis), respectively.[31] Figure 2-9 indicates that insider stock purchases made between December 2007 and June 2009 earn larger abnormal returns (i.e., a 6% to 40% abnormal return over a 90-day event window) than those made during other time periods. The results suggest that the recession beginning around the end of 2007 may have led to a trading environment in which opportunities were greater for insiders to earn abnormal returns. Also, insider stock purchases made after 2008 financial crisis earn smaller abnormal returns compared to trades made in the other two time periods, which provides some evidence that stricter regulations such as Dodd-Frank Act of 2010 may help increase the transparency of a firm and reduce information asymmetry between insiders and outsiders. Interesting, Figure 2-10 shows that insider stock sales made before 2008 financial crisis earn greater negative abnormal returns than those made in other time periods.

Table 2-3 and Table 2-4 show the regression model results for abnormal returns of insider stock purchases and sales conditional on insider trading and firm characteristics. These results are generally consistent with the event study results and support all three hypotheses discussed in the paper. Table 2-3 shows that insiders tend to earn a 9% to 13% abnormal return over a 90-day event window through stock purchases after stock price decreases of more than 25 percent. Table 2-4 also provides some evidence that for those firms whose insiders sell shares after an increase in stock prices, the future abnormal returns remain negative. Also, for firms in which insiders purchase shares, abnormal returns are larger for small firms (i.e., a 5% to 6% abnormal return over a 90-day event window) than for medium and large firms. Further, insiders in high stock volatility firms with smaller firm size tend to earn greater positive abnormal returns from their stock purchases (i.e., a 12% to 14% abnormal return over a 90-day event window). Also, insiders

[31] Appendix 2-M and Appendix 2-N accompany Figure 2-9 and Figure 2-10 and provide details of the event study results, respectively.

in high stock volatility firms earn approximately a -15% abnormal return from their stock sales over a 90-day event window. Our regression results also support that insider stock purchases made during the period of 2008 financial crisis earn greater abnormal returns than those traded in other time periods, which is consistent with the event study results. Finally, there does seem to be a higher positive (negative) short-term return when CEOs or CFOs purchase (sell) shares. Interesting, officers earn greater abnormal returns from their stock purchases than CEOs.

Several of the control variables also suggest interesting results. First, we find a positive (negative) relationship between number of shares purchased by insiders of a firm and abnormal returns from these insider stock purchases (sales). Not surprisingly, this suggests that firms whose insiders purchase (sell) more shares have higher positive (negative) abnormal returns. We also find some evidence that trades made in the fourth quarter earn higher abnormal returns, while those made in January earn smaller abnormal returns. This result comports with both the "fourth-quarter effect" (i.e., insiders are taking advantage of non-fundamental reductions in prices) as well as the "January effect" (i.e., stock prices are thought to already be artificially high, and thus offer less opportunity for insiders).[32]

2.7 Conclusions

The study examines the informativeness of insider trading in the context of stock purchases and sales by insiders for all publicly-traded firms from 1996 to 2013. Our approach contributes to the literature by identifying an "insider smile" or a U-shaped relationship between insider

[32] We also consider accrual quality and information risk in our regression models as robustness checks. Appendix 2-O and Appendix 2-P provide details of the regression results of accrual quality for insider stock purchases and sales, respectively. Appendix 2-Q and Appendix 2-R provide details of the regression results of information risk for insider stock purchases and sales, respectively. Further, we use a 90-day holding period return of insider stock purchases and sales as a dependent variable in our regression models as robustness checks. Appendix 2-S provides details of the regression results of 90-day holding period returns.

purchases and abnormal returns following various levels of changes in stock prices. The insider smile suggests that stock purchases by insiders earn greater abnormal returns following significant decreases and increases in stock prices but only earn small abnormal returns following small changes in stock prices.

In particular, we examine three hypotheses: insider contrarian hypothesis, insider superior information hypothesis, and information uncertainty hypothesis. We employ an event study approach and an ex-post regression model to investigate abnormal returns of insider stock purchases and sales following different levels of declines or increases in individual firm stock prices. Our results support these three hypotheses in general. First, evidence suggests that insiders are both contrarian investors and possessors of superior information; that is, abnormal returns are larger for firms in which insiders make stock trades as past stock returns decrease and increase significantly. Second, evidence also provides some supports that abnormal returns of insider stock transactions increase with the level of information uncertainty of a firm. Insiders in small firms with high stock volatility tend to earn greater abnormal returns from their stock purchases than insiders in other firms.

Our results highlight the fact that, in spite of increased financial disclosure and regulatory oversight, insiders continue to possess insights that provide them with share purchasing advantages. These advantages appeared to be even greater in small firms with high stock volatility, which tend to be more opaque. Thus, our study supports the importance for insider trading regulation to assure transparency of a firm. Enforcement of insider trading laws is particularly important for firms with higher levels of information uncertainty. Repurchases of company stock following changes in stock prices may be fruitful areas for future research.

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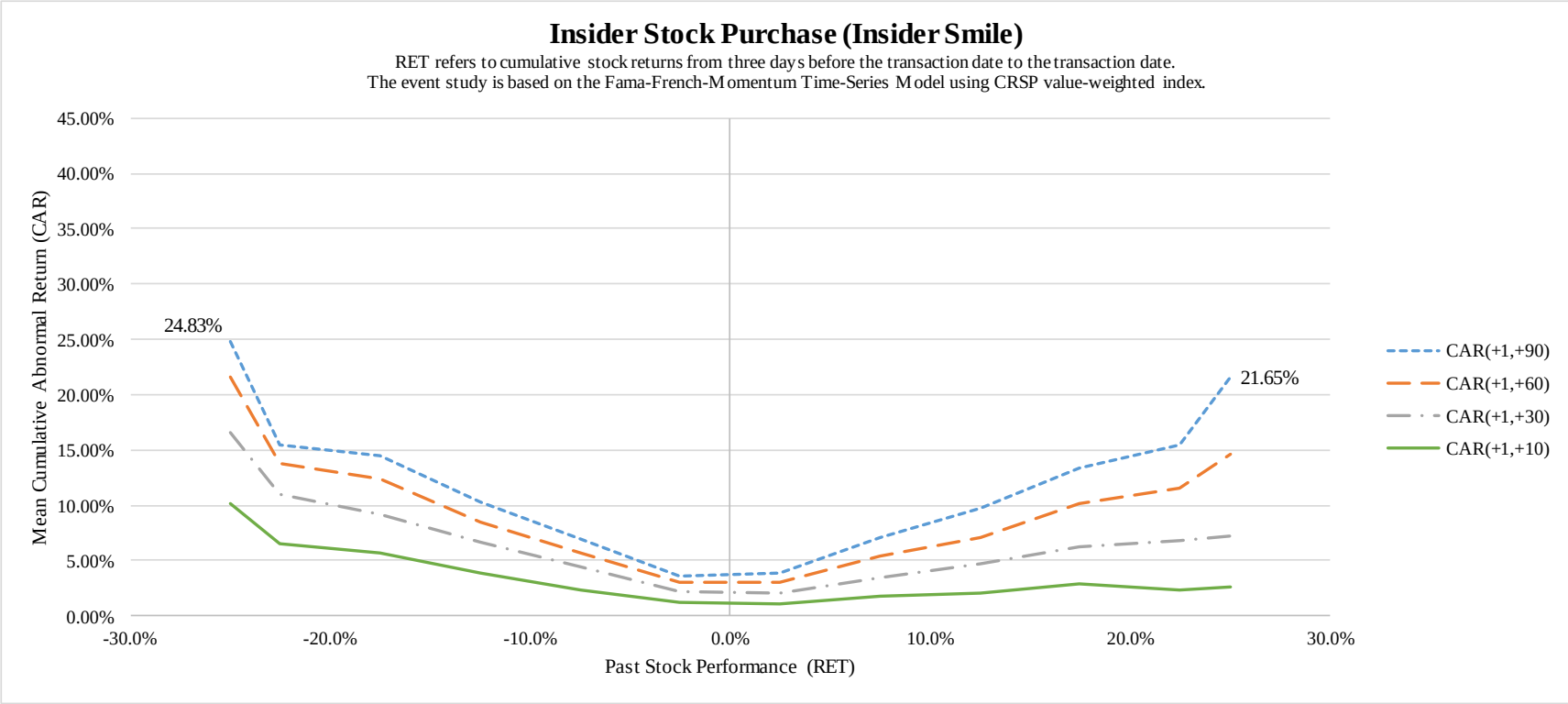

Figure 2-1: Event Study Results with Insider Purchase (Insider Smile)

1. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.
2. The insider stock purchase sample is comprised of 261,128 firm-day observations based on 11,047 publicly traded firms from 1996 to 2013.
3. We divide the insider stock purchase sample into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock purchases traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.
4. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.
5. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock purchases, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

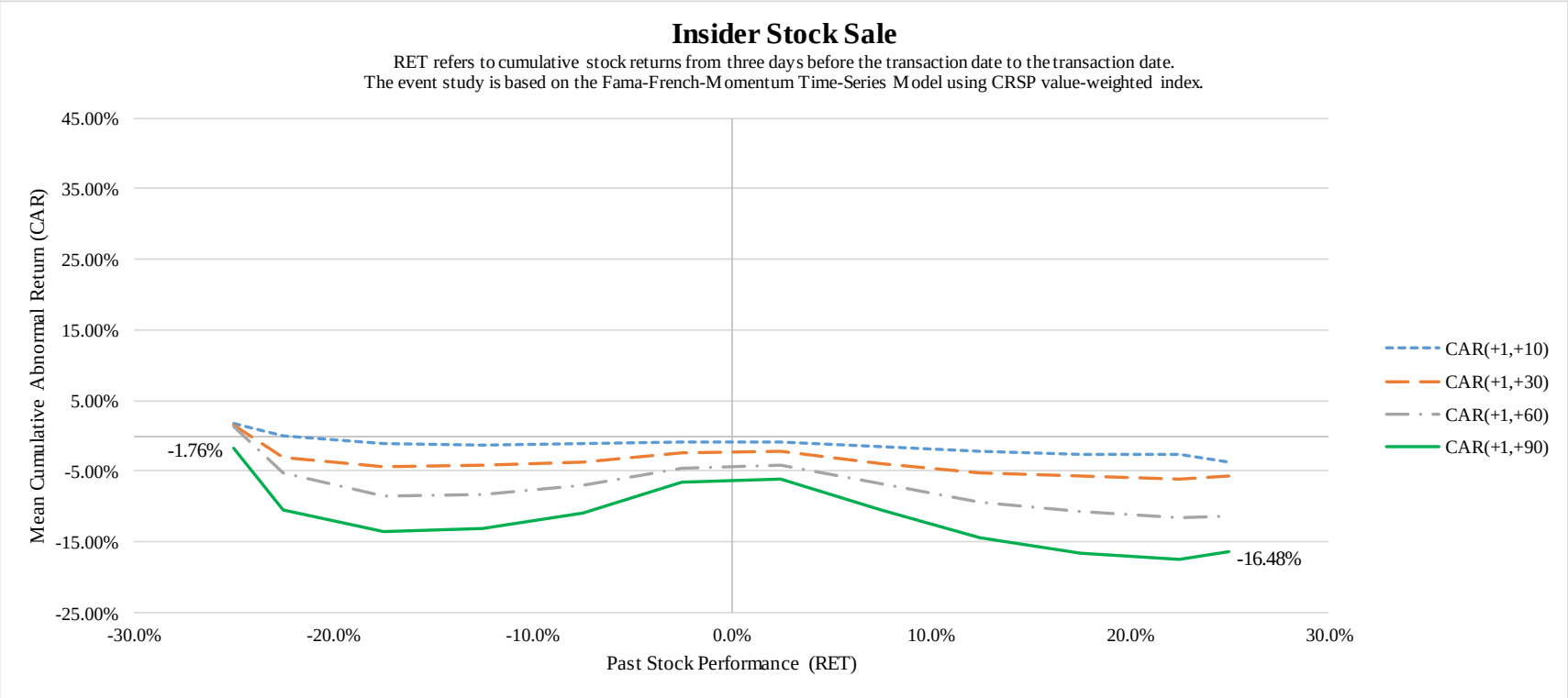

Figure 2-2: Event Study Results with Insider Sale

1. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

2. The insider stock sale sample is comprised of 591,104 firm-day observations based on 10,860 publicly traded firms from 1996 to 2013.

3. We divide the insider stock sale sample into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock sales traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

4. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

5. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock sales, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

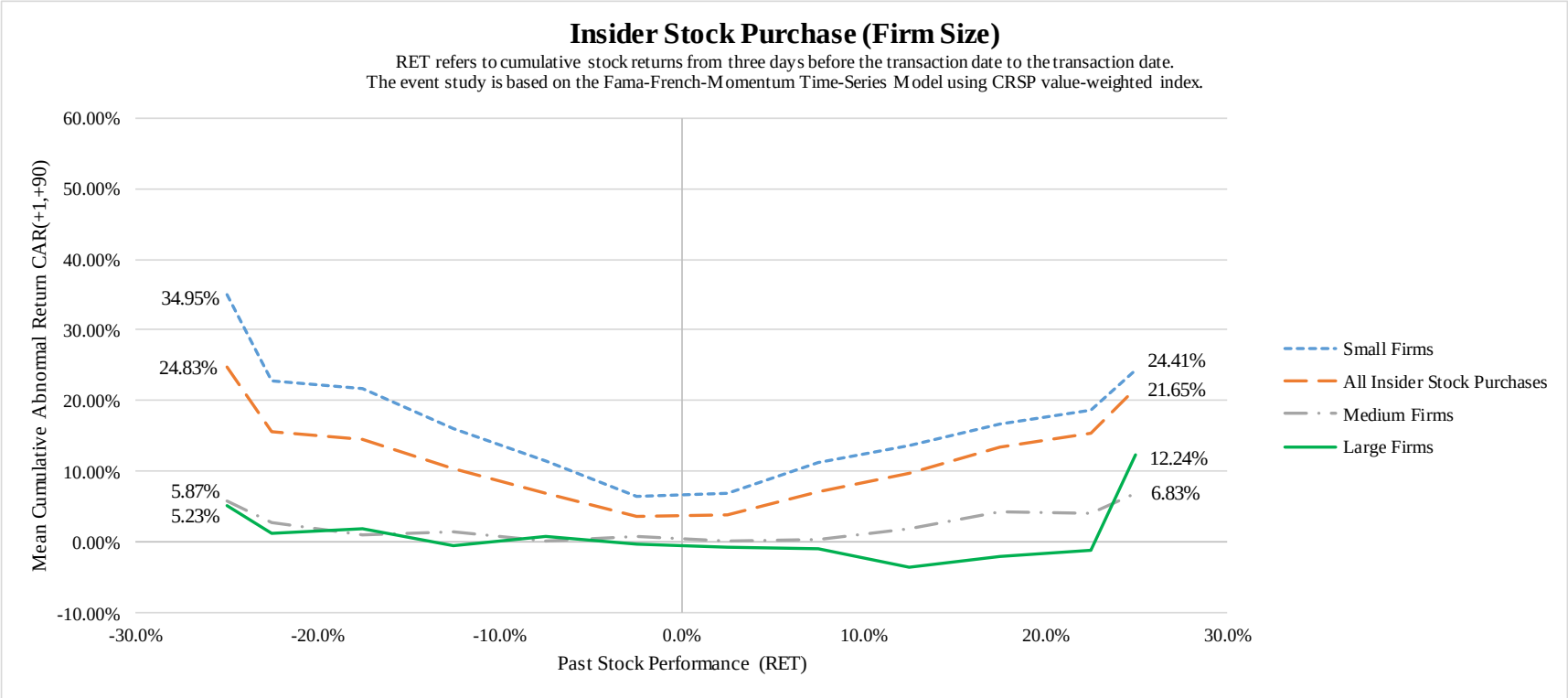

Figure 2-3: Event Study Results with Insider Purchase (Firm Size)

1. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

2. The insider stock purchase sample is comprised of 261,128 firm-day observations based on 11,047 publicly traded firms from 1996 to 2013.

3. We divide the sample into three groups based on firm size (i.e., market capitalization): small firms with market capitalization less than or equal to $206,986,006 (33.33th percentile of the insider stock purchase and sale sample), medium firms with market capitalization between $206,986,006 and $1,102,269,828 (33.33th percentile to 66.66th percentile), and large firms with market capitalization greater than $1,102,269,828 (66.66th percentile).

4. We further divide each firm size group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock purchases traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

5. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

6. Mean cumulative abnormal return (+1, +90) refers to a 90-day cumulative abnormal return of insider stock purchases. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

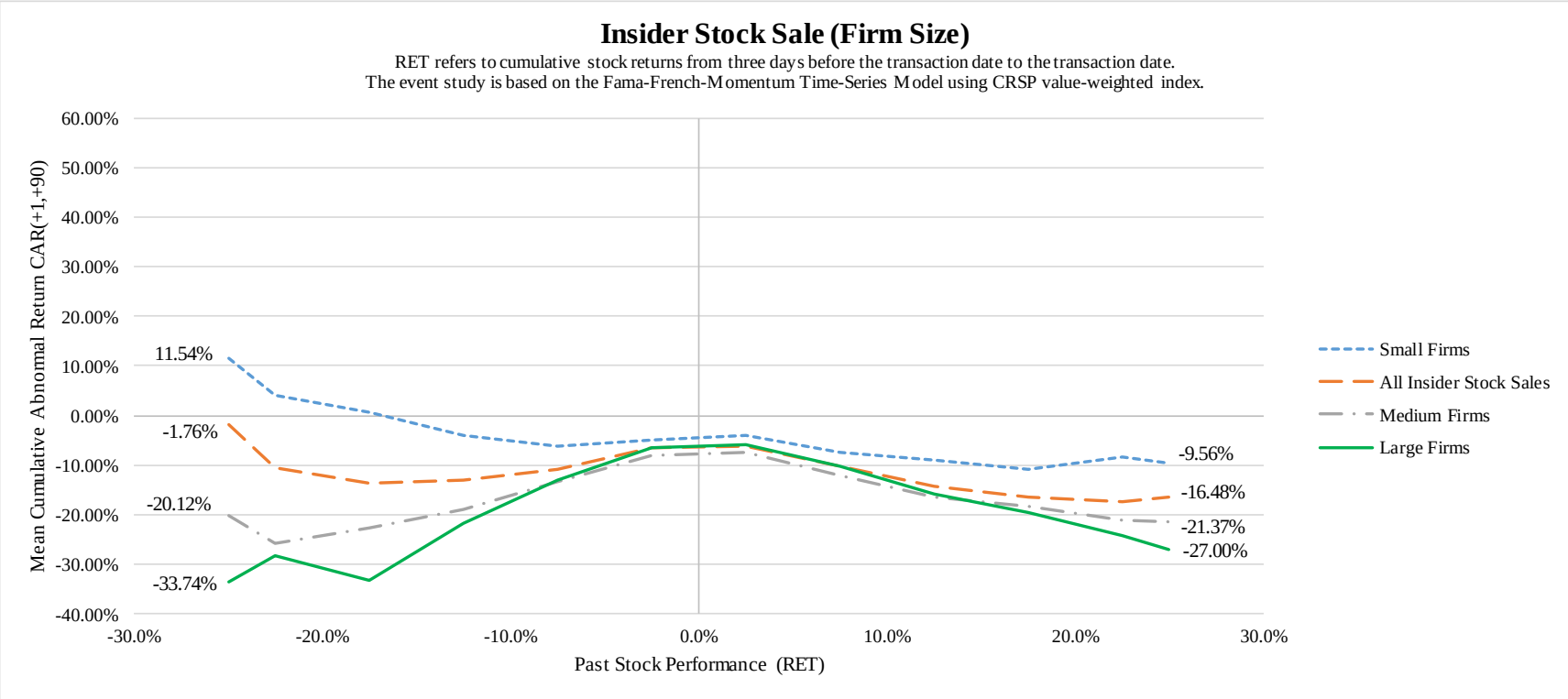

Figure 2-4: Event Study Results with Insider Sale (Firm Size)

1. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

2. The insider stock sale sample is comprised of 591,104 firm-day observations based on 10,860 publicly traded firms from 1996 to 2013.

3. We divide the sample into three groups based on firm size (i.e., market capitalization): small firms with market capitalization less than or equal to $206,986,006 (33.33th percentile of the insider stock purchase and sale sample), medium firms with market capitalization between $206,986,006 and $1,102,269,828 (33.33th percentile to 66.66th percentile), and large firms with market capitalization greater than $1,102,269,828 (66.66th percentile).

4. We further divide each firm size group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock sales traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

5. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

6. Mean cumulative abnormal return (+1, +90) refers to a 90-day cumulative abnormal return of insider stock sales. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

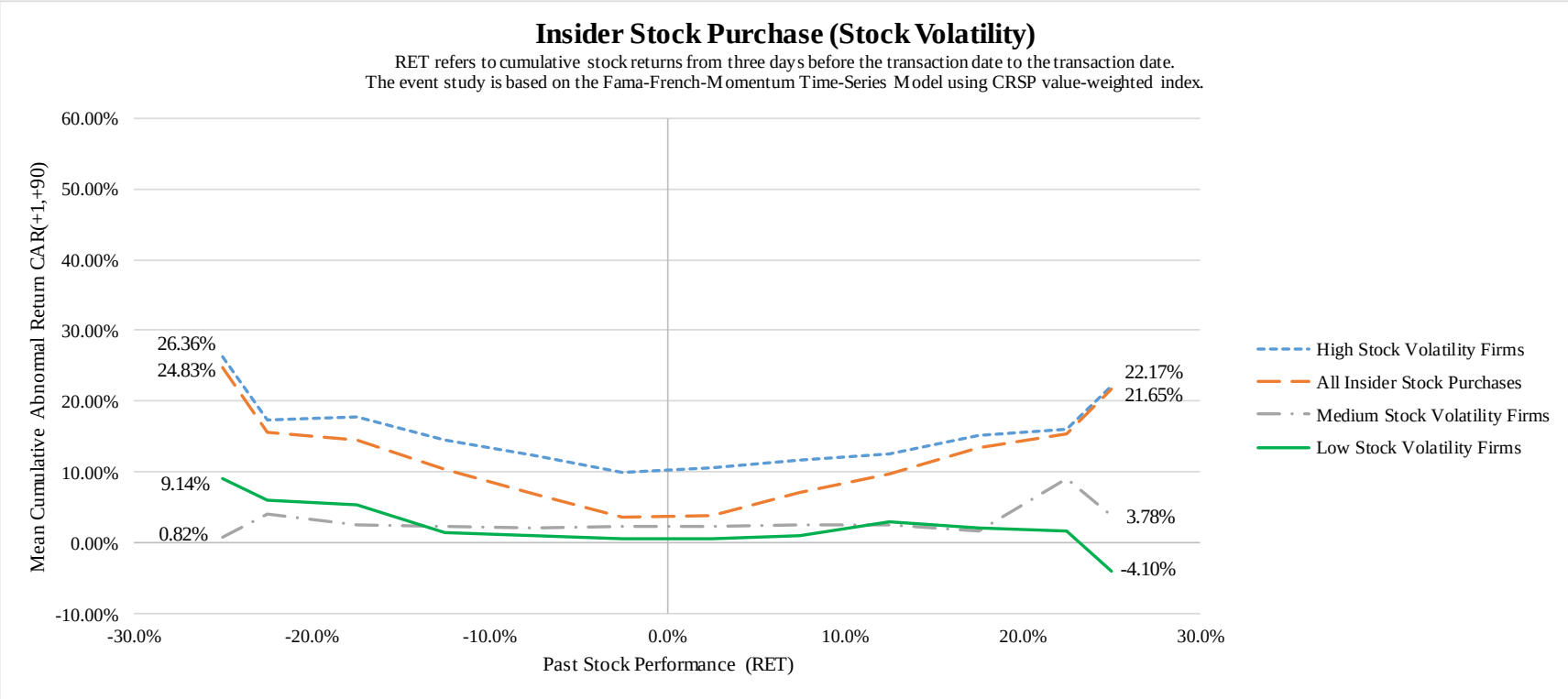

Figure 2-5: Event Study Results with Insider Purchase (Stock Volatility)

1. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

2. The insider stock purchase sample is comprised of 261,128 firm-day observations based on 11,047 publicly traded firms from 1996 to 2013.

3. We divide the insider stock purchase sample into three groups based on stock volatility of the firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: low stock volatility firms with stock volatility less than or equal to 0.01983 (33.33th percentile of the insider stock purchase and sale sample), medium stock volatility firms with stock volatility between 0.01983 and 0.03460 (33.33th percentile to 66.66th percentile), and high stock volatility firms with stock volatility greater than 0.03460 (66.66th percentile).

4. We further divide each stock volatility group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock purchases traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

5. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

6. Mean cumulative abnormal return (+1, +90) refers to a 90-day cumulative abnormal return of insider stock purchases. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

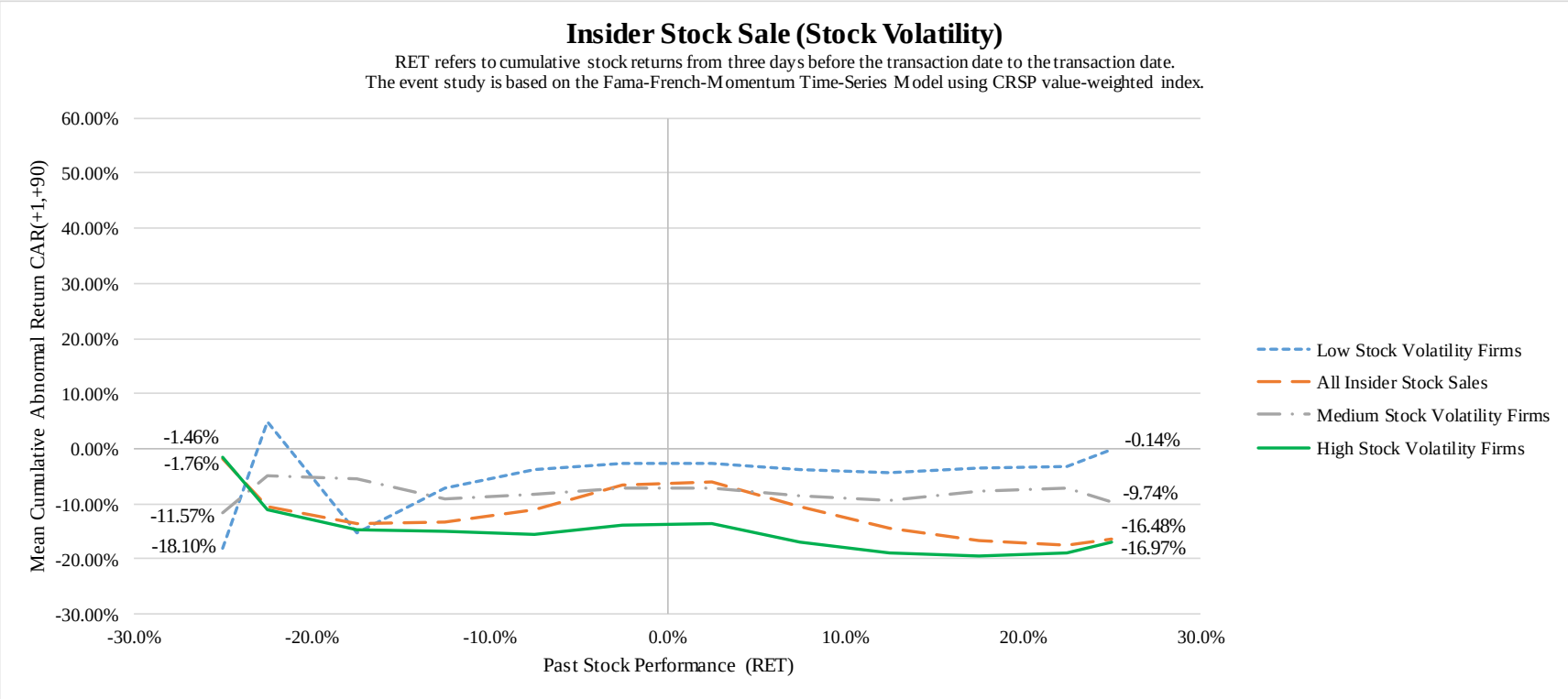

Figure 2-6: Event Study Results with Insider Sale (Stock Volatility)

1. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

2. The insider stock sale sample is comprised of 591,104 firm-day observations based on 10,860 publicly traded firms from 1996 to 2013.

3. We divide the insider stock sale sample into three groups based on stock volatility of the firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: low stock volatility firms with stock volatility less than or equal to 0.01983 (33.33th percentile of the insider stock purchase and sale sample), medium stock volatility firms with stock volatility between 0.01983 and 0.03460 (33.33th percentile to 66.66th percentile), and high stock volatility firms with stock volatility greater than 0.03460 (66.66th percentile).

4. We further divide each stock volatility group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock sales traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

5. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

6. Mean cumulative abnormal return (+1, +90) refers to a 90-day cumulative abnormal return of insider stock sales. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

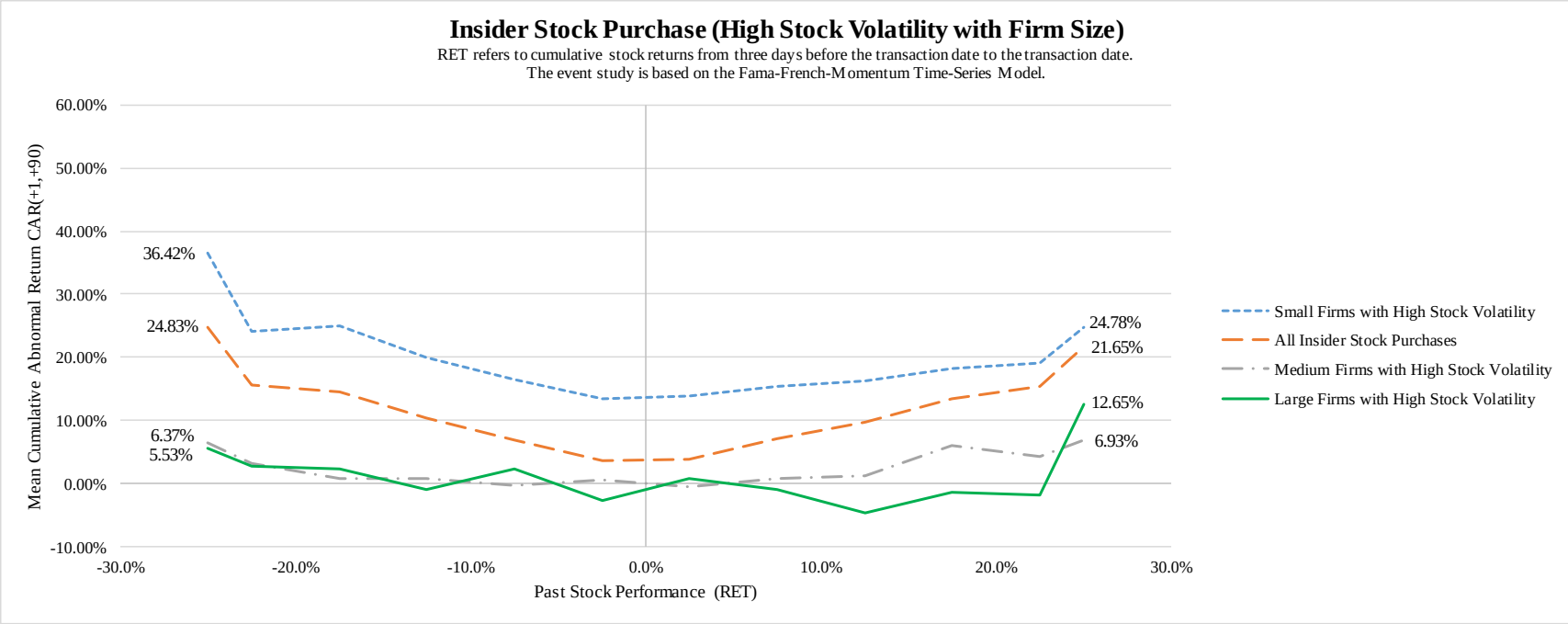

Figure 2-7: Event Study Results with Insider Purchase (Stock Volatility with Firm Size)

1. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

2. The insider stock purchase sample is comprised of 261,128 firm-day observations based on 11,047 publicly traded firms from 1996 to 2013.

3. We divide the insider stock purchase sample into three groups based on stock volatility of the firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: low stock volatility firms with stock volatility less than or equal to 0.01983 (33.33th percentile of the insider stock purchase and sale sample), medium stock volatility firms with stock volatility between 0.01983 and 0.03460 (33.33th percentile to 66.66th percentile), and high stock volatility firms with stock volatility greater than 0.03460 (66.66th percentile).

4. We further divide high stock volatility group into three subgroups based on their firm size (i.e., market capitalization): small firms with market capitalization less than or equal to $206,986,006 (33.33th percentile of the insider stock purchase and sale sample), medium firms with market capitalization between $206,986,006 and $1,102,269,828 (33.33th percentile to 66.66th percentile), and large firms with market capitalization greater than $1,102,269,828 (66.66th percentile).

5. We finally divide each firm size group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock purchases traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

6. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

7. Mean cumulative abnormal return (+1, +90) refers to a 90-day cumulative abnormal return of insider stock purchases. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

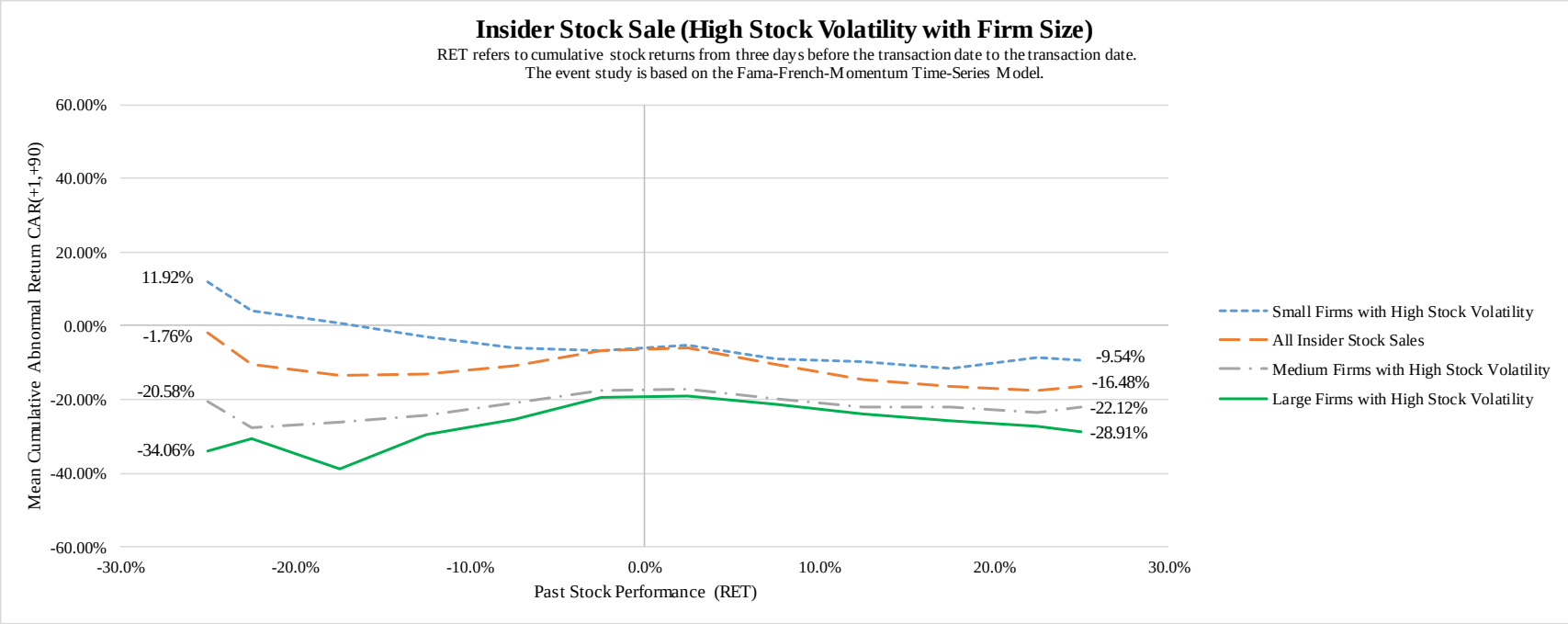

Figure 2-8: Event Study Results with Insider Sale (Stock Volatility with Firm Size)

1. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

2. The insider stock sale sample is comprised of 591,104 firm-day observations based on 10,860 publicly traded firms from 1996 to 2013.

3. We divide the insider stock sale sample into three groups based on stock volatility of the firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: low stock volatility firms with stock volatility less than or equal to 0.01983 (33.33th percentile of the insider stock purchase and sale sample), medium stock volatility firms with stock volatility between 0.01983 and 0.03460 (33.33th percentile to 66.66th percentile), and high stock volatility firms with stock volatility greater than 0.03460 (66.66th percentile).

4. We further divide high stock volatility group into three subgroups based on their firm size (i.e., market capitalization): small firms with market capitalization less than or equal to $206,986,006 (33.33th percentile of the insider stock purchase and sale sample), medium firms with market capitalization between $206,986,006 and $1,102,269,828 (33.33th percentile to 66.66th percentile), and large firms with market capitalization greater than $1,102,269,828 (66.66th percentile).

5. We finally divide each firm size group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock sales traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

6. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

7. Mean cumulative abnormal return (+1, +90) refers to a 90-day cumulative abnormal return of insider stock sales. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

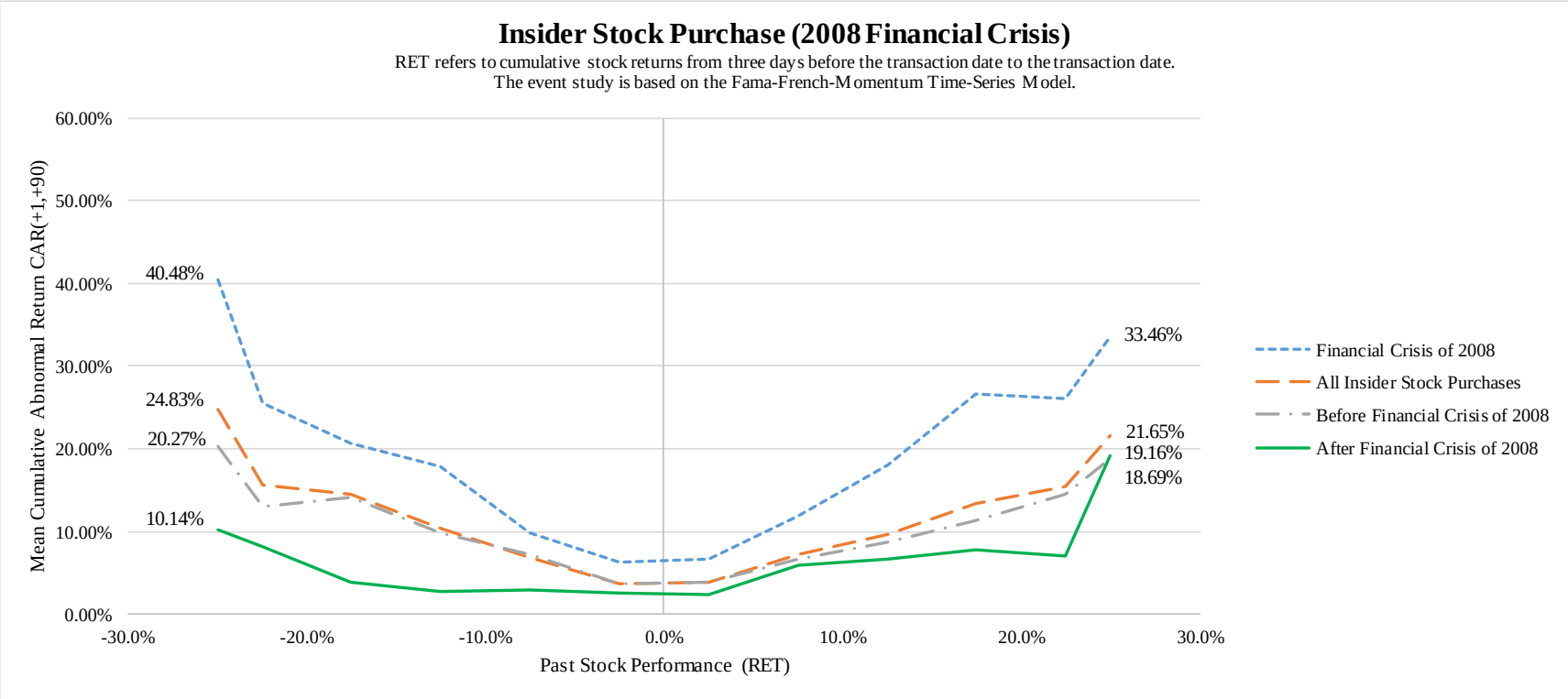

Figure 2-9: Event Study Results with Insider Purchase (2008 Financial Crisis)

1. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

2. The insider stock purchase sample is comprised of 261,128 firm-day observations based on 11,047 publicly traded firms from 1996 to 2013.

3. We divide the sample into three groups based on whether insider stock transactions made during the period of 2008 financial crisis: transactions made before 2008 financial crisis (i.e., January 1996 to November 2007), transactions made during 2008 financial crisis (i.e., December 2007 to June 2009), and transactions made after 2008 financial crisis (July 2009 to December 2013). According to the National Bureau of Economic Research, the 2008 financial crisis began in December 2007 and ended in June 2009.

4. We further divide each time period group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock purchases traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

5. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

6. Mean cumulative abnormal return (+1, +90) refers to a 90-day cumulative abnormal return of insider stock purchases. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

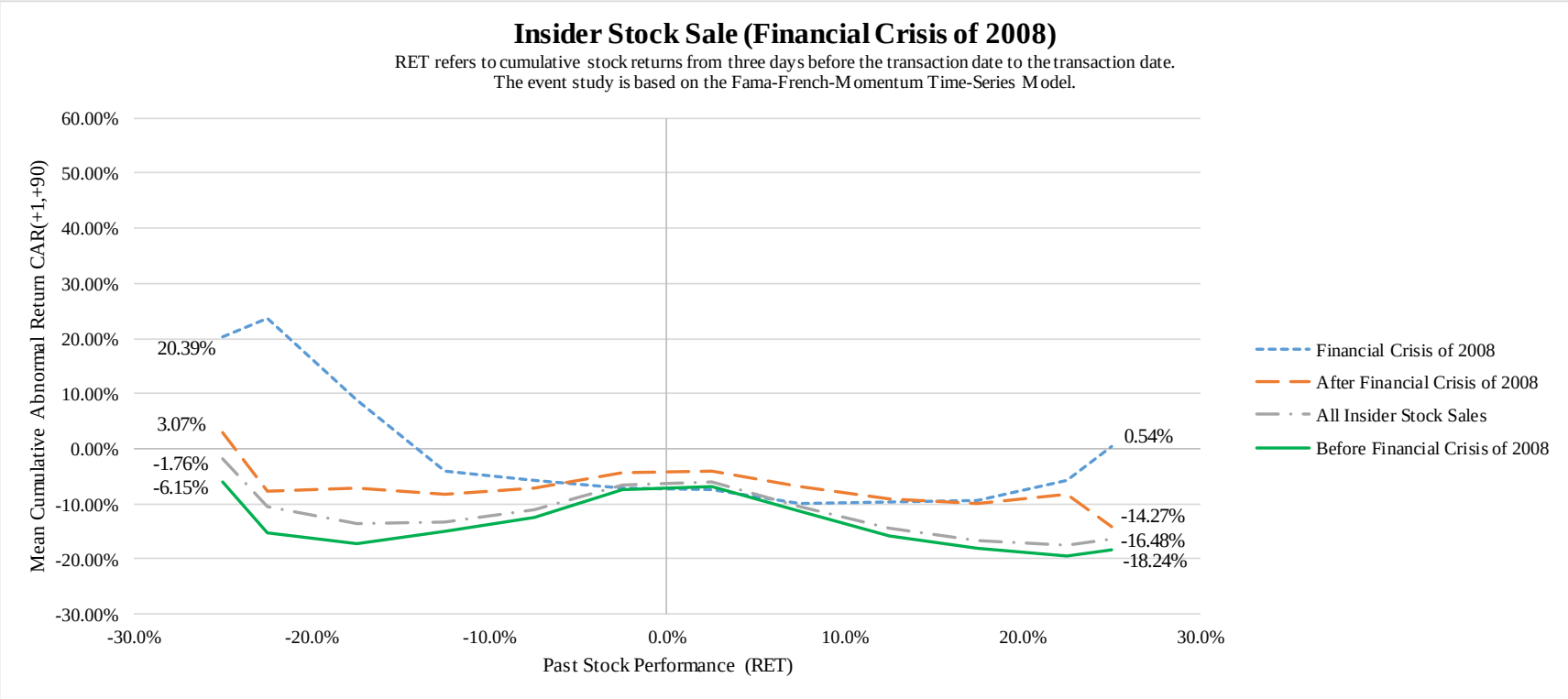

Figure 2-10: Event Study Results with Insider Sale (2008 Financial Crisis)

1. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

2. The insider stock sale sample is comprised of 591,104 firm-day observations based on 10,860 publicly traded firms from 1996 to 2013.

3. We divide the sample into three groups based on whether insider stock transactions made during the period of 2008 financial crisis: transactions made before 2008 financial crisis (i.e., January 1996 to November 2007), transactions made during 2008 financial crisis (i.e., December 2007 to June 2009), and transactions made after 2008 financial crisis (July 2009 to December 2013). According to the National Bureau of Economic Research, the 2008 financial crisis began in December 2007 and ended in June 2009.

4. We further divide each time period group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock sales traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

5. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

6. Mean cumulative abnormal return (+1, +90) refers to 90-day cumulative abnormal return of insider stock sales. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

Table 2-1: Event Study Results with Insider Purchase (Insider Smile)

Insider Stock Purchase

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Negative Past Stock Returns

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	24.46%	15.20%	10.13%	6.51%	5.65%	3.88%	2.40%	1.26%
(+1,+30)	35.32%	23.30%	16.56%	10.96%	9.19%	6.62%	4.37%	2.20%
(+1,+60)	59.16%	32.49%	21.63%	13.76%	12.42%	8.45%	5.65%	3.03%
(+1,+90)	60.68%	35.95%	24.83%	15.52%	14.44%	10.31%	6.92%	3.64%

B. N+:N-

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	42:14>>>	325:171>>>	2907:1471>>>	2043:1101>>>	3701:2149>>>	7429:4875>>>	17044:12235>>>	43342:35966>>>
(+1,+30)	42:14>>>	350:146>>>	2916:1462>>>	2024:1120>>>	3697:2153>>>	7473:4831>>>	16933:12346>>>	43036:36272>>>
(+1,+60)	43:13>>>	347:149>>>	2885:1493>>>	1975:1169>>>	3630:2220>>>	7305:4999>>>	16607:12672>>>	42988:36320>>>
(+1,+90)	41:15>>>	318:178>>>	2820:1558>>>	1931:1213>>>	3521:2329>>>	7181:5123>>>	16482:12797>>>	42864:36444>>>

C. Number of Firms

	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
	49	366	2,427	2,169	3,332	5,011	7,167	9,053

Positive Past Stock Returns

A. Mean Cumulative Abnormal Return

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	1.15%	1.81%	2.12%	2.85%	2.32%	2.66%	1.56%	4.27%
(+1,+30)	2.08%	3.39%	4.75%	6.31%	6.83%	7.25%	7.28%	13.42%
(+1,+60)	3.09%	5.42%	7.02%	10.10%	11.49%	14.56%	16.89%	22.95%
(+1,+90)	3.86%	7.15%	9.72%	13.40%	15.48%	21.65%	28.01%	45.22%

B. N+:N-

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	43111:38735>>>	12187:10696>>>	4936:4398>>>	2373:2111>>>	1248:1159>>>	2104:2023>>>	314:337	89:89
(+1,+30)	43743:38103>>>	12482:10401>>>	5181:4153>>>	2465:2019>>>	1340:1067>>>	2295:1832>>>	351:300>>>	108:70>>>
(+1,+60)	44048:37798>>>	12644:10239>>>	5256:4078>>>	2587:1897>>>	1409:998>>>	2488:1639>>>	402:249>>>	121:57>>>
(+1,+90)	44037:37809>>>	12722:10161>>>	5294:4040>>>	2619:1865>>>	1447:960>>>	2561:1566>>>	414:237>>>	129:49>>>

C. Number of Firms

	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
	9,109	6,407	4,093	2,494	1,623	1,980	427	121

1. This table accompanies Figure 2-1.

2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

3. The insider stock purchase sample is comprised of 261,128 firm-day observations based on 11,047 publicly traded firms from 1996 to 2013.

4. We divide the insider stock purchase sample into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock purchases traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

5. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

6. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock purchases, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

7. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.

Table 2-2: Event Study Results with Insider Sale

Insider Stock Sale

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Negative Past Stock Returns

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	5.11%	5.47%	1.71%	-0.07%	-1.06%	-1.20%	-1.18%	-0.82%
(+1,+30)	15.87%	6.75%	1.61%	-3.13%	-4.35%	-4.12%	-3.67%	-2.39%
(+1,+60)	30.55%	14.05%	1.27%	-5.30%	-8.45%	-8.28%	-7.05%	-4.53%
(+1,+90)	37.18%	14.54%	-1.76%	-10.48%	-13.56%	-13.19%	-10.95%	-6.63%

B. N+:N-

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	22:34	144:122>>	1327:1250>>>	1109:1161>>	2295:2585	5817:6527	18622:21924<<<	74667:90979<<<
(+1,+30)	24:32	136:130)	1227:1350)	1048:1222	2178:2702<<	5366:6978<<<	17514:23032<<<	72239:93407<<<
(+1,+60)	28:28	160:106>>>	1265:1312>>	1004:1266<	2080:2800<<<	5071:7273<<<	16776:23770<<<	70292:95354<<<
(+1,+90)	25:31	142:124>	1218:1359	985:1285<<	1995:2885<<<	4909:7435<<<	15996:24550<<<	69083:96563<<<

C. Number of Firms

	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
	42	190	1,233	1,338	2,338	4,232	7,013	9,325

Positive Past Stock Returns

A. Mean Cumulative Abnormal Return

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	-0.87%	-1.57%	-2.26%	-2.58%	-2.62%	-3.60%	-8.73%	-13.92%
(+1,+30)	-2.28%	-3.89%	-5.25%	-5.69%	-6.14%	-5.62%	-10.56%	-16.67%
(+1,+60)	-4.21%	-6.87%	-9.43%	-10.64%	-11.59%	-11.45%	-12.54%	-16.80%
(+1,+90)	-6.15%	-10.41%	-14.43%	-16.55%	-17.48%	-16.48%	-14.75%	-19.73%

B. N+:N-

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	103003:131506<<<	31964:45159<<<	10538:16168<<<	4447:6584<<<	2021:3048<<<	2806:4305<<<	403:788<<<	122:310<<<
(+1,+30)	100427:134082<<<	31259:45864<<<	10498:16208<<<	4394:6637<<<	1992:3077<<<	2966:4145<<<	450:741<<<	141:291<<<
(+1,+60)	98146:136363<<<	30487:46636<<<	10078:16628<<<	4235:6796<<<	1951:3118<<<	2756:4355<<<	460:731<<<	153:279<<<
(+1,+90)	96748:137761<<<	29773:47350<<<	9646:17060<<<	3991:7040<<<	1856:3213<<<	2685:4426<<<	452:739<<<	147:285<<<

C. Number of Firms

	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
	9,525	7,552	5,675	3,910	2,498	2,674	670	279

1. This table accompanies Figure 2-2.

2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

3. The insider stock sale sample is comprised of 591,104 firm-day observations based on 10,860 publicly traded firms from 1996 to 2013.

4. We divide the insider stock sale sample into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock sales traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

5. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

6. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock sales, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

7. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.

Table 2-3: Regression Results with Insider Purchase

Insider Stock Purchase

Cumulative Abnormal Return (CAR) Ordinary Least Squares Regression Model with Heteroscedasticity-Consistent Standard Errors

Number of Transactions = 294,925; Number of Insiders = 56,093; Number of Firms = 9,593; Sample Period = 1996 to 2013

Event Study is based on the Market Model using:	A. CRSP Value-Weighted Index				B. CRSP Equal-Weighted Index			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Independent Variables								
Insider Type								
CEO	0.0063***	0.0244***	0.0496***	0.0642***	0.0082***	0.0276***	0.0500***	0.0662***
	(0.0009)	(0.0015)	(0.0023)	(0.0030)	(0.0009)	(0.0016)	(0.0024)	(0.0032)
CFO	0.0123***	0.0353***	0.0685***	0.0891***	0.0144***	0.0385***	0.0710***	0.0928***
	(0.0014)	(0.0023)	(0.0034)	(0.0044)	(0.0013)	(0.0022)	(0.0032)	(0.0043)
Director	0.0034***	0.0171***	0.0345***	0.0452***	0.0044***	0.0196***	0.0363***	0.0497***
	(0.0006)	(0.0011)	(0.0016)	(0.0022)	(0.0006)	(0.0011)	(0.0016)	(0.0022)
Officer	0.0070***	0.0263***	0.0547***	0.0684***	0.0083***	0.0289***	0.0572***	0.0735***
	(0.0008)	(0.0014)	(0.0020)	(0.0027)	(0.0008)	(0.0014)	(0.0021)	(0.0028)
Large Shareholders	0.0211***	0.0198**	0.0447***	0.0414***	0.0156***	0.0142**	0.0392***	0.0450***
	(0.0047)	(0.0083)	(0.0119)	(0.0154)	(0.0039)	(0.0069)	(0.0104)	(0.0132)
Past Stock Performance								
RET <= -25%	0.0645***	0.1020***	0.1273***	0.1260***	0.0667***	0.0970***	0.0940***	0.0864***
	(0.0036)	(0.0054)	(0.0073)	(0.0097)	(0.0035)	(0.0076)	(0.0076)	(0.0104)
-25% < RET <= -20%	0.0373***	0.0602***	0.0724***	0.0650***	0.0405***	0.0538***	0.0478***	0.0350***
	(0.0033)	(0.0051)	(0.0072)	(0.0095)	(0.0032)	(0.0049)	(0.0070)	(0.0091)
20% < RET <= 25%	-0.0039	0.0117*	0.0299***	0.0390***	-0.0095**	0.0016	0.0249**	0.0404***
	(0.0039)	(0.0064)	(0.0092)	(0.0120)	(0.0041)	(0.0066)	(0.0111)	(0.0154)
RET > 25%	0.0049	0.0287***	0.0683***	0.0978***	-0.0065*	0.0051	0.0422***	0.0686***
	(0.0036)	(0.0057)	(0.0084)	(0.0109)	(0.0036)	(0.0057)	(0.0084)	(0.0111)
CEO * RET <= -25%	0.0039	0.0301**	0.0321	0.0369	0.0034	0.0198	0.0375*	0.0363
	(0.0104)	(0.0149)	(0.0196)	(0.0270)	(0.0102)	(0.0166)	(0.0206)	(0.0273)
CEO * RET > 25%	-0.0180**	-0.0275**	-0.0050	0.0303	-0.0146	-0.0201	-0.0060	0.0330
	(0.0091)	(0.0137)	(0.0207)	(0.0265)	(0.0090)	(0.0133)	(0.0206)	(0.0263)
Information Uncertainty								
Small Firms	0.0087***	0.0211***	0.0381***	0.0558***	0.0067***	0.0175***	0.0336***	0.0497***
	(0.0005)	(0.0009)	(0.0014)	(0.0018)	(0.0005)	(0.0009)	(0.0015)	(0.0019)
Medium Firms	0.0070***	0.0135***	0.0211***	0.0283***	0.0062***	0.0121***	0.0186***	0.0262***
	(0.0005)	(0.0009)	(0.0014)	(0.0019)	(0.0005)	(0.0010)	(0.0015)	(0.0019)
High Stock Volatility Firms	0.0066***	0.0073***	0.0030	-0.0091***	0.0051***	0.0002	-0.0187***	-0.0439***
	(0.0009)	(0.0016)	(0.0024)	(0.0031)	(0.0009)	(0.0016)	(0.0024)	(0.0031)
Medium Stock Volatility Firms	0.0046***	0.0031***	0.0063***	0.0067***	0.0057***	0.0060***	0.0080***	0.0072***
	(0.0004)	(0.0007)	(0.0011)	(0.0014)	(0.0004)	(0.0007)	(0.0011)	(0.0015)
Small Firm Size * High Stock Volatility Firms	0.0181***	0.0413***	0.0803***	0.1229***	0.0192***	0.0454***	0.0918***	0.1417***
	(0.0011)	(0.0018)	(0.0028)	(0.0037)	(0.0010)	(0.0019)	(0.0028)	(0.0037)
Financial Crisis of 2008 (December 2007 to June 2009)	0.0206***	0.0925***	0.1839***	0.2190***	0.0028	0.0214***	0.0378***	0.0278***
	(0.0021)	(0.0035)	(0.0054)	(0.0069)	(0.0021)	(0.0034)	(0.0051)	(0.0067)

(continued on next page)

Table 2-3: Regression Results with Insider Purchase (cont.)

Insider Stock Purchase (cont.)

Event Study is based on the Market Model using:	A. CRSP Value-Weighted Index				B. CRSP Equal-Weighted Index			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Control Variables								
Number of insider shares traded at insider level	<-0.0001	<-0.0001	<-0.0001	<-0.0001***	<-0.0001	<-0.0001	<-0.0001	<-0.0001*
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Number of insider shares traded at company level (%)	0.0006*	0.0007*	0.0007**	0.0007**	0.0006*	0.0008**	0.0007**	0.0007*
	(0.0004)	(0.0004)	(0.0004)	(0.0004)	(0.0003)	(0.0004)	(0.0003)	(0.0004)
Market to book ratio (MTB)	-0.0000	0.0000**	0.0000***	0.0000	-0.0000	0.0000	0.0000***	0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Loss (binary variable for net income < 0)	0.0033***	-0.0023*	-0.0153***	-0.0120***	0.0039***	-0.0005	-0.0137***	-0.0095***
	(0.0007)	(0.0012)	(0.0017)	(0.0022)	(0.0007)	(0.0012)	(0.0017)	(0.0022)
Return on assets (ROA)	-0.0018	-0.0256***	-0.0022	-0.0211	0.0000	-0.0088	0.0161	0.0054
	(0.0046)	(0.0098)	(0.0115)	(0.0145)	(0.0045)	(0.0093)	(0.0119)	(0.0151)
Leverage ratio (long-term debt/ equity)	-0.0000	-0.0002***	-0.0003***	-0.0002***	-0.0000	-0.0002***	-0.0003***	-0.0002***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Insurance industry	0.0059***	0.0118***	0.0067**	0.0092**	0.0044***	0.0083***	0.0047*	0.0055
	(0.0011)	(0.0017)	(0.0026)	(0.0036)	(0.0010)	(0.0017)	(0.0026)	(0.0035)
Banking industry	-0.0054***	-0.0098***	-0.0083***	-0.0107***	-0.0048***	-0.0077***	-0.0056***	-0.0063***
	(0.0006)	(0.0010)	(0.0015)	(0.0020)	(0.0006)	(0.0010)	(0.0015)	(0.0021)
January	-0.0036***	-0.0437***	-0.0620***	-0.0514***	-0.0051***	-0.0097***	-0.0076***	-0.0146***
	(0.0011)	(0.0019)	(0.0027)	(0.0035)	(0.0011)	(0.0019)	(0.0027)	(0.0036)
Fourth Quarter	0.0092***	0.0403***	0.0522***	0.0594***	0.0007	0.0002	-0.0003	0.0069***
	(0.0007)	(0.0011)	(0.0016)	(0.0021)	(0.0007)	(0.0011)	(0.0016)	(0.0021)
Constant	-0.0179***	-0.0388***	-0.0773***	-0.1092***	-0.0140***	-0.0296***	-0.0549***	-0.0685***
	(0.0011)	(0.0019)	(0.0028)	(0.0037)	(0.0011)	(0.0019)	(0.0029)	(0.0038)
Year Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Sector Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
R-squared	2.94%	5.19%	6.55%	6.70%	2.50%	2.96%	3.52%	3.77%

1. Heteroscedasticity-consistent standard errors are in parentheses.

2. The symbols ***, **, * show the significance at the 0.01, 0.05, and 0.10 levels of the t-test, respectively.

3. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock purchases, respectively. We employ the event study method based on the Market Model using CRSP value-weighted index and CRSP equal-weighted index, respectively.

4. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares. We employ five binary variables to proxy CEO, CFO, director, officer, and large shareholders who purchased the firm's stocks from 1996 to 2013, respectively.

5. We use four binary variables to proxy significant changes in firm's stock prices (i.e., past stock performance): RET is less than -25%, RET lies between -25% and -20%, RET lies between 20% and 25%, and RET is greater than 25%. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., 4 day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., 2 day past stock performance) to proxy RET and get similar results.

6. We employ two binary variables for firm size based on market capitalization: small firms with market capitalization less than or equal to $206,986,006 (33th percentile of the insider stock purchase and sale sample), medium firms with market capitalization between $206,986,006 and $1,102,269,828 (33.33th percentile to 66.66th percentile), and large firms with market capitalization greater than $1,102,269,828 (66.66th percentile).

7. We employ two binary variables for stock volatility of the firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: low stock volatility firms with stock volatility less than or equal to 0.01983 (33.33th percentile of the insider stock purchase and sale sample), medium stock volatility firms with stock volatility between 0.01983 and 0.03460 (33.33th percentile to 66.66th percentile), and high stock volatility firms with stock volatility greater than 0.03460 (66.66th percentile).

8. We also employ several robustness checks and get similar results: models including dollar value of insider stock purchase traded at insider level and at company level, models using the ratio of long-term debt to total assets to proxy the leverage variable, and models with autocorrelation corrections (i.e., Yule-Walker Estimates).

9. Variance inflation factors for all independent variables are less than 10, and thus collinearity does not appear to be problematic for any of the models.

Table 2-4: Regression Results with Insider Sale

Insider Stock Sale

Cumulative Abnormal Return (CAR) Ordinary Least Squares Regression Model with Heteroscedasticity-Consistent Standard Errors

Number of Transactions = 716,920; Number of Insiders = 86,709; Number of Firms = 9,503; Sample Period = 1996 to 2013

Event Study is based on the Market Model using:	**A. CRSP Value-Weighted Index**				**B. CRSP Equal-Weighted Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Independent Variables								
Insider Type								
CEO	-0.0017***	-0.0088***	-0.0192***	-0.0295***	-0.0011**	-0.0071***	-0.0167***	-0.0254***
	(0.0005)	(0.0010)	(0.0015)	(0.0019)	(0.0005)	(0.0010)	(0.0015)	(0.0019)
CFO	-0.0026***	-0.0094***	-0.0217***	-0.0322***	-0.0023***	-0.0089***	-0.0207***	-0.0298***
	(0.0006)	(0.0011)	(0.0017)	(0.0022)	(0.0006)	(0.0011)	(0.0017)	(0.0022)
Director	0.0003	-0.0022***	-0.0058***	-0.0128***	0.0007	-0.0013	-0.0041***	-0.0105***
	(0.0005)	(0.0008)	(0.0012)	(0.0016)	(0.0005)	(0.0008)	(0.0013)	(0.0016)
Officer	0.0001	-0.0030***	-0.0059***	-0.0100***	0.0006	-0.0020**	-0.0047***	-0.0077***
	(0.0004)	(0.0008)	(0.0012)	(0.0016)	(0.0004)	(0.0008)	(0.0012)	(0.0016)
Large Shareholders	-0.0076**	0.0060	-0.0083	-0.0083	-0.0029	0.0120*	0.0055	0.0105
	(0.0032)	(0.0069)	(0.0104)	(0.0138)	(0.0032)	(0.0068)	(0.0102)	(0.0134)
Past Stock Performance								
RET <= -25%	0.0259***	0.0709***	0.1027***	0.1100***	0.0340***	0.0692***	0.0642***	0.0765***
	(0.0056)	(0.0100)	(0.0128)	(0.0158)	(0.0058)	(0.0108)	(0.0126)	(0.0163)
-25% < RET <= -20%	0.0117***	0.0150**	0.0407***	0.0379**	0.0219***	0.0241***	0.0367***	0.0290**
	(0.0040)	(0.0073)	(0.0123)	(0.0150)	(0.0039)	(0.0071)	(0.0120)	(0.0145)
20% < RET <= 25%	-0.0011	0.0008	-0.0065	-0.0090	-0.0091***	-0.0161***	-0.0162***	-0.0179***
	(0.0020)	(0.0037)	(0.0053)	(0.0067)	(0.0020)	(0.0036)	(0.0052)	(0.0066)
RET > 25%	-0.0100***	-0.0004	-0.0241***	-0.0280***	-0.0199***	-0.0234***	-0.0384***	-0.0370***
	(0.0023)	(0.0042)	(0.0059)	(0.0072)	(0.0023)	(0.0041)	(0.0059)	(0.0072)
CEO * RET <= -25%	0.0058	-0.0077	0.0906*	0.0943	0.0152	0.0096	0.0776	0.0765
	(0.0156)	(0.0251)	(0.0528)	(0.0598)	(0.0159)	(0.0290)	(0.0531)	(0.0614)
CEO * RET > 25%	-0.0116*	-0.0310***	-0.0266	-0.0271	-0.0132**	-0.0313***	-0.0338**	-0.0380*
	(0.0068)	(0.0119)	(0.0175)	(0.0213)	(0.0067)	(0.0118)	(0.0172)	(0.0211)
Information Uncertainty								
Large Firms	-0.0075***	-0.0181***	-0.0280***	-0.0397***	-0.0080***	-0.0175***	-0.0257***	-0.0323***
	(0.0004)	(0.0007)	(0.0011)	(0.0014)	(0.0004)	(0.0007)	(0.0010)	(0.0014)
Medium Firms	-0.0038***	-0.0093***	-0.0156***	-0.0210***	-0.0028***	-0.0068***	-0.0094***	-0.0103***
	(0.0004)	(0.0007)	(0.0011)	(0.0014)	(0.0004)	(0.0007)	(0.0011)	(0.0014)
High Stock Volatility Firms	-0.0190***	-0.0492***	-0.0997***	-0.1502***	-0.0212***	-0.0507***	-0.1084***	-0.1626***
	(0.0004)	(0.0008)	(0.0012)	(0.0015)	(0.0004)	(0.0008)	(0.0012)	(0.0015)
Medium Stock Volatility Firms	-0.0066***	-0.0164***	-0.0328***	-0.0486***	-0.0062***	-0.0149***	-0.0294***	-0.0446***
	(0.0002)	(0.0004)	(0.0006)	(0.0008)	(0.0002)	(0.0004)	(0.0006)	(0.0008)
Small Firm Size * High Stock Volatility Firms	0.0104***	0.0397***	0.0829***	0.1176***	0.0125***	0.0406***	0.0912***	0.1296***
	(0.0008)	(0.0016)	(0.0023)	(0.0030)	(0.0008)	(0.0016)	(0.0023)	(0.0030)
Financial Crisis of 2008 (December 2007 to June 2009)	0.0097***	0.0249***	0.0529***	0.0814***	-0.0073***	-0.0374***	-0.0839***	-0.1062***
	(0.0011)	(0.0023)	(0.0037)	(0.0044)	(0.0011)	(0.0024)	(0.0037)	(0.0044)

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Table 2-4: Regression Results with Insider Sale (cont.)

Insider Stock Sale (cont.)

Event Study is based on the Market Model using:	A. CRSP Value-Weighted Index				B. CRSP Equal-Weighted Index			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Control Variables								
Number of insider shares traded at insider level	<0.0000***	<0.0000***	<0.0000***	<0.0000***	<0.0000***	<0.0000***	<0.0000***	<0.0000***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Number of insider shares traded at company level (%)	-0.0003***	-0.0015***	-0.0036***	-0.0052***	-0.0004***	-0.0016***	-0.0035***	-0.0049***
	(0.0001)	(0.0001)	(0.0003)	(0.0003)	(0.0001)	(0.0001)	(0.0002)	(0.0003)
Market to book ratio (MTB)	-0.0000	-0.0000***	-0.0000***	-0.0000***	-0.0000	-0.0000***	-0.0000***	-0.0000***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Loss (binary variable for net income < 0)	-0.0037***	-0.0161***	-0.0311***	-0.0342***	-0.0041***	-0.0164***	-0.0302***	-0.0285***
	(0.0005)	(0.0009)	(0.0013)	(0.0017)	(0.0005)	(0.0008)	(0.0013)	(0.0016)
Return on assets (ROA)	0.0084***	0.0167***	-0.0128	-0.0512***	0.0081***	0.0174***	-0.0035	-0.0480***
	(0.0031)	(0.0059)	(0.0081)	(0.0107)	(0.0029)	(0.0053)	(0.0077)	(0.0101)
Leverage ratio (long-term debt/ equity)	0.0000*	0.0000***	0.0000***	0.0000***	0.0000	0.0000**	0.0000***	0.0000***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Insurance industry	0.0014**	0.0030***	0.0048***	0.0073***	0.0011*	0.0008	0.0002	0.0001
	(0.0006)	(0.0011)	(0.0016)	(0.0022)	(0.0006)	(0.0011)	(0.0017)	(0.0022)
Banking industry	0.0021***	0.0038***	0.0050***	0.0084***	0.0022***	0.0019**	-0.0005	0.0012
	(0.0005)	(0.0008)	(0.0013)	(0.0017)	(0.0005)	(0.0009)	(0.0014)	(0.0017)
January	-0.0007	-0.0162***	-0.0254***	-0.0257***	-0.0067***	0.0046***	0.0290***	0.0154***
	(0.0006)	(0.0012)	(0.0018)	(0.0022)	(0.0006)	(0.0012)	(0.0018)	(0.0022)
Fourth Quarter	0.0030***	0.0163***	0.0228***	0.0161***	-0.0013***	-0.0178***	-0.0419***	-0.0418***
	(0.0003)	(0.0006)	(0.0009)	(0.0012)	(0.0003)	(0.0006)	(0.0009)	(0.0012)
Constant	0.0001	-0.0046***	-0.0167***	-0.0266***	0.0017**	0.0053***	0.0188***	0.0238***
	(0.0008)	(0.0015)	(0.0023)	(0.0029)	(0.0008)	(0.0015)	(0.0023)	(0.0030)
Year Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Sector Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
R-squared	0.81%	2.53%	4.62%	5.68%	1.34%	2.61%	4.43%	5.16%

1. Heteroscedasticity-consistent standard errors are in parentheses.
2. The symbols ***, **, * show the significance at the 0.01, 0.05, and 0.10 levels of the t-test, respectively.
3. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock sales, respectively. We employ the event study method based on the Market Model using CRSP value-weighted index and CRSP equal-weighted index, respectively.
4. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares. We employ five binary variables to proxy CEO, CFO, director, officer, and large shareholders who sold the firm's stocks from 1996 to 2013, respectively.
5. We use four binary variables to proxy significant changes in firm's stock prices (i.e., past stock performance): RET is less than -25%, RET lies between -25% and -20%, RET lies between 20% and 25%, and RET is greater than 25%. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., 4 day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., 2 day past stock performance) to proxy RET and get similar results.
6. We employ two binary variables for firm size based on market capitalization: small firms with market capitalization less than or equal to $206,986,006 (33th percentile of the insider stock purchase and sale sample), medium firms with market capitalization between $206,986,006 and $1,102,269,828 (33.33th percentile to 66.66th percentile), and large firms with market capitalization greater than $1,102,269,828 (66.66th percentile).
7. We employ two binary variables for stock volatility of the firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: low stock volatility firms with stock volatility less than or equal to 0.01983 (33.33th percentile of the insider stock purchase and sale sample), medium stock volatility firms with stock volatility between 0.01983 and 0.03460 (33.33th percentile to 66.66th percentile), and high stock volatility firms with stock volatility greater than 0.03460 (66.66th percentile).
8. We also employ several robustness checks and get similar results: models including dollar value of insider stock sale traded at insider level and at company level, models using the ratio of long-term debt to total assets to proxy the leverage variable, and models with autocorrelation corrections (i.e., Yule-Walker Estimates).
9. Variance inflation factors for all independent variables are less than 10, and thus collinearity does not appear to be problematic for any of the models.

Appendix 2-A: Description of Sample Selection Process

Description of Sample Selection Process
Sample Period: 1996 to 2013

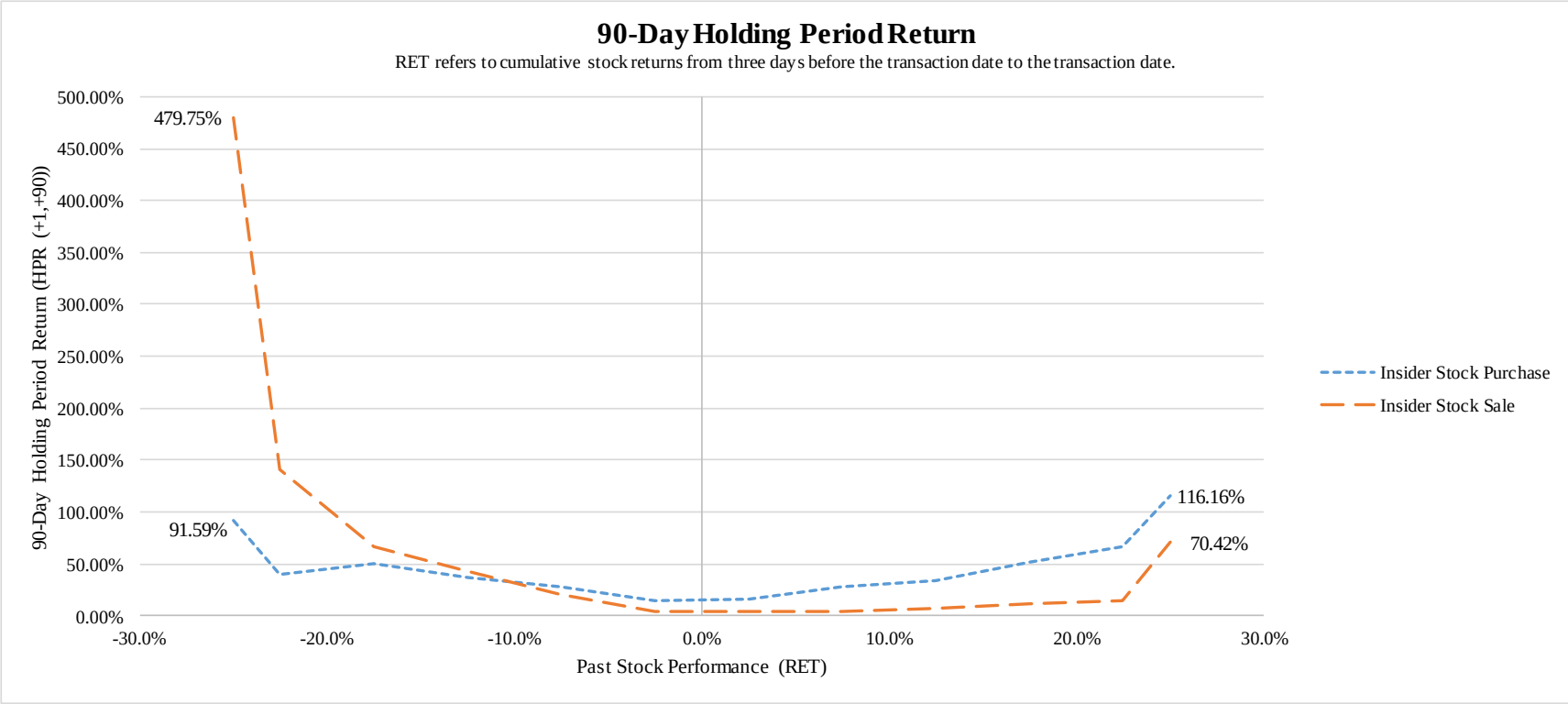
Panel A: Event Study (Firm-Day Level Data)

	Insider Stock Purchase		Insider Stock Sale	
	Num. of Obs.	**Num. of Firms**	**Num. of Obs.**	**Num. of Firms**
	319,104	13,810	667,872	13,348
Less				
Firms with market capitalization less than $1 million and without thirty consecutive past stock returns prior to the transaction date of insider trading	57,976	2,763	76,768	2,488
	261,128	11,047	591,104	10,860

Panel B: Regression Model (Insider-Day Level Data)

	Insider Stock Purchase			Insider Stock Purchase		
	Num. of Obs.	**Num. of Firms**	**Num. of Insiders**	**Num. of Obs.**	**Num. of Firms**	**Num. of Insiders**
	329,768	10,942	60,377	769,914	10,774	91,963
Less						
Firms without firm characteristics and transactions without insider trading characteristics	34,843	1,349	4,284	52,994	1,271	5,254
	294,925	9,593	56,093	716,920	9,503	86,709

*As for the regression model analysis, we first run the cross-sectional event study analysis of 261,128 firm-day observations for insider stock purchases and of 591,104 firm-day observations for insider stock sales to obtain the cumulative abnormal return data at firm-day level. We then merge the cumulative abnormal return data with data of firm characteristics and insider trading characteristics. Therefore, the data used in the regression analysis also exclude firms with market capitalization less than $1 million and without thirty consecutive past stock returns prior to the transaction date of insider trading.



Appendix 2-B: 90-DAY Holding Period Return Results (Figure 2-B)

1. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.
2. 90-Day Holding Period Return refers to a holding period return from the insider stock transaction date to ninety days after the insider stock transaction.
3. The insider stock purchase sample is comprised of 261,128 firm-day observations based on 11,047 publicly traded firms from 1996 to 2013.
4. The insider stock sale sample is comprised of 591,104 firm-day observations based on 10,860 publicly traded firms from 1996 to 2013.
5. We divide the insider stock transaction sample into 16 groups based on cumulative daily stock returns (RET) and examine a 90-day holding period return for each group: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.
6. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, 90-day holding period returns are slightly higher when we use two day past stock performance as stock return classification method.

Appendix 2-B: 90-DAY Holding Period Return Results (Table 2-B)

90-Day Holding Period Return (HPR): Insider Stock Purchase and Sale

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

A. Insider Stock Purchase

	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	25% < RET ≤ -20%	20% < RET ≤ -15%	15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
HPR(+1,+90)	69.81%	122.66%***	91.59%***	39.43%***	50.06%***	37.01%***	27.32%***	14.78%***
Number of Obs.	57	499	4,432	3,165	5,899	12,409	29,452	79,854
Number of Firms	49	366	2,427	2,169	3,332	5,011	7,167	9,053
	0% < RET ≤ 5%	**5% < RET ≤ 10%**	**10% < RET ≤ 15%**	**15% < RET ≤ 20%**	**20% < RET ≤ 25%**	**25% < RET**	**50% < RET**	**75% < RET**
HPR(+1,+90)	15.48%***	27.63%***	34.06%***	51.13%***	67.05%***	116.16%***	210.90%***	339.75%***
Number of Obs.	82,399	23,031	9,403	4,507	2,419	4,158	653	179
Number of Firms	9,109	6,407	4,093	2,494	1,623	1,980	427	121

B. Insider Stock Sale

	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	25% < RET ≤ -20%	20% < RET ≤ -15%	15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
HPR(+1,+90)	4206.65%***	2035.18%***	479.75%***	141.33%***	66.28%***	43.47%***	19.96%***	4.18%***
Number of Obs.	57	268	2,586	2,280	4,904	12,398	40,663	165,970
Number of Firms	42	190	1,233	1,338	2,338	4,232	7,013	9,325
	0% < RET ≤ 5%	**5% < RET ≤ 10%**	**10% < RET ≤ 15%**	**15% < RET ≤ 20%**	**20% < RET ≤ 25%**	**25% < RET**	**50% < RET**	**75% < RET**
HPR(+1,+90)	3.43%***	4.07%***	6.60%***	12.19%***	13.86%***	70.42%***	174.58%***	244.78%***
Number of Obs.	234,997	77,242	26,763	11,065	5,085	7,151	1,196	436
Number of Firms	9,525	7,552	5,675	3,910	2,498	2,674	670	279

1. This table accompanies Figure 2-B.

2. 90-Day Holding Period Return refers to a holding period return from the insider stock transaction date to ninety days after the insider stock transaction.

3. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

4. The insider stock purchase sample is comprised of 261,128 firm-day observations based on 11,047 publicly traded firms from 1996 to 2013.

5. The insider stock sale sample is comprised of 591,104 firm-day observations based on 10,860 publicly traded firms from 1996 to 2013.

6. We divide the insider stock transaction sample into 16 groups based on cumulative daily stock returns (RET) and examine a 90-day holding period return for each group: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

7. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, 90-day holding period returns are slightly higher when we use two day past stock performance as stock return classification method.

8. The symbols *, **, or *** show the significance at the 0.10, 0.05, 0.01 levels of the sample mean test (i.e., whether the mean is significantly different from zero), respectively.

Appendix 2-C: Event Study Results with Insider Purchase (Firm Size) (Table 2-C)

Insider Stock Purchase (Small Firms)

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Negative Past Stock Returns

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	24.59%	18.92%	13.23%	8.26%	7.15%	4.78%	3.03%	1.70%
(+1,+30)	36.31%	29.04%	21.49%	14.75%	12.11%	9.01%	6.16%	3.38%
(+1,+60)	63.76%	40.04%	28.71%	19.13%	17.37%	12.23%	8.78%	5.05%
(+1,+90)	67.05%	47.82%	34.95%	22.89%	21.64%	16.05%	11.48%	6.47%

B. N+:N-

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	34:12>>>	257:111>>>	1998:886>>>	1351:675>>>	2466:1322>>>	4750:3015>>>	10173:7155>>>	23819:19343>>>
(+1,+30)	36:10>>>	274:94>>>	1997:887>>>	1372:654>>>	2495:1293>>>	4918:2847>>>	10313:7015>>>	24115:19047>>>
(+1,+60)	36:10>>>	260:108>>>	1971:913>>>	1346:680>>>	2461:1327>>>	4796:2969>>>	10195:7133>>>	24211:18951>>>
(+1,+90)	35:11>>>	254:114>>>	1974:910>>>	1346:680>>>	2435:1353>>>	4792:2973>>>	10270:7058>>>	24262:18900>>>

C. Number of Firms

	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
	40	277	1,685	1,448	2,211	3,296	4,586	5,802

Positive Past Stock Returns

A. Mean Cumulative Abnormal Return

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	1.47%	2.18%	2.59%	3.21%	2.59%	3.03%	2.00%	3.04%
(+1,+30)	3.07%	4.61%	5.81%	7.36%	8.04%	7.92%	7.90%	10.29%
(+1,+60)	5.18%	8.15%	9.59%	12.55%	13.86%	16.14%	17.59%	18.80%
(+1,+90)	6.90%	11.33%	13.71%	16.72%	18.58%	24.41%	30.03%	40.98%

B. N+:N-

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	24807:22620>>>	7619:6827>>>	3449:3119>>>	1801:1636>>>	1006:939>>>	1786:1697>>>	284:302	78:86
(+1,+30)	25897:21530>>>	7990:6456>>>	3680:2888>>>	1889:1548>>>	1092:853>>>	1931:1552>>>	309:277>>	91:73>
(+1,+60)	26633:20794>>>	8318:6128>>>	3833:2735>>>	2034:1403>>>	1165:780>>>	2125:1358>>>	358:228>>>	102:62>>>
(+1,+90)	26904:20523>>>	8536:5910>>>	3901:2667>>>	2086:1351>>>	1202:743>>>	2191:1292>>>	370:216>>>	117:47>>>

C. Number of Firms

	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
	5,886	4,174	2,865	1,894	1,295	1,610	378	112

1. This table accompanies Figure 2-3.

2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

3. The insider stock purchase sample is comprised of 261,128 firm-day observations based on 11,047 publicly traded firms from 1996 to 2013.

4. We divide the sample into three groups based on firm size (i.e., market capitalization): small firms with market capitalization less than or equal to $206,986,006 (33.33th percentile of the insider stock purchase and sale sample), medium firms with market capitalization between $206,986,006 and $1,102,269,828 (33.33th percentile to 66.66th percentile), and large firms with market capitalization greater than $1,102,269,828 (66.66th percentile).

5. We further divide each firm size group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock purchases traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

6. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

7. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock purchases, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

8. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.

Appendix 2-C: Event Study Results with Insider Purchase (Firm Size) (Table 2-C) (cont.)

Insider Stock Purchase (Medium Firms)

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Negative Past Stock Returns

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	13.65%	3.69%	4.45%	3.53%	3.21%	2.72%	1.64%	0.90%
(+1,+30)	18.72%	6.55%	7.75%	4.68%	4.21%	3.22%	2.04%	1.08%
(+1,+60)	29.92%	11.13%	8.28%	4.16%	3.49%	2.67%	1.04%	1.03%
(+1,+90)	27.78%	0.97%	5.87%	2.84%	1.12%	1.36%	0.13%	0.78%

B. N+:N-

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	7:2>	51:48	683:426>>>	504:301>>>	888:555>>>	1886:1212>>>	4511:3229>>>	12188:10216>>>
(+1,+30)	5:4	56:43>	690:419>>>	481:324>>>	861:582>>>	1804:1294>>>	4321:3419>>>	11902:10502>>>
(+1,+60)	6:3	67:32>>>	673:436>>>	455:350>>>	828:615>>>	1720:1378>>>	4101:3639>>>	11771:10633>>>
(+1,+90)	5:4	47:52	630:479>>>	437:368>>>	751:692>>>	1660:1438>>>	4038:3702>>>	11619:10785>>>

C. Number of Firms

	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
	8	76	730	612	1,011	1,665	2,688	3,718

Positive Past Stock Returns

A. Mean Cumulative Abnormal Return

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	0.91%	1.46%	1.44%	2.16%	1.81%	1.23%	-2.63%	4.98%
(+1,+30)	1.06%	1.73%	3.06%	4.13%	2.94%	4.66%	1.65%	2.83%
(+1,+60)	0.61%	1.23%	1.93%	3.62%	2.67%	7.38%	8.81%	20.17%
(+1,+90)	0.09%	0.43%	1.82%	4.25%	4.15%	6.83%	5.19%	27.19%

B. N+:N-

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	11588:9929>>>	3180:2563>>>	1134:928>>>	434:342>>>	200:173>	264:266	20:25	6:3
(+1,+30)	11345:10172>>>	3115:2628>>>	1138:924>>>	434:342>>>	204:169>>	302:228>>>	27:18>	6:3
(+1,+60)	11111:10406>>>	3006:2737>>>	1073:989>>>	411:365>>	197:176>	302:228>>>	29:16>	7:2>
(+1,+90)	10875:10642>>>	2872:2871>>>	1067:995>>>	398:378>	204:169>>	301:229>>>	23:22	6:3

C. Number of Firms

	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
	3,672	2,220	1,169	538	300	364	39	7

1. This table accompanies Figure 2-3.

2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

3. The insider stock purchase sample is comprised of 261,128 firm-day observations based on 11,047 publicly traded firms from 1996 to 2013.

4. We divide the sample into three groups based on firm size (i.e., market capitalization): small firms with market capitalization less than or equal to $206,986,006 (33.33th percentile of the insider stock purchase and sale sample), medium firms with market capitalization between $206,986,006 and $1,102,269,828 (33.33th percentile to 66.66th percentile), and large firms with market capitalization greater than $1,102,269,828 (66.66th percentile).

5. We further divide each firm size group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock purchases traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

6. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

7. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock purchases, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

8. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.

Appendix 2-C: Event Study Results with Insider Purchase (Firm Size) (Table 2-C) (cont.)

Insider Stock Purchase (Large Firms)

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Negative Past Stock Returns

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	109.25%	7.50%	2.96%	2.84%	2.12%	1.54%	1.22%	0.49%
(+1,+30)	130.25%	6.91%	5.13%	2.57%	2.97%	1.06%	1.23%	0.31%
(+1,+60)	112.46%	2.74%	7.95%	4.16%	3.45%	1.26%	1.38%	0.12%
(+1,+90)	61.18%	0.47%	5.23%	1.20%	1.98%	-0.61%	0.75%	-0.34%

B. N+:N-

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	1:1	18:11)	223:162>>>	189:124>>>	345:275>>>	801:646>>>	2379:1838>>>	7346:6414>>>
(+1,+30)	1:1	19:10>	228:157>>>	168:145>	350:270>>>	758:689>>>	2307:1910>>>	7026:6734>>>
(+1,+60)	1:1	18:11)	243:142>>>	177:136>>	340:280>>>	798:649>>>	2287:1930>>>	7011:6749>>>
(+1,+90)	1:1	13:16	223:162>>>	151:162	331:289>>	741:706>	2186:2031>>>	7027:6733>>>

C. Number of Firms

	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
	1	22	236	246	442	806	1,401	1,995

Positive Past Stock Returns

A. Mean Cumulative Abnormal Return

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	0.42%	0.56%	-0.16%	0.44%	-1.02%	-2.21%	-1.78%	-3.79%
(+1,+30)	0.25%	0.48%	-0.03%	-0.75%	-1.86%	0.11%	3.51%	16.78%
(+1,+60)	-0.27%	-0.16%	-1.59%	-1.83%	-0.63%	4.72%	20.09%	22.33%
(+1,+90)	-0.80%	-0.87%	-3.57%	-1.94%	-1.22%	12.24%	24.66%	6.87%

B. N+:N-

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	6761:6170>>>	1399:1298>>>	358:348)	141:130)	40:49	57:58	11:9	1:4
(+1,+30)	6567:6364>>>	1378:1319>>	358:348)	140:131)	46:43	57:58	15:5>	5:0>
(+1,+60)	6332:6599	1318:1379	358:348)	146:125>	45:44	65:50>	14:6>	5:0>
(+1,+90)	6289:6642	1310:1387	329:377	138:133	44:45	73:42>>>	17:3>>>	5:0>

C. Number of Firms

	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
	1,952	1,104	489	223	79	86	13	2

1. This table accompanies Figure 2-3.

2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

3. The insider stock purchase sample is comprised of 261,128 firm-day observations based on 11,047 publicly traded firms from 1996 to 2013.

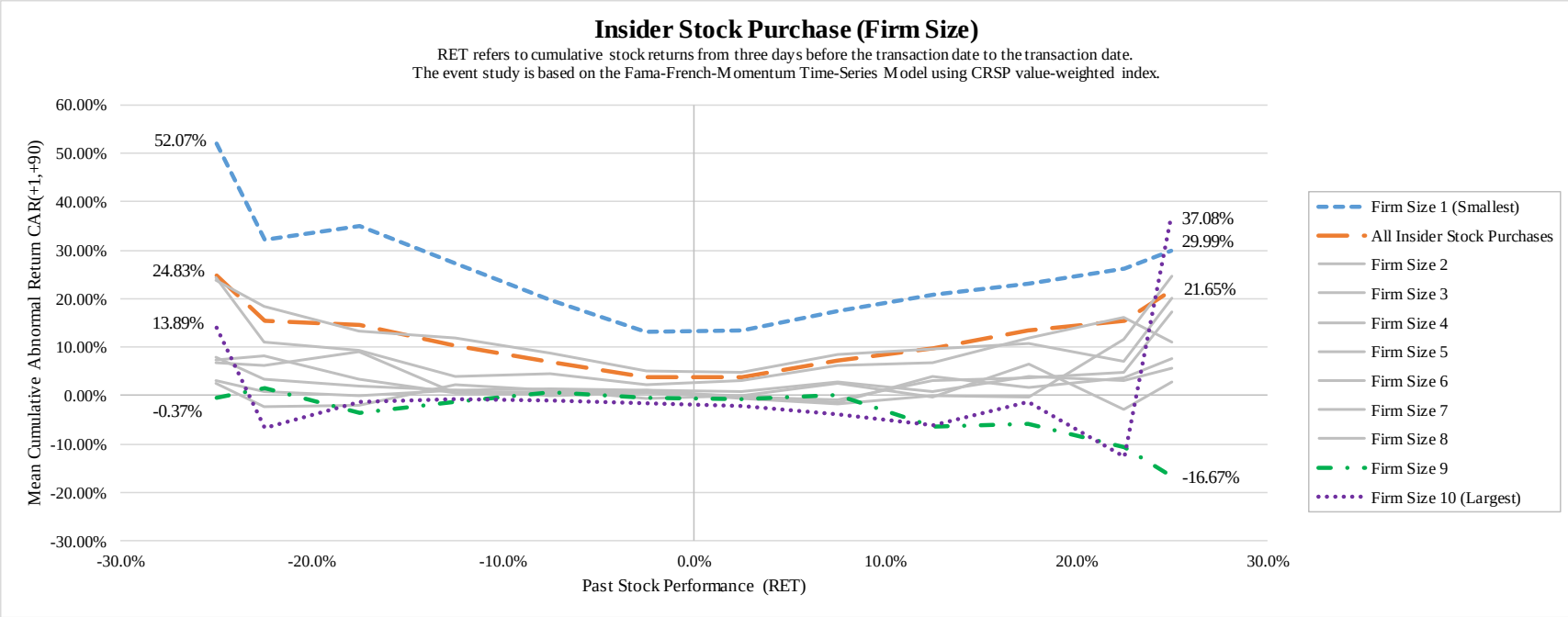
4. We divide the sample into three groups based on firm size (i.e., market capitalization): small firms with market capitalization less than or equal to $206,986,006 (33.33th percentile of the insider stock purchase and sale sample), medium firms with market capitalization between $206,986,006 and $1,102,269,828 (33.33th percentile to 66.66th percentile), and large firms with market capitalization greater than $1,102,269,828 (66.66th percentile).

5. We further divide each firm size group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock purchases traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

6. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

7. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock purchases, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

8. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.



Appendix 2-D: Event Study Results with Insider Purchase (10 Firm Size Groups) (Figure 2-D)

1. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

2. The insider stock purchase sample is comprised of 261,128 firm-day observations based on 11,047 publicly traded firms from 1996 to 2013.

3. We divide the sample into ten groups based on firm size (i.e., market capitalization): firm size group one (smallest firms) with market capitalization less than or equal to $38,902,500 (10th percentile of the insider stock purchase and sale sample), firm size group two with market capitalization between $38,902,500 and $89,657,373 (10th-20th percentile), firm size group three with market capitalization between $89,657,373 and $170,049,877 (20th-30th percentile), firm size group four with market capitalization between $170,049,877 and $295,258,718 (30th-40th percentile), firm size group five with market capitalization between $295,258,718 and $486,289,242 (40th-50th percentile), firm size group six with market capitalization between $486,289,242 and $782,310,000 (50th-60th percentile), firm size group seven with market capitalization between $782,310,000 and $1,330,502,093 (60th-70th percentile), firm size group eight with market capitalization between $1,330,502,093 and $2,582,572,886 (70th-80th percentile), firm size group nine with market capitalization between $2,582,572,886 and $7,305,133,020 (80th-90th percentile), and firm size group ten (largest firms) with market capitalization greater than $7,305,133,020 (90th percentile).

4. We further divide each firm size group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock purchases traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

5. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

6. Mean cumulative abnormal return (+1, +90) refers to a 90-day cumulative abnormal return of insider stock purchases. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

Appendix 2-D: Event Study Results with Insider Purchase (10 Firm Size Groups) (Table 2-D)

Insider Stock Purchase (Firm Size Group One, Smallest Firms)

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Negative Past Stock Returns

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	29.67%	27.12%	18.41%	9.48%	9.29%	6.28%	4.04%	2.55%
(+1,+30)	46.80%	41.30%	30.64%	17.88%	17.59%	13.14%	9.11%	5.72%
(+1,+60)	85.32%	53.95%	41.63%	25.71%	27.62%	20.02%	14.11%	9.55%
(+1,+90)	94.26%	63.30%	52.07%	32.10%	35.09%	27.40%	19.63%	13.02%

B. N+:N-

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	19:5>>	118:36>>>	892:332>>>	641:319>>>	1147:557>>>	2089:1240>>>	4100:2740>>>	7771:6000>>>
(+1,+30)	20:4>>>	124:30>>>	914:310>>>	673:287>>>	1197:507>>>	2204:1125>>>	4190:2650>>>	7983:5788>>>
(+1,+60)	20:4>>>	116:38>>>	924:300>>>	664:296>>>	1221:483>>>	2226:1103>>>	4299:2541>>>	8140:5631>>>
(+1,+90)	21:3>>>	116:38>>>	923:301>>>	670:290>>>	1223:481>>>	2236:1093>>>	4346:2494>>>	8289:5482>>>

C. Number of Firms

	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
	22	126	808	705	1,073	1,593	2,185	2,616

Positive Past Stock Returns

A. Mean Cumulative Abnormal Return

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	2.18%	2.76%	3.09%	3.66%	3.60%	3.31%	0.80%	1.99%
(+1,+30)	5.17%	6.68%	7.73%	9.38%	11.00%	9.30%	6.96%	10.06%
(+1,+60)	9.64%	12.51%	14.02%	17.34%	19.41%	19.57%	19.37%	22.51%
(+1,+90)	13.35%	17.40%	20.80%	23.19%	26.15%	29.99%	32.41%	48.76%

B. N+:N-

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	8420:7444>>>	3140:2868>>>	1518:1450>>>	875:827>>>	544:519>>	1040:1029>>	180:212	54:67
(+1,+30)	8995:6869>>>	3364:2644>>>	1676:1292>>>	959:743>>>	602:461>>>	1145:924>>>	200:192)	64:57)
(+1,+60)	9441:6423>>>	3640:2368>>>	1790:1178>>>	1049:653>>>	665:398>>>	1303:766>>>	243:149>>>	78:43>>>
(+1,+90)	9586:6278>>>	3744:2264>>>	1841:1127>>>	1088:614>>>	685:378>>>	1348:721>>>	251:141>>>	82:39>>>

C. Number of Firms

	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
	2,732	1,989	1,383	989	719	938	252	80

1. This table accompanies Figure 2-D.

2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

3. The insider stock purchase sample is comprised of 261,128 firm-day observations based on 11,047 publicly traded firms from 1996 to 2013.

4. We divide the sample into ten groups based on firm size (i.e., market capitalization): firm size group one (smallest firms) with market capitalization less than or equal to $38,902,500 (10th percentile of the insider stock purchase and sale sample), firm size group two with market capitalization between $38,902,500 and $89,657,373 (10th-20th percentile), firm size group three with market capitalization between $89,657,373 and $170,049,877 (20th-30th percentile), firm size group four with market capitalization between $170,049,877 and $295,258,718 (30th-40th percentile), firm size group five with market capitalization between $295,258,718 and $486,289,242 (40th-50th percentile), firm size group six with market capitalization between $486,289,242 and $782,310,000 (50th-60th percentile), firm size group seven with market capitalization between $782,310,000 and $1,330,502,093 (60th-70th percentile), firm size group eight with market capitalization between $1,330,502,093 and $2,582,572,886 (70th-80th percentile), firm size group nine with market capitalization between $2,582,572,886 and $7,305,133,020 (80th-90th percentile), and firm size group ten (largest firms) with market capitalization greater than $7,305,133,020 (90th percentile).

5. We further divide each firm size group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock purchases traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

6. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

7. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock purchases, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

8. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.

Appendix 2-D: Event Study Results with Insider Purchase (10 Firm Size Groups) (Table 2-D) (cont.)

Insider Stock Purchase (Firm Size Group Two)

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Negative Past Stock Returns

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	3.83%	8.35%	9.04%	8.04%	5.68%	3.83%	2.71%	1.51%
(+1,+30)	15.91%	18.36%	15.63%	14.79%	8.53%	7.72%	5.09%	2.86%
(+1,+60)	38.18%	25.57%	18.96%	15.34%	10.50%	9.14%	7.42%	3.79%
(+1,+90)	42.61%	29.27%	23.83%	18.45%	13.19%	11.84%	8.67%	5.08%

B. N+:N-

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	9:6	69:39>>>	563:275>>>	367:166>>>	673:389>>>	1358:879>>>	3102:2143>>>	7799:6418>>>
(+1,+30)	10:5)	76:32>>>	561:277>>>	360:173>>>	664:398>>>	1389:848>>>	3128:2117>>>	7870:6347>>>
(+1,+60)	10:5)	74:34>>>	533:305>>>	348:185>>>	636:426>>>	1317:920>>>	3002:2243>>>	7895:6322>>>
(+1,+90)	9:6	68:40>>>	551:287>>>	341:192>>>	630:432>>>	1328:909>>>	3030:2215>>>	7894:6323>>>

C. Number of Firms

	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
	13	88	573	445	768	1,303	2,017	2,817

Positive Past Stock Returns

A. Mean Cumulative Abnormal Return

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	1.13%	1.75%	2.53%	2.76%	1.63%	3.24%	6.25%	13.33%
(+1,+30)	2.17%	3.27%	4.54%	5.20%	4.73%	5.24%	8.44%	26.09%
(+1,+60)	3.47%	5.58%	7.11%	7.54%	5.74%	13.49%	16.19%	30.25%
(+1,+90)	4.65%	8.59%	9.54%	10.76%	6.98%	20.08%	22.11%	40.68%

B. N+:N-

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	7969:7541>>>	2289:2055>>>	983:892>>>	512:435>>>	248:226>	432:387>>	63:47>	16:7>
(+1,+30)	8247:7263>>>	2360:1984>>>	1024:851>>>	504:443>>>	262:212>>>	443:376>>>	56:54	17:6>>
(+1,+60)	8525:6985>>>	2417:1927>>>	1065:810>>>	522:425>>>	269:205>>>	487:332>>>	66:44>>	17:6>>
(+1,+90)	8660:6850>>>	2496:1848>>>	1070:805>>>	543:404>>>	273:201>>>	492:327>>>	60:50)	17:6>>

C. Number of Firms

	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
	2,864	1,824	1,109	664	376	505	85	19

1. This table accompanies Figure 2-D.

2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

3. The insider stock purchase sample is comprised of 261,128 firm-day observations based on 11,047 publicly traded firms from 1996 to 2013.

4. We divide the sample into ten groups based on firm size (i.e., market capitalization): firm size group one (smallest firms) with market capitalization less than or equal to $38,902,500 (10th percentile of the insider stock purchase and sale sample), firm size group two with market capitalization between $38,902,500 and $89,657,373 (10th-20th percentile), firm size group three with market capitalization between $89,657,373 and $170,049,877 (20th-30th percentile), firm size group four with market capitalization between $170,049,877 and $295,258,718 (30th-40th percentile), firm size group five with market capitalization between $295,258,718 and $486,289,242 (40th-50th percentile), firm size group six with market capitalization between $486,289,242 and $782,310,000 (50th-60th percentile), firm size group seven with market capitalization between $782,310,000 and $1,330,502,093 (60th-70th percentile), firm size group eight with market capitalization between $1,330,502,093 and $2,582,572,886 (70th-80th percentile), firm size group nine with market capitalization between $2,582,572,886 and $7,305,133,020 (80th-90th percentile), and firm size group ten (largest firms) with market capitalization greater than $7,305,133,020 (90th percentile).

5. We further divide each firm size group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock purchases traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

6. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

7. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock purchases, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

8. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.

Appendix 2-D: Event Study Results with Insider Purchase (10 Firm Size Groups) (Table 2-D) (cont.)

Insider Stock Purchase (Firm Size Group Three)

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Negative Past Stock Returns

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	51.69%	21.09%	10.60%	6.04%	4.48%	3.35%	2.02%	1.10%
(+1,+30)	44.07%	22.81%	14.57%	8.41%	6.29%	3.99%	3.56%	1.72%
(+1,+60)	44.60%	41.36%	21.67%	10.88%	8.22%	3.80%	3.71%	2.35%
(+1,+90)	26.14%	53.16%	24.33%	11.13%	9.16%	3.82%	4.39%	2.32%

B. N+:N-

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	6:1>	60:27>>>	421:219>>>	260:146>>>	497:299>>>	1016:707>>>	2311:1769>>>	6472:5422>>>
(+1,+30)	6:1>	58:29>>>	397:243>>>	252:154>>>	497:299>>>	1040:683>>>	2348:1732>>>	6487:5407>>>
(+1,+60)	6:1>	58:29>>>	400:240>>>	249:157>>>	483:313>>>	977:746>>>	2272:1808>>>	6426:5468>>>
(+1,+90)	5:2)	58:29>>>	389:251>>>	255:151>>>	465:331>>>	973:750>>>	2284:1796>>>	6363:5531>>>

C. Number of Firms

	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
	5	69	460	362	601	1,052	1,732	2,560

Positive Past Stock Returns

A. Mean Cumulative Abnormal Return

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	1.04%	1.75%	1.65%	2.58%	1.19%	0.89%	1.74%	9.53%
(+1,+30)	1.94%	3.09%	3.72%	5.52%	5.22%	6.74%	12.72%	23.22%
(+1,+60)	2.54%	4.90%	5.00%	9.44%	11.90%	7.13%	8.36%	19.59%
(+1,+90)	3.16%	6.26%	6.81%	11.92%	16.07%	11.01%	28.66%	46.02%

B. N+:N-

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	6601:6104>>>	1696:1486>>>	718:598>>>	324:302>	168:147>	233:237	35:40	13:7)
(+1,+30)	6845:5860>>>	1737:1445>>>	729:587>>>	339:287>>>	183:132>>>	271:199>>>	50:25>>>	17:3>>>
(+1,+60)	6828:5877>>>	1736:1446>>>	742:574>>>	374:252>>>	182:133>>>	265:205>>>	42:33)	14:6>
(+1,+90)	6870:5835>>>	1787:1395>>>	761:555>>>	371:255>>>	196:119>>>	273:197>>>	53:22>>>	18:2>>>

C. Number of Firms

	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
	2,571	1,459	835	453	255	325	55	17

1. This table accompanies Figure 2-D.

2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

3. The insider stock purchase sample is comprised of 261,128 firm-day observations based on 11,047 publicly traded firms from 1996 to 2013.

4. We divide the sample into ten groups based on firm size (i.e., market capitalization): firm size group one (smallest firms) with market capitalization less than or equal to $38,902,500 (10th percentile of the insider stock purchase and sale sample), firm size group two with market capitalization between $38,902,500 and $89,657,373 (10th-20th percentile), firm size group three with market capitalization between $89,657,373 and $170,049,877 (20th-30th percentile), firm size group four with market capitalization between $170,049,877 and $295,258,718 (30th-40th percentile), firm size group five with market capitalization between $295,258,718 and $486,289,242 (40th-50th percentile), firm size group six with market capitalization between $486,289,242 and $782,310,000 (50th-60th percentile), firm size group seven with market capitalization between $782,310,000 and $1,330,502,093 (60th-70th percentile), firm size group eight with market capitalization between $1,330,502,093 and $2,582,572,886 (70th-80th percentile), firm size group nine with market capitalization between $2,582,572,886 and $7,305,133,020 (80th-90th percentile), and firm size group ten (largest firms) with market capitalization greater than $7,305,133,020 (90th percentile).

5. We further divide each firm size group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock purchases traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

6. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

7. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock purchases, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

8. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.

Appendix 2-D: Event Study Results with Insider Purchase (10 Firm Size Groups) (Table 2-D) (cont.)

Insider Stock Purchase (Firm Size Group Four)

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Negative Past Stock Returns

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	5.05%	4.13%	5.16%	5.89%	5.42%	3.33%	1.93%	1.09%
(+1,+30)	23.37%	12.37%	9.93%	9.12%	6.37%	3.89%	2.31%	1.68%
(+1,+60)	58.87%	8.97%	9.27%	8.63%	5.21%	2.35%	0.84%	1.72%
(+1,+90)	81.59%	8.13%	7.44%	8.24%	3.29%	0.59%	0.10%	1.16%

B. N+:N-

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	3:0>	33:26)	335:199>>>	226:122>>>	391:226>>>	822:503>>>	1848:1362>>>	4938:4124>>>
(+1,+30)	2:1	41:18>>>	348:186>>>	233:115>>>	368:249>>>	783:542>>>	1766:1444>>>	4890:4172>>>
(+1,+60)	3:0>	38:21>>	329:205>>>	216:132>>>	354:263>>>	754:571>>>	1710:1500>>>	4815:4247>>>
(+1,+90)	3:0>	33:26)	312:222>>>	206:142>>>	326:291>>	720:605>>>	1650:1560>>>	4767:4295>>>

C. Number of Firms

	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
	3	49	411	283	508	887	1,513	2,194

Positive Past Stock Returns

A. Mean Cumulative Abnormal Return

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	1.10%	1.82%	1.92%	2.95%	1.95%	2.03%	-2.65%	2.04%
(+1,+30)	1.43%	2.61%	4.02%	4.80%	3.91%	3.35%	-3.42%	10.64%
(+1,+60)	1.54%	3.23%	2.29%	5.35%	1.03%	6.35%	23.11%	48.78%
(+1,+90)	0.84%	2.89%	0.75%	4.01%	3.02%	5.53%	20.95%	52.72%

B. N+:N-

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	4830:4142>>>	1374:1110>>>	562:456>>>	230:172>>>	112:100>	157:135>	11:13	2:1
(+1,+30)	4783:4189>>>	1405:1079>>>	587:431>>>	230:172>>>	114:98>	157:135>	10:14	2:1
(+1,+60)	4825:4147>>>	1381:1103>>>	544:474>>>	230:172>>>	113:99>	162:130>>	17:7>>	3:0>
(+1,+90)	4677:4295>>>	1339:1145>>>	521:497>>	220:182>>	113:99>	174:118>>>	13:11	2:1

C. Number of Firms

	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
	2,166	1,203	636	314	179	216	22	3

1. This table accompanies Figure 2-D.

2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

3. The insider stock purchase sample is comprised of 261,128 firm-day observations based on 11,047 publicly traded firms from 1996 to 2013.

4. We divide the sample into ten groups based on firm size (i.e., market capitalization): firm size group one (smallest firms) with market capitalization less than or equal to $38,902,500 (10th percentile of the insider stock purchase and sale sample), firm size group two with market capitalization between $38,902,500 and $89,657,373 (10th-20th percentile), firm size group three with market capitalization between $89,657,373 and $170,049,877 (20th-30th percentile), firm size group four with market capitalization between $170,049,877 and $295,258,718 (30th-40th percentile), firm size group five with market capitalization between $295,258,718 and $486,289,242 (40th-50th percentile), firm size group six with market capitalization between $486,289,242 and $782,310,000 (50th-60th percentile), firm size group seven with market capitalization between $782,310,000 and $1,330,502,093 (60th-70th percentile), firm size group eight with market capitalization between $1,330,502,093 and $2,582,572,886 (70th-80th percentile), firm size group nine with market capitalization between $2,582,572,886 and $7,305,133,020 (80th-90th percentile), and firm size group ten (largest firms) with market capitalization greater than $7,305,133,020 (90th percentile).

5. We further divide each firm size group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock purchases traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

6. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

7. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock purchases, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

8. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.

Appendix 2-D: Event Study Results with Insider Purchase (10 Firm Size Groups) (Table 2-D) (cont.)

Insider Stock Purchase (Firm Size Group Five)

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Negative Past Stock Returns

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	13.20%	7.90%	4.38%	3.91%	3.71%	3.19%	1.70%	1.05%
(+1,+30)	2.41%	9.13%	7.87%	3.84%	5.33%	3.78%	2.35%	1.32%
(+1,+60)	-4.12%	2.34%	10.03%	5.75%	4.61%	3.96%	1.66%	0.99%
(+1,+90)	-21.38%	-12.83%	7.79%	3.36%	1.86%	1.00%	-0.06%	0.50%

B. N+:N-

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	3:2	15:12	231:144>>>	176:95>>>	333:191>>>	660:406>>>	1556:1062>>>	4094:3393>>>
(+1,+30)	2:3	15:12	237:138>>>	152:119>>	322:202>>>	619:447>>>	1487:1131>>>	3974:3513>>>
(+1,+60)	2:3	14:13	229:146>>>	156:115>>>	311:213>>>	601:465>>>	1424:1194>>>	3978:3509>>>
(+1,+90)	1:4	11:16	219:156>>>	145:126>	287:237>>>	562:504>>>	1366:1252>>>	3884:3603>>>

C. Number of Firms

RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
4	23	285	231	409	708	1,271	1,914

Positive Past Stock Returns

A. Mean Cumulative Abnormal Return

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	1.08%	1.02%	2.07%	2.58%	2.17%	2.65%	2.30%	6.45%
(+1,+30)	1.44%	1.86%	3.59%	4.05%	2.12%	7.30%	7.59%	-1.08%
(+1,+60)	0.69%	0.68%	3.54%	3.85%	1.13%	10.47%	16.00%	5.87%
(+1,+90)	0.05%	-1.34%	3.87%	1.56%	3.53%	7.55%	10.82%	14.42%

B. N+:N-

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	3938:3226>>>	1048:901>>>	394:322>>>	138:112>>	69:47>>	109:99)	10:9	4:2
(+1,+30)	3800:3364>>>	1056:893>>>	409:307>>>	134:116>	66:50>	125:83>>>	12:7)	4:2
(+1,+60)	3690:3474>>>	1005:944>>>	388:328>>>	129:121	60:65	132:76>>>	15:4>>	4:2
(+1,+90)	3652:3512>>>	947:1002	390:326>>>	126:124	67:49>	128:80>>>	12:7)	4:2

C. Number of Firms

0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
1,877	992	487	203	96	153	14	4

1. This table accompanies Figure 2-D.

2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

3. The insider stock purchase sample is comprised of 261,128 firm-day observations based on 11,047 publicly traded firms from 1996 to 2013.

4. We divide the sample into ten groups based on firm size (i.e., market capitalization): firm size group one (smallest firms) with market capitalization less than or equal to $38,902,500 (10th percentile of the insider stock purchase and sale sample), firm size group two with market capitalization between $38,902,500 and $89,657,373 (10th-20th percentile), firm size group three with market capitalization between $89,657,373 and $170,049,877 (20th-30th percentile), firm size group four with market capitalization between $170,049,877 and $295,258,718 (30th-40th percentile), firm size group five with market capitalization between $295,258,718 and $486,289,242 (40th-50th percentile), firm size group six with market capitalization between $486,289,242 and $782,310,000 (50th-60th percentile), firm size group seven with market capitalization between $782,310,000 and $1,330,502,093 (60th-70th percentile), firm size group eight with market capitalization between $1,330,502,093 and $2,582,572,886 (70th-80th percentile), firm size group nine with market capitalization between $2,582,572,886 and $7,305,133,020 (80th-90th percentile), and firm size group ten (largest firms) with market capitalization greater than $7,305,133,020 (90th percentile).

5. We further divide each firm size group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock purchases traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

6. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

7. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock purchases, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

8. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.

Appendix 2-D: Event Study Results with Insider Purchase (10 Firm Size Groups) (Table 2-D) (cont.)

Insider Stock Purchase (Firm Size Group Six)

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Negative Past Stock Returns

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	41.66%	-1.71%	4.41%	2.25%	2.84%	2.14%	1.72%	0.88%
(+1,+30)	86.25%	-1.07%	5.11%	3.51%	2.42%	1.64%	2.34%	0.88%
(+1,+60)	113.31%	13.00%	6.14%	1.57%	1.85%	1.22%	1.15%	0.98%
(+1,+90)	112.13%	-8.88%	2.93%	0.67%	-0.10%	1.21%	1.43%	0.99%

B. N+:N-

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	1:0	10:13	163:98>>>	124:76>>>	219:130>>>	464:321>>>	1146:811>>>	3072:2479>>>
(+1,+30)	1:0	11:12	152:109>>>	118:82>>>	206:143>>>	446:339>>>	1128:829>>>	2955:2596>>>
(+1,+60)	1:0	18:5>>	154:107>>>	109:91>	191:158>>	410:375>>	1014:943>>>	2929:2622>>>
(+1,+90)	1:0	11:12	143:118>	111:89>	173:176	420:365>>>	1063:894>>>	2914:2637>>>

C. Number of Firms

	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
	1	18	205	165	293	555	958	1,499

Positive Past Stock Returns

A. Mean Cumulative Abnormal Return

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	0.79%	1.80%	0.38%	1.74%	0.61%	3.57%	-0.62%	N/A
(+1,+30)	0.75%	0.97%	1.84%	3.71%	-0.32%	9.84%	11.63%	
(+1,+60)	0.16%	-0.20%	0.97%	2.83%	4.96%	14.20%	-0.17%	
(+1,+90)	-0.22%	-0.88%	2.96%	3.53%	4.77%	17.16%	-0.65%	

B. N+:N-

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	2863:2499>>>	843:623>>>	262:224>>	106:87>	45:57	56:44>	5:4	N/A
(+1,+30)	2843:2519>>>	771:695>>>	265:221>>	106:87>	49:53	63:37>>	7:2>	
(+1,+60)	2750:2612>>>	745:721>	255:231>	99:94	54:48	52:48	4:5	
(+1,+90)	2714:2648>>>	725:741	260:226>>	89:104	52:50	51:49	4:5	

C. Number of Firms

	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
	1,483	757	326	156	91	75	9	N/A

1. This table accompanies Figure 2-D.

2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

3. The insider stock purchase sample is comprised of 261,128 firm-day observations based on 11,047 publicly traded firms from 1996 to 2013.

4. We divide the sample into ten groups based on firm size (i.e., market capitalization): firm size group one (smallest firms) with market capitalization less than or equal to $38,902,500 (10th percentile of the insider stock purchase and sale sample), firm size group two with market capitalization between $38,902,500 and $89,657,373 (10th-20th percentile), firm size group three with market capitalization between $89,657,373 and $170,049,877 (20th-30th percentile), firm size group four with market capitalization between $170,049,877 and $295,258,718 (30th-40th percentile), firm size group five with market capitalization between $295,258,718 and $486,289,242 (40th-50th percentile), firm size group six with market capitalization between $486,289,242 and $782,310,000 (50th-60th percentile), firm size group seven with market capitalization between $782,310,000 and $1,330,502,093 (60th-70th percentile), firm size group eight with market capitalization between $1,330,502,093 and $2,582,572,886 (70th-80th percentile), firm size group nine with market capitalization between $2,582,572,886 and $7,305,133,020 (80th-90th percentile), and firm size group ten (largest firms) with market capitalization greater than $7,305,133,020 (90th percentile).

5. We further divide each firm size group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock purchases traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

6. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

7. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock purchases, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

8. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.

Appendix 2-D: Event Study Results with Insider Purchase (10 Firm Size Groups) (Table 2-D) (cont.)

Insider Stock Purchase (Firm Size Group Seven)

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Negative Past Stock Returns

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	109.25%	0.73%	4.45%	1.58%	1.55%	1.84%	1.20%	0.45%
(+1,+30)	130.25%	-1.82%	6.28%	2.87%	2.22%	3.28%	1.80%	0.28%
(+1,+60)	112.46%	15.66%	8.51%	1.65%	0.07%	2.70%	1.57%	-0.14%
(+1,+90)	61.18%	7.72%	2.62%	-2.34%	-2.12%	2.26%	1.07%	-0.58%

B. N+:N-

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	1:0	5:9	108:70>>>	94:75>	153:116>>	350:254>>>	948:726>>>	2920:2650>>>
(+1,+30)	1:0	6:8	109:69>>>	98:71>>	155:114>>>	358:246>>>	942:732>>>	2872:2698>>>
(+1,+60)	1:0	11:3>	112:66>>>	91:78)	145:124>	343:261>>>	916:758>>>	2758:2812>
(+1,+90)	1:0	6:8	99:79>	83:86	132:137	315:289>	894:780>>>	2753:2817>

C. Number of Firms

	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
	1	12	128	144	223	400	805	1,309

Positive Past Stock Returns

A. Mean Cumulative Abnormal Return

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	0.58%	1.20%	0.75%	1.93%	-0.52%	-3.16%	-13.34%	-5.44%
(+1,+30)	0.53%	1.72%	2.07%	3.46%	1.48%	-0.56%	-11.15%	4.83%
(+1,+60)	0.46%	2.08%	-0.72%	-3.57%	-2.23%	-0.73%	-27.83%	4.83%
(+1,+90)	-0.10%	2.37%	-0.27%	6.58%	-2.84%	2.87%	-29.34%	4.83%

B. N+:N-

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	2694:2485>>>	604:501>>>	198:161>>	76:61>	25:23	31:42	0:5<	0:3<
(+1,+30)	2649:2530>>>	604:501>>>	188:171>	71:66	24:24	36:37	4:1)	3:0>
(+1,+60)	2619:2560>>>	591:514>>>	178:181	64:73	23:25	38:35	3:2	3:0>
(+1,+90)	2544:2635)	568:537>	175:184	70:67	24:24	37:36	3:2	3:0>

C. Number of Firms

	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
	1,272	610	269	111	45	58	3	1

1. This table accompanies Figure 2-D.

2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

3. The insider stock purchase sample is comprised of 261,128 firm-day observations based on 11,047 publicly traded firms from 1996 to 2013.

4. We divide the sample into ten groups based on firm size (i.e., market capitalization): firm size group one (smallest firms) with market capitalization less than or equal to $38,902,500 (10th percentile of the insider stock purchase and sale sample), firm size group two with market capitalization between $38,902,500 and $89,657,373 (10th-20th percentile), firm size group three with market capitalization between $89,657,373 and $170,049,877 (20th-30th percentile), firm size group four with market capitalization between $170,049,877 and $295,258,718 (30th-40th percentile), firm size group five with market capitalization between $295,258,718 and $486,289,242 (40th-50th percentile), firm size group six with market capitalization between $486,289,242 and $782,310,000 (50th-60th percentile), firm size group seven with market capitalization between $782,310,000 and $1,330,502,093 (60th-70th percentile), firm size group eight with market capitalization between $1,330,502,093 and $2,582,572,886 (70th-80th percentile), firm size group nine with market capitalization between $2,582,572,886 and $7,305,133,020 (80th-90th percentile), and firm size group ten (largest firms) with market capitalization greater than $7,305,133,020 (90th percentile).

5. We further divide each firm size group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock purchases traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

6. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

7. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock purchases, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

8. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.

Appendix 2-D: Event Study Results with Insider Purchase (10 Firm Size Groups) (Table 2-D) (cont.)

Insider Stock Purchase (Firm Size Group Eight)

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Negative Past Stock Returns

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	N/A	2.63%	2.15%	5.40%	2.57%	2.64%	1.29%	0.57%
(+1,+30)		4.07%	3.44%	3.86%	5.43%	1.68%	0.86%	0.40%
(+1,+60)		0.07%	5.92%	7.78%	8.00%	2.96%	1.69%	0.55%
(+1,+90)		6.73%	6.66%	6.12%	8.94%	0.58%	0.68%	0.76%

B. N+:N-

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	N/A	9:4)	74:64	71:40>>>	119:116	293:227>>>	856:623>>>	2549:2169>>>
(+1,+30)		8:5	80:58>	64:47>	136:99>>	282:238>>	806:673>>>	2437:2281>>>
(+1,+60)		8:5	84:54>>	67:44>>	135:100>>	306:214>>>	829:650>>>	2505:2213>>>
(+1,+90)		7:6	88:50>>>	59:52	129:106>	258:262	778:701>>>	2497:2221>>>

C. Number of Firms

RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
N/A	9	98	95	182	360	706	1,106

Positive Past Stock Returns

A. Mean Cumulative Abnormal Return

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	0.58%	1.13%	0.34%	-0.65%	1.75%	-1.39%	-3.42%	-1.32%
(+1,+30)	0.32%	0.29%	0.65%	-0.52%	3.59%	1.34%	5.69%	34.71%
(+1,+60)	-0.22%	-0.72%	0.51%	1.36%	12.72%	12.73%	25.53%	48.59%
(+1,+90)	-0.54%	-1.62%	0.08%	-0.37%	11.70%	24.61%	28.05%	9.94%

B. N+:N-

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	2417:2093>>>	540:423>>>	141:114>>	60:62	22:16	30:24	8:5	1:1
(+1,+30)	2339:2171>>>	497:466>	135:120>	64:58	25:13>	31:23	10:3>	2:0)
(+1,+60)	2214:2296	461:502	142:113>>	70:52>	28:10>>	35:19>	9:4)	2:0)
(+1,+90)	2214:2296	456:507	131:124	67:55)	26:12>>	40:14>>>	12:1>>>	2:0)

C. Number of Firms

0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
1,099	501	205	108	35	37	8	1

1. This table accompanies Figure 2-D.

2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

3. The insider stock purchase sample is comprised of 261,128 firm-day observations based on 11,047 publicly traded firms from 1996 to 2013.

4. We divide the sample into ten groups based on firm size (i.e., market capitalization): firm size group one (smallest firms) with market capitalization less than or equal to $38,902,500 (10th percentile of the insider stock purchase and sale sample), firm size group two with market capitalization between $38,902,500 and $89,657,373 (10th-20th percentile), firm size group three with market capitalization between $89,657,373 and $170,049,877 (20th-30th percentile), firm size group four with market capitalization between $170,049,877 and $295,258,718 (30th-40th percentile), firm size group five with market capitalization between $295,258,718 and $486,289,242 (40th-50th percentile), firm size group six with market capitalization between $486,289,242 and $782,310,000 (50th-60th percentile), firm size group seven with market capitalization between $782,310,000 and $1,330,502,093 (60th-70th percentile), firm size group eight with market capitalization between $1,330,502,093 and $2,582,572,886 (70th-80th percentile), firm size group nine with market capitalization between $2,582,572,886 and $7,305,133,020 (80th-90th percentile), and firm size group ten (largest firms) with market capitalization greater than $7,305,133,020 (90th percentile).

5. We further divide each firm size group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock purchases traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

6. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

7. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock purchases, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

8. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.

Appendix 2-D: Event Study Results with Insider Purchase (10 Firm Size Groups) (Table 2-D) (cont.)

Insider Stock Purchase (Firm Size Group Nine)

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Negative Past Stock Returns

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	N/A	5.07%	4.49%	1.16%	0.46%	0.22%	1.24%	0.63%
(+1,+30)		18.29%	5.72%	2.38%	0.14%	-0.11%	1.23%	0.43%
(+1,+60)		17.63%	4.04%	4.36%	-0.27%	-0.06%	1.31%	0.26%
(+1,+90)		6.60%	-0.37%	1.46%	-3.66%	-1.41%	0.54%	-0.59%

B. N+:N-

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	N/A	4:4	72:44>>	48:32>	93:81)	217:203)	674:536>>>	2067:1834>>>
(+1,+30)		7:1>	71:45>>	44:36	88:86	215:205)	645:565>>>	1999:1902>>>
(+1,+60)		6:2)	70:46>>	48:32>	89:85	219:201>	634:576>>	1985:1916>>
(+1,+90)		6:2)	57:59	37:43	87:87	218:202)	603:607	1965:1936>>

C. Number of Firms

	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
	N/A	6	80	66	138	281	537	866

Positive Past Stock Returns

A. Mean Cumulative Abnormal Return

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	0.47%	0.73%	-1.35%	0.49%	-2.56%	-6.53%	5.16%	N/A
(+1,+30)	0.35%	0.85%	-1.20%	-0.23%	-6.82%	-6.73%	4.29%	
(+1,+60)	-0.42%	0.29%	-3.35%	-5.91%	-8.53%	-17.50%	-15.02%	
(+1,+90)	-0.87%	0.12%	-6.56%	-6.00%	-10.81%	-16.67%	7.32%	

B. N+:N-

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	1899:1661>>>	419:373>>	81:112(	34:28	12:15	12:19	1:1	N/A
(+1,+30)	1847:1713>>>	430:362>>>	92:101	33:29	14:13	11:20(	1:1	
(+1,+60)	1758:1802	390:402	86:107	32:30	10:17	10:21<	1:1	
(+1,+90)	1721:1839	390:402	81:112(	28:34	12:15	13:18	1:1	

C. Number of Firms

	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
	828	397	150	53	24	28	2	N/A

1. This table accompanies Figure 2-D.

2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

3. The insider stock purchase sample is comprised of 261,128 firm-day observations based on 11,047 publicly traded firms from 1996 to 2013.

4. We divide the sample into ten groups based on firm size (i.e., market capitalization): firm size group one (smallest firms) with market capitalization less than or equal to $38,902,500 (10th percentile of the insider stock purchase and sale sample), firm size group two with market capitalization between $38,902,500 and $89,657,373 (10th-20th percentile), firm size group three with market capitalization between $89,657,373 and $170,049,877 (20th-30th percentile), firm size group four with market capitalization between $170,049,877 and $295,258,718 (30th-40th percentile), firm size group five with market capitalization between $295,258,718 and $486,289,242 (40th-50th percentile), firm size group six with market capitalization between $486,289,242 and $782,310,000 (50th-60th percentile), firm size group seven with market capitalization between $782,310,000 and $1,330,502,093 (60th-70th percentile), firm size group eight with market capitalization between $1,330,502,093 and $2,582,572,886 (70th-80th percentile), firm size group nine with market capitalization between $2,582,572,886 and $7,305,133,020 (80th-90th percentile), and firm size group ten (largest firms) with market capitalization greater than $7,305,133,020 (90th percentile).

5. We further divide each firm size group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock purchases traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

6. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

7. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock purchases, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

8. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.

Appendix 2-D: Event Study Results with Insider Purchase (10 Firm Size Groups) (Table 2-D) (cont.)

Insider Stock Purchase (Firm Size Group Ten, Largest Firms)

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Negative Past Stock Returns

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	N/A	24.49%	2.50%	1.66%	1.93%	1.47%	0.82%	0.10%
(+1,+30)		19.32%	10.43%	-0.48%	2.34%	1.00%	0.28%	-0.16%
(+1,+60)		31.37%	16.17%	-3.37%	0.74%	-0.06%	-0.70%	-0.55%
(+1,+90)		18.80%	13.89%	-6.73%	-1.38%	-0.68%	-1.03%	-1.48%

B. N+:N-

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	N/A	3:0>	45:29>	37:29	74:47>>	168:133>>	522:450>>>	1671:1484>>>
(+1,+30)		3:0>	46:28>	27:39	73:48>>	144:157	501:471>	1576:1579)
(+1,+60)		3:0>	52:22>>>	30:36	64:57	161:140>	483:489	1562:1593
(+1,+90)		2:1	46:28>	27:39	65:56	163:138>	480:492	1582:1573>

C. Number of Firms

	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
	N/A	3	48	56	89	163	330	512

Positive Past Stock Returns

A. Mean Cumulative Abnormal Return

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	0.04%	-0.87%	0.46%	-0.13%	-4.39%	2.64%	7.48%	N/A
(+1,+30)	-0.37%	-1.19%	-1.03%	-2.28%	-5.93%	5.27%	-13.35%	
(+1,+60)	-1.14%	-2.62%	-1.79%	-1.91%	-17.75%	20.56%	42.75%	
(+1,+90)	-2.05%	-3.98%	-6.21%	-1.32%	-12.73%	37.08%	49.73%	

B. N+:N-

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	1525:1524)	245:348<<<	84:66>	21:22	1:11<<	7:5	2:0)	N/A
(+1,+30)	1461:1588	259:334<	71:79	23:20	3:9(	8:4	1:1	
(+1,+60)	1426:1623<	276:317	74:76	22:21	3:9(	8:4	1:1	
(+1,+90)	1430:1619<	266:327<	67:83	20:23	2:10<	9:3>	1:1	

C. Number of Firms

	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
	511	270	110	39	9	9	2	N/A

1. This table accompanies Figure 2-D.

2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

3. The insider stock purchase sample is comprised of 261,128 firm-day observations based on 11,047 publicly traded firms from 1996 to 2013.

4. We divide the sample into ten groups based on firm size (i.e., market capitalization): firm size group one (smallest firms) with market capitalization less than or equal to $38,902,500 (10th percentile of the insider stock purchase and sale sample), firm size group two with market capitalization between $38,902,500 and $89,657,373 (10th-20th percentile), firm size group three with market capitalization between $89,657,373 and $170,049,877 (20th-30th percentile), firm size group four with market capitalization between $170,049,877 and $295,258,718 (30th-40th percentile), firm size group five with market capitalization between $295,258,718 and $486,289,242 (40th-50th percentile), firm size group six with market capitalization between $486,289,242 and $782,310,000 (50th-60th percentile), firm size group seven with market capitalization between $782,310,000 and $1,330,502,093 (60th-70th percentile), firm size group eight with market capitalization between $1,330,502,093 and $2,582,572,886 (70th-80th percentile), firm size group nine with market capitalization between $2,582,572,886 and $7,305,133,020 (80th-90th percentile), and firm size group ten (largest firms) with market capitalization greater than $7,305,133,020 (90th percentile).

5. We further divide each firm size group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock purchases traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

6. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

7. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock purchases, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

8. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.

Appendix 2-E: Event Study Results with Insider Sale (Firm Size) (Table 2-E)

Insider Stock Sale (Small Firms)

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Negative Past Stock Returns

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	6.03%	5.55%	3.59%	1.97%	0.43%	-0.24%	-0.53%	-0.67%
(+1,+30)	16.48%	9.37%	7.03%	2.55%	0.40%	-0.88%	-1.87%	-1.86%
(+1,+60)	31.53%	17.49%	11.28%	4.95%	0.32%	-2.09%	-4.07%	-3.57%
(+1,+90)	38.34%	18.87%	11.54%	4.06%	0.59%	-4.01%	-6.24%	-4.86%

B. N+:N-

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	22:32	113:94>>	875:760>>>	617:582>>>	1169:1191>>>	2602:2694>>>	6156:6842>	16250:19823<<<
(+1,+30)	23:31	108:99>	826:809>>>	617:582>>>	1169:1191>>>	2496:2800)	5969:7029(	16151:19922<<<
(+1,+60)	27:27	126:81>>>	875:760>>>	599:600>>	1145:1215>>	2459:2837	5824:7174<<<	16009:20064<<<
(+1,+90)	25:29	113:94>>	857:778>>>	614:585>>>	1161:1199>>	2427:2869	5741:7257<<<	15966:20107<<<

C. Number of Firms

	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
	40	142	804	760	1,297	2,249	3,696	5,143

Positive Past Stock Returns

A. Mean Cumulative Abnormal Return

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	-0.65%	-1.21%	-1.43%	-1.71%	-1.89%	-3.74%	-10.15%	-14.29%
(+1,+30)	-1.37%	-2.83%	-2.84%	-3.37%	-2.40%	-3.73%	-11.25%	-16.83%
(+1,+60)	-2.77%	-4.66%	-5.30%	-6.78%	-5.09%	-6.71%	-9.98%	-14.71%
(+1,+90)	-3.93%	-7.43%	-9.12%	-10.95%	-8.45%	-9.56%	-11.86%	-17.44%

B. N+:N-

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	17790:22546<<<	5872:8147<<<	2647:3734<<<	1396:1931<<<	721:1094<<<	1353:2158<<<	262:546<<<	94:236<<<
(+1,+30)	18193:22143<<<	5981:8038<<<	2706:3675<<<	1394:1933<<<	773:1042<<	1493:2018<<<	297:511<<<	107:223<<<
(+1,+60)	18100:22236<<<	5992:8027<<<	2700:3681<<<	1395:1932<<<	772:1043<<	1449:2062<<<	319:489<<<	119:211<<<
(+1,+90)	18169:22167<<<	5955:8064<<<	2616:3765<<<	1351:1976<<<	775:1040<<	1433:2078<<<	308:500<<<	113:217<<<

C. Number of Firms

	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
	5,263	3,654	2,562	1,717	1,124	1,495	466	217

1. This table accompanies Figure 2-4.

2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

3. The insider stock sale sample is comprised of 591,104 firm-day observations based on 10,860 publicly traded firms from 1996 to 2013.

4. We divide the sample into three groups based on firm size (i.e., market capitalization): small firms with market capitalization less than or equal to $206,986,006 (33.33th percentile of the insider stock purchase and sale sample), medium firms with market capitalization between $206,986,006 and $1,102,269,828 (33.33th percentile to 66.66th percentile), and large firms with market capitalization greater than $1,102,269,828 (66.66th percentile).

5. We further divide each firm size group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock sales traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

6. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

7. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock sales, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

8. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.

Appendix 2-E: Event Study Results with Insider Sale (Firm Size) (Table 2-E) (cont.)

Insider Stock Sale (Medium Firms)

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Negative Past Stock Returns

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	-20.66%	1.26%	-1.57%	-2.24%	-1.87%	-1.48%	-1.42%	-0.99%
(+1,+30)	-0.27%	-0.32%	-6.39%	-8.92%	-7.02%	-6.01%	-4.59%	-2.84%
(+1,+60)	14.70%	5.37%	-14.49%	-16.65%	-14.39%	-12.84%	-8.65%	-5.47%
(+1,+90)	12.72%	-1.99%	-20.12%	-25.96%	-22.67%	-19.09%	-13.39%	-8.05%

B. N+:N-

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	0:2(	20:24	294:316	318:362	707:837	2035:2296	7344:8664<<<	27573:33647<<<
(+1,+30)	1:1	22:22	258:352<	279:401<<	630:914<<<	1808:2523<<<	6748:9260<<<	26654:34566<<<
(+1,+60)	1:1	27:17>	254:356<	258:422<<<	582:962<<<	1630:2701<<<	6380:9628<<<	25680:35540<<<
(+1,+90)	1:1	21:23	239:371<<<	243:437<<<	537:1007<<<	1535:2796<<<	6007:10001<<<	25276:35944<<<

C. Number of Firms

	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
	2	36	386	474	885	1,875	3,440	4,879

Positive Past Stock Returns

A. Mean Cumulative Abnormal Return

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	-0.98%	-1.65%	-2.44%	-2.65%	-2.29%	-2.63%	-5.68%	-14.32%
(+1,+30)	-2.77%	-4.36%	-5.87%	-6.23%	-7.13%	-6.39%	-8.76%	-19.04%
(+1,+60)	-5.22%	-8.01%	-11.00%	-12.18%	-13.83%	-14.26%	-15.62%	-25.75%
(+1,+90)	-7.59%	-12.11%	-16.42%	-18.36%	-21.29%	-21.37%	-19.98%	-28.91%

B. N+:N-

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	35566:45451<<<	12610:17508<<<	4364:6826<<<	1867:2690<<<	816:1180<<<	1011:1334<<	93:167<<	18:52<<<
(+1,+30)	34586:46431<<<	12078:18040<<<	4363:6827<<<	1822:2735<<<	779:1217<<<	1009:1336<<	110:150	25:45(
(+1,+60)	33568:47449<<<	11722:18396<<<	4058:7132<<<	1661:2896<<<	733:1263<<<	864:1481<<<	102:158<	26:44(
(+1,+90)	33091:47926<<<	11325:18793<<<	3859:7331<<<	1600:2957<<<	687:1309<<<	832:1513<<<	96:164<<	25:45(

C. Number of Firms

	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
	5,040	4,022	2,952	1,944	1,179	1,137	167	48

1. This table accompanies Figure 2-4.

2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

3. The insider stock sale sample is comprised of 591,104 firm-day observations based on 10,860 publicly traded firms from 1996 to 2013.

4. We divide the sample into three groups based on firm size (i.e., market capitalization): small firms with market capitalization less than or equal to $206,986,006 (33.33th percentile of the insider stock purchase and sale sample), medium firms with market capitalization between $206,986,006 and $1,102,269,828 (33.33th percentile to 66.66th percentile), and large firms with market capitalization greater than $1,102,269,828 (66.66th percentile).

5. We further divide each firm size group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock sales traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

6. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

7. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock sales, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

8. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.

Appendix 2-E: Event Study Results with Insider Sale (Firm Size) (Table 2-E) (cont.)

Insider Stock Sale (Large Firms)

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Negative Past Stock Returns

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	N/A	16.82%	-1.48%	-2.59%	-3.34%	-2.60%	-1.56%	-0.75%
(+1,+30)		-6.46%	-9.89%	-10.43%	-11.56%	-7.38%	-4.40%	-2.27%
(+1,+60)		-5.72%	-18.93%	-16.91%	-20.16%	-12.98%	-8.26%	-4.30%
(+1,+90)		6.57%	-33.74%	-28.19%	-33.21%	-21.73%	-13.09%	-6.48%

B. N+:N-

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	N/A	11:4>	165:167	174:217	427:549<	1179:1538<<<	5131:6418<<<	30792:37613<<<
(+1,+30)		6:9	140:192(	150:241<<<	377:599<<<	1062:1655<<<	4822:6727<<<	29436:38969<<<
(+1,+60)		7:8	136:196<	148:243<<<	354:622<<<	1001:1716<<<	4547:7002<<<	28484:39921<<<
(+1,+90)		9:6	118:214<<<	132:259<<<	301:675<<<	936:1781<<<	4232:7317<<<	27644:40761<<<

C. Number of Firms

	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
	N/A	14	174	243	492	1,039	2,201	3,106

Positive Past Stock Returns

A. Mean Cumulative Abnormal Return

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	-0.87%	-1.63%	-2.60%	-3.37%	-4.17%	-4.96%	-5.97%	-9.46%
(+1,+30)	-2.26%	-3.89%	-6.15%	-7.26%	-9.92%	-9.40%	-9.96%	-10.03%
(+1,+60)	-4.07%	-6.77%	-10.36%	-12.35%	-17.07%	-19.31%	-22.44%	-18.88%
(+1,+90)	-6.02%	-10.19%	-15.74%	-19.74%	-24.11%	-27.00%	-23.57%	-24.81%

B. N+:N-

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	49711:63547<<<	13516:19477<<<	3538:5600<<<	1191:1956<<<	483:775<<<	442:814<<<	49:74(	11:21
(+1,+30)	47670:65588<<<	13215:19778<<<	3425:5713<<<	1190:1957<<<	449:809<<<	466:790<<<	44:79<	9:23<
(+1,+60)	46320:66938<<<	12804:20189<<<	3353:5785<<<	1179:1968<<<	452:806<<<	441:815<<<	40:83<<	9:23<
(+1,+90)	45242:68016<<<	12449:20544<<<	3186:5952<<<	1061:2086<<<	406:852<<<	414:842<<<	46:77<	11:21

C. Number of Firms

	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
	3,236	2,807	1,989	1,189	624	532	80	22

1. This table accompanies Figure 2-4.

2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

3. The insider stock sale sample is comprised of 591,104 firm-day observations based on 10,860 publicly traded firms from 1996 to 2013.

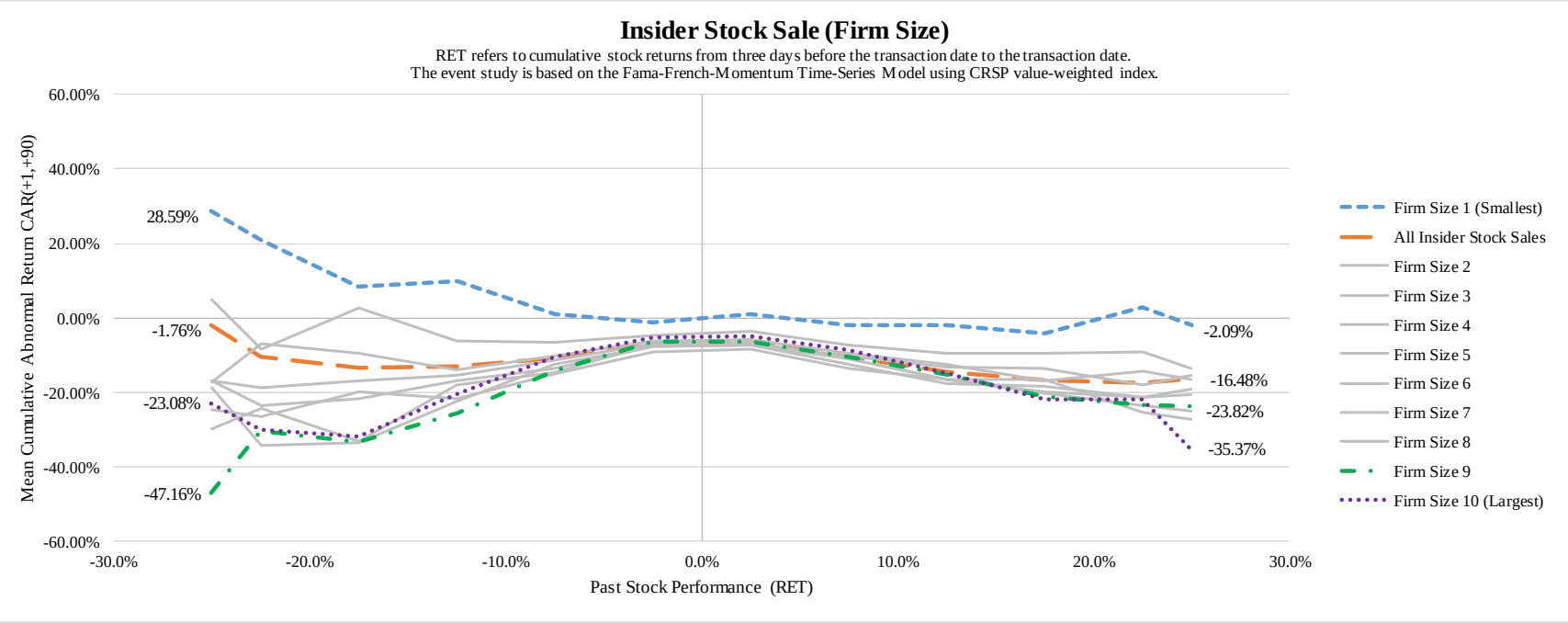
4. We divide the sample into three groups based on firm size (i.e., market capitalization): small firms with market capitalization less than or equal to $206,986,006 (33.33th percentile of the insider stock purchase and sale sample), medium firms with market capitalization between $206,986,006 and $1,102,269,828 (33.33th percentile to 66.66th percentile), and large firms with market capitalization greater than $1,102,269,828 (66.66th percentile).

5. We further divide each firm size group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock sales traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

6. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

7. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock sales, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

8. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.



Appendix 2-F: Event Study Results with Insider Sale (10 Firm Size Groups) (Figure 2-F)

1. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.
2. The insider stock sale sample is comprised of 591,104 firm-day observations based on 10,860 publicly traded firms from 1996 to 2013.
3. We divide the sample into ten groups based on firm size (i.e., market capitalization): firm size group one (smallest firms) with market capitalization less than or equal to $38,902,500 (10th percentile of the insider stock purchase and sale sample), firm size group two with market capitalization between $38,902,500 and $89,657,373 (10th-20th percentile), firm size group three with market capitalization between $89,657,373 and $170,049,877 (20th-30th percentile), firm size group four with market capitalization between $170,049,877 and $295,258,718 (30th-40th percentile), firm size group five with market capitalization between $295,258,718 and $486,289,242 (40th-50th percentile), firm size group six with market capitalization between $486,289,242 and $782,310,000 (50th-60th percentile), firm size group seven with market capitalization between $782,310,000 and $1,330,502,093 (60th-70th percentile), firm size group eight with market capitalization between $1,330,502,093 and $2,582,572,886 (70th-80th percentile), firm size group nine with market capitalization between $2,582,572,886 and $7,305,133,020 (80th-90th percentile), and firm size group ten (largest firms) with market capitalization greater than $7,305,133,020 (90th percentile).
4. We further divide each firm size group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock sales traded at different levels of past stock performance: RET $\leq$ -75%, RET $\leq$ -50%, RET $\leq$ -25%, -25% < RET $\leq$ -20%, -20% < RET $\leq$ -15%, -15% < RET $\leq$ -10%, -10% < RET $\leq$ -5%, -5% < RET $\leq$ 0%, 0% < RET $\leq$ 5%, 5% < RET $\leq$ 10%, 10% < RET $\leq$ 15%, 15% < RET $\leq$ 20%, 20% < RET $\leq$ 25%, 25% < RET, 50% < RET and 75% < RET.
5. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.
6. Mean cumulative abnormal return (+1, +90) refers to 90-day cumulative abnormal return of insider stock sales. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

Appendix 2-F: Event Study Results with Insider Sale (10 Firm Size Groups) (Table 2-F)

Insider Stock Sale (Firm Size Group One, Smallest Firms)

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Negative Past Stock Returns

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	11.97%	7.38%	7.10%	4.59%	1.82%	1.47%	-0.04%	-0.55%
(+1,+30)	25.53%	18.39%	15.35%	9.46%	4.04%	3.66%	-0.26%	-1.01%
(+1,+60)	44.88%	27.60%	24.66%	19.66%	5.14%	5.12%	-0.19%	-1.53%
(+1,+90)	47.70%	30.22%	28.59%	21.08%	8.38%	9.83%	0.92%	-1.35%

B. N+:N-

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	19:23	61:55	458:358>>>	286:219>>>	479:454>>>	875:839>>>	1573:1778	2936:3590<<
(+1,+30)	21:21	66:50>	443:373>>>	279:226>>>	472:461>>	878:836>>>	1589:1762	2987:3539
(+1,+60)	24:18	73:43>>>	479:337>>>	287:218>>>	481:452>>>	892:822>>>	1624:1727>>	3040:3486
(+1,+90)	19:23	63:53)	476:340>>>	288:217>>>	497:436>>>	924:790>>>	1661:1690>>>	3072:3454

C. Number of Firms

	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
	33	80	400	333	550	832	1,315	1,702

Positive Past Stock Returns

A. Mean Cumulative Abnormal Return

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	-0.77%	-0.30%	-0.66%	-1.76%	-1.69%	-4.54%	-11.94%	-14.61%
(+1,+30)	-0.09%	-0.56%	-0.20%	0.99%	1.93%	-3.72%	-13.63%	-16.70%
(+1,+60)	0.31%	-0.06%	0.37%	-1.33%	4.42%	-3.36%	-8.26%	-11.15%
(+1,+90)	1.00%	-1.82%	-1.84%	-4.09%	2.78%	-2.09%	-10.00%	-12.16%

B. N+:N-

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	3017:3955<<<	1084:1543<<<	548:804<<<	313:481<<<	179:306<<<	487:807<<<	130:282<<<	55:131<<<
(+1,+30)	3207:3765	1163:1464<	602:750	371:423	210:275	543:751<<	152:260<<<	66:120<<
(+1,+60)	3330:3642>	1182:1445	622:730	353:441	217:268	537:757<<	157:255<<	69:117<<
(+1,+90)	3423:3549>>>	1208:1419	634:718	353:441	227:258	561:733(	157:255<<	67:119<<

C. Number of Firms

	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
	1,711	1,099	717	501	342	590	243	129

1. This table accompanies Figure 2-F.

2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

3. The insider stock sale sample is comprised of 591,104 firm-day observations based on 10,860 publicly traded firms from 1996 to 2013.

4. We divide the sample into ten groups based on firm size (i.e., market capitalization): firm size group one (smallest firms) with market capitalization less than or equal to $38,902,500 (10th percentile of the insider stock purchase and sale sample), firm size group two with market capitalization between $38,902,500 and $89,657,373 (10th-20th percentile), firm size group three with market capitalization between $89,657,373 and $170,049,877 (20th-30th percentile), firm size group four with market capitalization between $170,049,877 and $295,258,718 (30th-40th percentile), firm size group five with market capitalization between $295,258,718 and $486,289,242 (40th-50th percentile), firm size group six with market capitalization between $486,289,242 and $782,310,000 (50th-60th percentile), firm size group seven with market capitalization between $782,310,000 and $1,330,502,093 (60th-70th percentile), firm size group eight with market capitalization between $1,330,502,093 and $2,582,572,886 (70th-80th percentile), firm size group nine with market capitalization between $2,582,572,886 and $7,305,133,020 (80th-90th percentile), and firm size group ten (largest firms) with market capitalization greater than $7,305,133,020 (90th percentile).

5. We further divide each firm size group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock sales traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

6. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

7. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock sales, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

8. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.

Appendix 2-F: Event Study Results with Insider Sale (10 Firm Size Groups) (Table 2-F) (cont.)

Insider Stock Sale (Firm Size Group Two)

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Negative Past Stock Returns

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	3.87%	6.03%	1.97%	0.42%	1.31%	-0.44%	-0.31%	-0.54%
(+1,+30)	4.38%	-4.81%	2.25%	1.31%	1.39%	-1.24%	-1.71%	-1.78%
(+1,+60)	5.05%	8.36%	4.91%	-3.93%	2.68%	-2.01%	-3.82%	-3.79%
(+1,+90)	73.62%	15.50%	4.82%	-8.35%	2.75%	-6.10%	-6.71%	-4.86%

B. N+:N-

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	2:2	32:15>>	216:182>>>	149:163	289:295>	706:722>>	1786:1954)	4842:5779<<
(+1,+30)	2:2	23:24	192:206	159:153>	299:285>>	666:762	1686:2054<	4721:5900<<<
(+1,+60)	2:2	29:18>	201:197>	142:170	296:288>	660:768	1667:2073<	4639:5982<<<
(+1,+90)	4:0>	26:21	198:200)	149:163	289:295>	644:784	1613:2127<<<	4639:5982<<<

C. Number of Firms

	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
	3	37	249	241	401	818	1,527	2,389

Positive Past Stock Returns

A. Mean Cumulative Abnormal Return

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	-0.50%	-1.34%	-1.83%	-1.77%	-3.16%	-4.71%	-8.71%	-13.54%
(+1,+30)	-1.42%	-3.19%	-2.89%	-4.60%	-4.64%	-4.28%	-8.23%	-17.73%
(+1,+60)	-2.70%	-4.45%	-5.38%	-6.44%	-6.52%	-8.90%	-10.89%	-22.72%
(+1,+90)	-3.68%	-7.27%	-9.40%	-9.57%	-9.19%	-13.56%	-12.16%	-27.51%

B. N+:N-

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	5097:6637<<<	1594:2233<<<	719:1043<<<	416:575<<	182:332<<<	372:637<<<	81:146<<	26:64<<<
(+1,+30)	5211:6523<<<	1606:2221<<<	738:1024<<<	393:598<<<	211:303<	413:596<<	81:146<<	22:68<<<
(+1,+60)	5186:6548<<<	1672:2155<<<	737:1025<<<	422:569<	218:296(	409:600<<<	90:137<	30:60<
(+1,+90)	5309:6425<<<	1647:2180<<<	717:1045<<<	415:576<<	229:285	384:625<<<	79:148<<<	25:65<<<

C. Number of Firms

	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
	2,475	1,511	976	654	380	563	151	67

1. This table accompanies Figure 2-F.

2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

3. The insider stock sale sample is comprised of 591,104 firm-day observations based on 10,860 publicly traded firms from 1996 to 2013.

4. We divide the sample into ten groups based on firm size (i.e., market capitalization): firm size group one (smallest firms) with market capitalization less than or equal to $38,902,500 (10th percentile of the insider stock purchase and sale sample), firm size group two with market capitalization between $38,902,500 and $89,657,373 (10th-20th percentile), firm size group three with market capitalization between $89,657,373 and $170,049,877 (20th-30th percentile), firm size group four with market capitalization between $170,049,877 and $295,258,718 (30th-40th percentile), firm size group five with market capitalization between $295,258,718 and $486,289,242 (40th-50th percentile), firm size group six with market capitalization between $486,289,242 and $782,310,000 (50th-60th percentile), firm size group seven with market capitalization between $782,310,000 and $1,330,502,093 (60th-70th percentile), firm size group eight with market capitalization between $1,330,502,093 and $2,582,572,886 (70th-80th percentile), firm size group nine with market capitalization between $2,582,572,886 and $7,305,133,020 (80th-90th percentile), and firm size group ten (largest firms) with market capitalization greater than $7,305,133,020 (90th percentile).

5. We further divide each firm size group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock sales traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

6. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

7. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock sales, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

8. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.

Appendix 2-F: Event Study Results with Insider Sale (10 Firm Size Groups) (Table 2-F) (cont.)

Insider Stock Sale (Firm Size Group Three)

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Negative Past Stock Returns

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	-24.12%	-3.11%	-2.79%	0.56%	-1.91%	-1.44%	-0.81%	-0.79%
(+1,+30)	-24.99%	3.21%	-5.64%	-4.96%	-4.51%	-4.32%	-2.57%	-2.30%
(+1,+60)	-25.28%	6.40%	-9.62%	-6.41%	-6.21%	-8.04%	-6.15%	-4.27%
(+1,+90)	-28.44%	-0.75%	-17.25%	-6.99%	-9.69%	-13.79%	-10.11%	-6.33%

B. N+:N-

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	1:7<	14:21	155:176	149:151)	299:347	772:858	2103:2203>>	6113:7704<<<
(+1,+30)	0:8<<	14:21	145:186	141:159	303:343	719:911<	1990:2316	6120:7697<<<
(+1,+60)	1:7<	19:16	146:185	136:164	281:365	700:930<<	1848:2458<<<	6030:7787<<<
(+1,+90)	2:6	20:15)	138:193(	139:161	289:357	667:963<<<	1791:2515<<<	5962:7855<<<

C. Number of Firms

	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
	4	28	218	219	453	926	1,687	2,698

Positive Past Stock Returns

A. Mean Cumulative Abnormal Return

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	-0.67%	-1.37%	-1.44%	-1.64%	-1.28%	-1.84%	-6.23%	-14.89%
(+1,+30)	-1.91%	-3.37%	-3.90%	-4.89%	-2.89%	-3.37%	-6.51%	-17.24%
(+1,+60)	-3.98%	-6.32%	-7.71%	-11.17%	-9.13%	-10.24%	-8.30%	-14.68%
(+1,+90)	-5.89%	-9.49%	-12.51%	-17.06%	-14.16%	-16.48%	-11.47%	-23.98%

B. N+:N-

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	6895:8616<<<	2245:3071<<<	976:1352<<<	488:629(	255:332	368:540<<	39:89<<<	8:32<<<
(+1,+30)	6881:8630<<<	2248:3068<<<	979:1349<<<	451:666<<<	252:335(	416:492	52:76	14:26(
(+1,+60)	6810:8701<<<	2207:3109<<<	951:1377<<<	435:682<<<	243:344<	364:544<<<	56:72	15:25
(+1,+90)	6667:8844<<<	2181:3135<<<	896:1432<<<	406:711<<<	233:354<<	356:552<<<	57:71	15:25

C. Number of Firms

	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
	2,726	1,857	1,176	704	438	533	97	30

1. This table accompanies Figure 2-F.

2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

3. The insider stock sale sample is comprised of 591,104 firm-day observations based on 10,860 publicly traded firms from 1996 to 2013.

4. We divide the sample into ten groups based on firm size (i.e., market capitalization): firm size group one (smallest firms) with market capitalization less than or equal to $38,902,500 (10th percentile of the insider stock purchase and sale sample), firm size group two with market capitalization between $38,902,500 and $89,657,373 (10th-20th percentile), firm size group three with market capitalization between $89,657,373 and $170,049,877 (20th-30th percentile), firm size group four with market capitalization between $170,049,877 and $295,258,718 (30th-40th percentile), firm size group five with market capitalization between $295,258,718 and $486,289,242 (40th-50th percentile), firm size group six with market capitalization between $486,289,242 and $782,310,000 (50th-60th percentile), firm size group seven with market capitalization between $782,310,000 and $1,330,502,093 (60th-70th percentile), firm size group eight with market capitalization between $1,330,502,093 and $2,582,572,886 (70th-80th percentile), firm size group nine with market capitalization between $2,582,572,886 and $7,305,133,020 (80th-90th percentile), and firm size group ten (largest firms) with market capitalization greater than $7,305,133,020 (90th percentile).

5. We further divide each firm size group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock sales traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

6. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

7. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock sales, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

8. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.

Appendix 2-F: Event Study Results with Insider Sale (10 Firm Size Groups) (Table 2-F) (cont.)

Insider Stock Sale (Firm Size Group Four)

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Negative Past Stock Returns

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	-20.66%	-1.73%	-0.76%	-2.28%	-1.56%	-1.25%	-1.60%	-0.94%
(+1,+30)	-0.27%	-6.62%	-6.37%	-7.32%	-5.97%	-4.40%	-3.97%	-2.31%
(+1,+60)	14.70%	-11.96%	-13.84%	-12.20%	-11.82%	-10.13%	-7.57%	-4.63%
(+1,+90)	12.72%	-20.36%	-16.75%	-18.60%	-16.87%	-15.53%	-11.27%	-6.93%

B. N+:N-

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	0:2(	10:15	122:124	113:144	276:278)	736:805	2188:2752<<<	7308:8756<<<
(+1,+30)	1:1	12:13	118:128	117:140	239:315(	680:861<	2141:2799<<<	7267:8797<<<
(+1,+60)	1:1	13:12	117:129	107:150(	232:322<	621:920<<<	2087:2853<<<	7050:9014<<<
(+1,+90)	1:1	13:12	108:138	106:151(	218:336<<<	573:968<<<	1978:2962<<<	6889:9175<<<

C. Number of Firms

	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
	2	17	177	201	387	900	1,795	2,741

Positive Past Stock Returns

A. Mean Cumulative Abnormal Return

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	-0.90%	-1.35%	-2.03%	-1.97%	-1.40%	-2.65%	-5.91%	-12.21%
(+1,+30)	-2.12%	-3.30%	-4.62%	-5.02%	-5.12%	-4.97%	-10.69%	-12.31%
(+1,+60)	-4.39%	-6.71%	-8.70%	-8.85%	-11.30%	-9.26%	-10.91%	-19.75%
(+1,+90)	-6.78%	-10.34%	-13.26%	-13.42%	-17.96%	-15.41%	-15.46%	-16.94%

B. N+:N-

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	8703:10881<<<	3260:4210<<<	1315:1848<<<	571:772<<	282:344	363:479(	46:68	14:29<
(+1,+30)	8890:10694<<<	3213:4257<<<	1301:1862<<<	555:788<<<	276:350	363:479(	52:62	19:24
(+1,+60)	8530:11054<<<	3055:4415<<<	1284:1879<<<	543:800<<<	244:382<<<	347:495<<	52:62	16:27
(+1,+90)	8368:11216<<<	2990:4480<<<	1211:1952<<<	535:808<<<	226:400<<<	340:502<<<	52:62	18:25

C. Number of Firms

	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
	2,929	2,124	1,424	820	449	540	88	34

1. This table accompanies Figure 2-F.

2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

3. The insider stock sale sample is comprised of 591,104 firm-day observations based on 10,860 publicly traded firms from 1996 to 2013.

4. We divide the sample into ten groups based on firm size (i.e., market capitalization): firm size group one (smallest firms) with market capitalization less than or equal to $38,902,500 (10th percentile of the insider stock purchase and sale sample), firm size group two with market capitalization between $38,902,500 and $89,657,373 (10th-20th percentile), firm size group three with market capitalization between $89,657,373 and $170,049,877 (20th-30th percentile), firm size group four with market capitalization between $170,049,877 and $295,258,718 (30th-40th percentile), firm size group five with market capitalization between $295,258,718 and $486,289,242 (40th-50th percentile), firm size group six with market capitalization between $486,289,242 and $782,310,000 (50th-60th percentile), firm size group seven with market capitalization between $782,310,000 and $1,330,502,093 (60th-70th percentile), firm size group eight with market capitalization between $1,330,502,093 and $2,582,572,886 (70th-80th percentile), firm size group nine with market capitalization between $2,582,572,886 and $7,305,133,020 (80th-90th percentile), and firm size group ten (largest firms) with market capitalization greater than $7,305,133,020 (90th percentile).

5. We further divide each firm size group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock sales traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

6. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

7. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock sales, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

8. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.

Appendix 2-F: Event Study Results with Insider Sale (10 Firm Size Groups) (Table 2-F) (cont.)

Insider Stock Sale (Firm Size Group Five)

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Negative Past Stock Returns

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	N/A	4.33%	-1.93%	-3.22%	-0.78%	-1.85%	-1.73%	-1.12%
(+1,+30)		12.21%	-4.75%	-8.92%	-4.23%	-6.87%	-5.69%	-3.29%
(+1,+60)		6.38%	-16.71%	-15.02%	-11.00%	-14.60%	-9.75%	-6.21%
(+1,+90)		-4.38%	-24.52%	-26.54%	-19.96%	-21.84%	-14.94%	-9.08%

B. N+:N-

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	N/A	5:7	82:99	91:115	231:271	624:726	2259:2745<<	7851:9923<<<
(+1,+30)		8:4)	73:108(	89:117	218:284	558:792<<<	2017:2987<<<	7618:10156<<<
(+1,+60)		7:5	69:112<	77:129<<	191:311<<<	486:864<<<	1902:3102<<<	7248:10526<<<
(+1,+90)		5:7	70:111<	77:129<<	173:329<<<	441:909<<<	1796:3208<<<	7167:10607<<<

C. Number of Firms

	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
	N/A	10	139	156	362	792	1,790	2,796

Positive Past Stock Returns

A. Mean Cumulative Abnormal Return

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	-1.12%	-1.85%	-2.73%	-3.25%	-2.12%	-2.22%	-4.67%	-6.63%
(+1,+30)	-3.15%	-4.89%	-6.08%	-6.91%	-8.57%	-5.41%	-5.83%	-15.35%
(+1,+60)	-5.98%	-8.90%	-11.53%	-12.89%	-15.96%	-15.99%	-19.22%	-22.09%
(+1,+90)	-8.49%	-13.41%	-16.46%	-20.26%	-23.70%	-25.15%	-27.71%	-26.98%

B. N+:N-

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	9736:12762<<<	3530:5081<<<	1284:2020<<<	561:849<<<	253:380<<<	342:428	38:60	8:13
(+1,+30)	9441:13057<<<	3360:5251<<<	1306:1998<<<	548:862<<<	240:393<<<	344:426	39:59	9:12
(+1,+60)	9119:13379<<<	3313:5298<<<	1190:2114<<<	498:912<<<	240:393<<<	277:493<<<	41:57	11:10
(+1,+90)	9032:13466<<<	3166:5445<<<	1168:2136<<<	448:962<<<	234:399<<<	243:527<<<	32:66<<	10:11

C. Number of Firms

	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
	2,976	2,253	1,490	845	483	474	70	16

1. This table accompanies Figure 2-F.

2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

3. The insider stock sale sample is comprised of 591,104 firm-day observations based on 10,860 publicly traded firms from 1996 to 2013.

4. We divide the sample into ten groups based on firm size (i.e., market capitalization): firm size group one (smallest firms) with market capitalization less than or equal to $38,902,500 (10th percentile of the insider stock purchase and sale sample), firm size group two with market capitalization between $38,902,500 and $89,657,373 (10th-20th percentile), firm size group three with market capitalization between $89,657,373 and $170,049,877 (20th-30th percentile), firm size group four with market capitalization between $170,049,877 and $295,258,718 (30th-40th percentile), firm size group five with market capitalization between $295,258,718 and $486,289,242 (40th-50th percentile), firm size group six with market capitalization between $486,289,242 and $782,310,000 (50th-60th percentile), firm size group seven with market capitalization between $782,310,000 and $1,330,502,093 (60th-70th percentile), firm size group eight with market capitalization between $1,330,502,093 and $2,582,572,886 (70th-80th percentile), firm size group nine with market capitalization between $2,582,572,886 and $7,305,133,020 (80th-90th percentile), and firm size group ten (largest firms) with market capitalization greater than $7,305,133,020 (90th percentile).

5. We further divide each firm size group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock sales traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

6. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

7. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock sales, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

8. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.

Appendix 2-F: Event Study Results with Insider Sale (10 Firm Size Groups) (Table 2-F) (cont.)

Insider Stock Sale (Firm Size Group Six)

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Negative Past Stock Returns

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	N/A	7.47%	-1.68%	-1.16%	-2.17%	-1.16%	-1.12%	-0.93%
(+1,+30)		-10.01%	-6.92%	-8.06%	-5.87%	-6.08%	-4.33%	-2.79%
(+1,+60)		15.79%	-13.67%	-16.99%	-13.46%	-11.74%	-8.56%	-5.38%
(+1,+90)		17.65%	-16.88%	-23.71%	-21.61%	-16.84%	-13.41%	-7.84%

B. N+:N-

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	N/A	6:4	86:81)	94:91)	195:236	604:625>	2197:2496	8829:10639<<<
(+1,+30)		3:7	64:103<	70:115<	186:245(	502:727<<<	1996:2697<<<	8436:11032<<<
(+1,+60)		7:3)	70:97	70:115<	166:265<<<	455:774<<<	1869:2824<<<	8209:11259<<<
(+1,+90)		5:5	70:97	63:122<<<	157:274<<<	450:779<<<	1759:2934<<<	8146:11322<<<

C. Number of Firms

	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
	N/A	9	119	157	302	710	1,581	2,584

Positive Past Stock Returns

A. Mean Cumulative Abnormal Return

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	-0.89%	-1.58%	-1.99%	-2.15%	-2.18%	-3.23%	-10.60%	-30.80%
(+1,+30)	-2.63%	-4.38%	-5.64%	-6.52%	-6.39%	-7.29%	-9.85%	-31.25%
(+1,+60)	-4.99%	-7.67%	-11.27%	-13.40%	-12.92%	-14.50%	-20.61%	-30.82%
(+1,+90)	-7.17%	-11.17%	-16.60%	-19.87%	-21.35%	-19.29%	-19.63%	-40.98%

B. N+:N-

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	11683:14604<<<	4073:5535<<<	1399:2085<<<	582:779<<	239:329<	259:356<	15:42<<	1:11<<
(+1,+30)	11343:14944<<<	3859:5749<<<	1358:2126<<<	550:811<<<	215:353<<<	245:370<<<	27:30	2:10<
(+1,+60)	10961:15326<<<	3737:5871<<<	1228:2256<<<	459:902<<<	207:361<<<	229:386<<<	18:39<	3:9(
(+1,+90)	10888:15399<<<	3691:5917<<<	1157:2327<<<	452:909<<<	192:376<<<	232:383<<<	20:37(	2:10<

C. Number of Firms

	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
	2,773	2,152	1,383	800	417	394	48	11

1. This table accompanies Figure 2-F.

2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

3. The insider stock sale sample is comprised of 591,104 firm-day observations based on 10,860 publicly traded firms from 1996 to 2013.

4. We divide the sample into ten groups based on firm size (i.e., market capitalization): firm size group one (smallest firms) with market capitalization less than or equal to $38,902,500 (10th percentile of the insider stock purchase and sale sample), firm size group two with market capitalization between $38,902,500 and $89,657,373 (10th-20th percentile), firm size group three with market capitalization between $89,657,373 and $170,049,877 (20th-30th percentile), firm size group four with market capitalization between $170,049,877 and $295,258,718 (30th-40th percentile), firm size group five with market capitalization between $295,258,718 and $486,289,242 (40th-50th percentile), firm size group six with market capitalization between $486,289,242 and $782,310,000 (50th-60th percentile), firm size group seven with market capitalization between $782,310,000 and $1,330,502,093 (60th-70th percentile), firm size group eight with market capitalization between $1,330,502,093 and $2,582,572,886 (70th-80th percentile), firm size group nine with market capitalization between $2,582,572,886 and $7,305,133,020 (80th-90th percentile), and firm size group ten (largest firms) with market capitalization greater than $7,305,133,020 (90th percentile).

5. We further divide each firm size group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock sales traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

6. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

7. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock sales, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

8. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.

Appendix 2-F: Event Study Results with Insider Sale (10 Firm Size Groups) (Table 2-F) (cont.)

Insider Stock Sale (Firm Size Group Seven)

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Negative Past Stock Returns

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	N/A	13.03%	1.20%	-1.18%	-3.77%	-1.65%	-1.15%	-0.85%
(+1,+30)		5.76%	-1.76%	-10.34%	-13.58%	-6.10%	-3.70%	-2.64%
(+1,+60)		1.38%	-6.38%	-22.28%	-22.71%	-13.74%	-8.00%	-5.23%
(+1,+90)		-6.73%	-18.67%	-34.07%	-33.39%	-22.25%	-12.56%	-7.79%

B. N+:N-

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	N/A	8:3>	73:76	77:80	163:211	491:586	2014:2312	8825:10604<<<
(+1,+30)		6:5	72:77	61:96<	128:246<<<	453:624<<<	1889:2437<<<	8340:11089<<<
(+1,+60)		7:4	66:83	54:103<<<	122:252<<<	404:673<<<	1750:2576<<<	7964:11465<<<
(+1,+90)		4:7	49:100<<<	51:106<<<	110:264<<<	381:696<<<	1664:2662<<<	7795:11634<<<

C. Number of Firms

	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
	N/A	10	106	114	252	587	1,437	2,392

Positive Past Stock Returns

A. Mean Cumulative Abnormal Return

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	-0.98%	-1.82%	-2.98%	-3.05%	-3.93%	-2.71%	-7.47%	-14.09%
(+1,+30)	-2.80%	-4.52%	-6.84%	-6.70%	-9.14%	-7.91%	-24.66%	-28.13%
(+1,+60)	-5.04%	-8.03%	-11.32%	-12.49%	-15.71%	-13.86%	-28.09%	-25.21%
(+1,+90)	-7.39%	-12.35%	-17.53%	-18.40%	-21.40%	-20.76%	-31.07%	-27.35%

B. N+:N-

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	12407:15946<<<	4058:5927<<<	1161:2089<<<	476:791<<<	209:349<<<	239:341<<	18:40<	5:13(
(+1,+30)	11690:16663<<<	3903:6082<<<	1180:2070<<<	489:778<<<	207:351<<<	239:341<<	8:50<<<	2:16<<
(+1,+60)	11518:16835<<<	3822:6163<<<	1130:2120<<<	484:783<<<	195:363<<<	206:374<<<	11:47<<<	3:15<<
(+1,+90)	11309:17044<<<	3645:6340<<<	1058:2192<<<	474:793<<<	183:375<<<	201:379<<<	16:42<<	6:12

C. Number of Firms

	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
	2,528	2,030	1,297	715	393	334	41	11

1. This table accompanies Figure 2-F.

2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

3. The insider stock sale sample is comprised of 591,104 firm-day observations based on 10,860 publicly traded firms from 1996 to 2013.

4. We divide the sample into ten groups based on firm size (i.e., market capitalization): firm size group one (smallest firms) with market capitalization less than or equal to $38,902,500 (10th percentile of the insider stock purchase and sale sample), firm size group two with market capitalization between $38,902,500 and $89,657,373 (10th-20th percentile), firm size group three with market capitalization between $89,657,373 and $170,049,877 (20th-30th percentile), firm size group four with market capitalization between $170,049,877 and $295,258,718 (30th-40th percentile), firm size group five with market capitalization between $295,258,718 and $486,289,242 (40th-50th percentile), firm size group six with market capitalization between $486,289,242 and $782,310,000 (50th-60th percentile), firm size group seven with market capitalization between $782,310,000 and $1,330,502,093 (60th-70th percentile), firm size group eight with market capitalization between $1,330,502,093 and $2,582,572,886 (70th-80th percentile), firm size group nine with market capitalization between $2,582,572,886 and $7,305,133,020 (80th-90th percentile), and firm size group ten (largest firms) with market capitalization greater than $7,305,133,020 (90th percentile).

5. We further divide each firm size group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock sales traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

6. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

7. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock sales, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

8. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.

Appendix 2-F: Event Study Results with Insider Sale (10 Firm Size Groups) (Table 2-F) (cont.)

Insider Stock Sale (Firm Size Group Eight)

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Negative Past Stock Returns

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	N/A	26.66%	-2.25%	-2.01%	-2.84%	-2.05%	-1.80%	-0.95%
(+1,+30)		-21.62%	-11.53%	-8.50%	-9.73%	-5.90%	-5.16%	-2.51%
(+1,+60)		23.72%	-18.21%	-13.19%	-21.07%	-11.65%	-9.41%	-4.72%
(+1,+90)		22.39%	-29.98%	-24.33%	-32.97%	-18.09%	-14.51%	-7.01%

B. N+:N-

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	N/A	5:0>	50:62	52:74	136:189<	407:520<	1708:2181<<<	8957:11181<<<
(+1,+30)		2:3	48:64	52:74	129:196<<	366:561<<<	1539:2350<<<	8618:11520<<<
(+1,+60)		3:2	46:66	53:73	115:210<<<	364:563<<<	1502:2387<<<	8339:11799<<<
(+1,+90)		3:2	43:69<	50:76(	107:218<<<	345:582<<<	1390:2499<<<	8133:12005<<<

C. Number of Firms

	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
	N/A	5	80	102	225	511	1,275	2,114

Positive Past Stock Returns

A. Mean Cumulative Abnormal Return

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	-1.03%	-1.83%	-2.49%	-2.71%	-3.70%	-5.42%	-8.48%	-8.30%
(+1,+30)	-2.64%	-4.52%	-6.58%	-5.94%	-9.95%	-10.05%	-6.08%	3.77%
(+1,+60)	-4.68%	-7.57%	-11.06%	-10.96%	-18.27%	-18.41%	-26.35%	-20.36%
(+1,+90)	-6.67%	-10.98%	-16.59%	-16.66%	-25.35%	-27.22%	-34.26%	-32.08%

B. N+:N-

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	13292:17651<<<	4053:5987<<<	1199:1862<<<	440:700<<<	176:284<<<	165:303<<<	13:32<	5:12(
(+1,+30)	12789:18154<<<	3912:6128<<<	1118:1943<<<	433:707<<<	159:301<<<	173:295<<<	18:27	7:10
(+1,+60)	12528:18415<<<	3820:6220<<<	1127:1934<<<	434:706<<<	159:301<<<	168:300<<<	15:30(	6:11
(+1,+90)	12355:18588<<<	3753:6287<<<	1033:2028<<<	404:736<<<	142:318<<<	156:312<<<	13:32<	5:12(

C. Number of Firms

	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
	2,247	1,819	1,133	626	293	265	30	12

1. This table accompanies Figure 2-F.

2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

3. The insider stock sale sample is comprised of 591,104 firm-day observations based on 10,860 publicly traded firms from 1996 to 2013.

4. We divide the sample into ten groups based on firm size (i.e., market capitalization): firm size group one (smallest firms) with market capitalization less than or equal to $38,902,500 (10th percentile of the insider stock purchase and sale sample), firm size group two with market capitalization between $38,902,500 and $89,657,373 (10th-20th percentile), firm size group three with market capitalization between $89,657,373 and $170,049,877 (20th-30th percentile), firm size group four with market capitalization between $170,049,877 and $295,258,718 (30th-40th percentile), firm size group five with market capitalization between $295,258,718 and $486,289,242 (40th-50th percentile), firm size group six with market capitalization between $486,289,242 and $782,310,000 (50th-60th percentile), firm size group seven with market capitalization between $782,310,000 and $1,330,502,093 (60th-70th percentile), firm size group eight with market capitalization between $1,330,502,093 and $2,582,572,886 (70th-80th percentile), firm size group nine with market capitalization between $2,582,572,886 and $7,305,133,020 (80th-90th percentile), and firm size group ten (largest firms) with market capitalization greater than $7,305,133,020 (90th percentile).

5. We further divide each firm size group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock sales traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

6. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

7. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock sales, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

8. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.

Appendix 2-F: Event Study Results with Insider Sale (10 Firm Size Groups) (Table 2-F) (cont.)

Insider Stock Sale (Firm Size Group Nine)

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Negative Past Stock Returns

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	N/A	18.35%	-4.35%	-4.07%	-3.43%	-3.61%	-1.67%	-0.80%
(+1,+30)		7.27%	-11.62%	-13.39%	-12.30%	-8.60%	-4.65%	-2.39%
(+1,+60)		-1.86%	-23.12%	-18.61%	-18.81%	-14.30%	-9.10%	-4.32%
(+1,+90)		15.10%	-47.16%	-30.21%	-33.19%	-25.66%	-14.06%	-6.50%

B. N+:N-

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	N/A	2:1	53:53	64:79	139:178	328:466<<	1439:1818<<<	9116:11350<<<
(+1,+30)		1:2	42:64(	46:97<<<	122:195<<	306:488<<<	1346:1911<<<	8736:11730<<<
(+1,+60)		2:1	41:65<	47:96<<<	126:191<<	287:507<<<	1223:2034<<<	8505:11961<<<
(+1,+90)		3:0>	33:73<<<	41:102<<<	104:213<<<	268:526<<<	1132:2125<<<	8212:12254<<<

C. Number of Firms

	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
	N/A	3	68	109	191	393	917	1,580

Positive Past Stock Returns

A. Mean Cumulative Abnormal Return

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	-0.88%	-1.56%	-2.61%	-3.37%	-5.00%	-5.41%	-5.10%	-11.61%
(+1,+30)	-2.29%	-3.81%	-5.67%	-7.23%	-10.11%	-8.15%	-4.84%	-29.48%
(+1,+60)	-4.11%	-6.85%	-9.99%	-12.19%	-16.62%	-18.15%	-15.74%	-14.57%
(+1,+90)	-6.28%	-10.61%	-15.31%	-21.27%	-23.43%	-23.82%	-7.40%	-10.34%

B. N+:N-

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	15095:19203<<<	4236:6031<<<	1130:1741<<<	384:579<<<	133:237<<<	142:279<<<	17:22	1:4
(+1,+30)	14444:19854<<<	4161:6106<<<	1117:1754<<<	389:574<<<	133:237<<<	161:260<<<	18:21	0:5<
(+1,+60)	14044:20254<<<	3945:6322<<<	1062:1809<<<	380:583<<<	130:240<<<	164:257<<	17:22	1:4
(+1,+90)	13610:20688<<<	3810:6457<<<	1040:1831<<<	318:645<<<	120:250<<<	153:268<<<	19:20	1:4

C. Number of Firms

	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
	1,647	1,362	861	466	231	214	30	5

1. This table accompanies Figure 2-F.

2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

3. The insider stock sale sample is comprised of 591,104 firm-day observations based on 10,860 publicly traded firms from 1996 to 2013.

4. We divide the sample into ten groups based on firm size (i.e., market capitalization): firm size group one (smallest firms) with market capitalization less than or equal to $38,902,500 (10th percentile of the insider stock purchase and sale sample), firm size group two with market capitalization between $38,902,500 and $89,657,373 (10th-20th percentile), firm size group three with market capitalization between $89,657,373 and $170,049,877 (20th-30th percentile), firm size group four with market capitalization between $170,049,877 and $295,258,718 (30th-40th percentile), firm size group five with market capitalization between $295,258,718 and $486,289,242 (40th-50th percentile), firm size group six with market capitalization between $486,289,242 and $782,310,000 (50th-60th percentile), firm size group seven with market capitalization between $782,310,000 and $1,330,502,093 (60th-70th percentile), firm size group eight with market capitalization between $1,330,502,093 and $2,582,572,886 (70th-80th percentile), firm size group nine with market capitalization between $2,582,572,886 and $7,305,133,020 (80th-90th percentile), and firm size group ten (largest firms) with market capitalization greater than $7,305,133,020 (90th percentile).

5. We further divide each firm size group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock sales traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

6. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

7. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock sales, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

8. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.

Appendix 2-F: Event Study Results with Insider Sale (10 Firm Size Groups) (Table 2-F) (cont.)

Insider Stock Sale (Firm Size Group Ten, Largest Firms)

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Negative Past Stock Returns

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	N/A	5.83%	1.57%	-3.87%	-3.43%	-2.90%	-1.20%	-0.51%
(+1,+30)		-25.16%	-12.48%	-12.22%	-12.78%	-8.81%	-3.46%	-1.79%
(+1,+60)		-55.98%	-19.98%	-19.99%	-20.17%	-12.34%	-5.96%	-3.45%
(+1,+90)		5.48%	-23.08%	-30.05%	-31.76%	-20.50%	-10.25%	-5.25%

B. N+:N-

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	N/A	1:1	39:32)	34:45	96:118	273:381<<	1364:1685<<<	9838:11557<<<
(+1,+30)		1:1	27:44(	32:47	80:134<<	238:416<<<	1346:1703<<<	9398:11997<<<
(+1,+60)		0:2(	30:41	32:47	71:143<<<	221:433<<<	1279:1770<<<	9149:12246<<<
(+1,+90)		1:1	29:42	25:54<<	55:159<<<	205:449<<<	1196:1853<<<	8871:12524<<<

C. Number of Firms

	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
	N/A	2	34	51	107	233	555	831

Positive Past Stock Returns

A. Mean Cumulative Abnormal Return

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	-0.69%	-1.44%	-2.62%	-4.66%	-3.19%	-4.41%	2.04%	N/A
(+1,+30)	-1.75%	-3.16%	-5.86%	-8.71%	-8.40%	-10.48%	-2.68%	
(+1,+60)	-3.23%	-5.58%	-9.61%	-13.40%	-14.62%	-25.88%	-16.47%	
(+1,+90)	-4.78%	-8.48%	-14.90%	-21.74%	-21.80%	-35.37%	-8.01%	

B. N+:N-

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	17142:21289<<<	3865:5514<<<	818:1316<<<	223:422<<<	112:156<	69:136<<<	7:6	N/A
(+1,+30)	16553:21878<<<	3849:5530<<<	795:1339<<<	227:418<<<	98:170<<<	71:134<<<	4:9	
(+1,+60)	15962:22469<<<	3765:5614<<<	780:1354<<<	227:418<<<	104:164<<	53:152<<<	4:9	
(+1,+90)	15541:22890<<<	3638:5741<<<	747:1387<<<	207:438<<<	82:186<<<	53:152<<<	5:8	

C. Number of Firms

	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
	878	758	483	249	144	97	9	N/A

1. This table accompanies Figure 2-F.

2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

3. The insider stock sale sample is comprised of 591,104 firm-day observations based on 10,860 publicly traded firms from 1996 to 2013.

4. We divide the sample into ten groups based on firm size (i.e., market capitalization): firm size group one (smallest firms) with market capitalization less than or equal to $38,902,500 (10th percentile of the insider stock purchase and sale sample), firm size group two with market capitalization between $38,902,500 and $89,657,373 (10th-20th percentile), firm size group three with market capitalization between $89,657,373 and $170,049,877 (20th-30th percentile), firm size group four with market capitalization between $170,049,877 and $295,258,718 (30th-40th percentile), firm size group five with market capitalization between $295,258,718 and $486,289,242 (40th-50th percentile), firm size group six with market capitalization between $486,289,242 and $782,310,000 (50th-60th percentile), firm size group seven with market capitalization between $782,310,000 and $1,330,502,093 (60th-70th percentile), firm size group eight with market capitalization between $1,330,502,093 and $2,582,572,886 (70th-80th percentile), firm size group nine with market capitalization between $2,582,572,886 and $7,305,133,020 (80th-90th percentile), and firm size group ten (largest firms) with market capitalization greater than $7,305,133,020 (90th percentile).

5. We further divide each firm size group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock sales traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

6. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

7. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock sales, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

8. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.

Appendix 2-G: Event Study Results with Insider Purchase (Stock Volatility) (Table 2-G)

Insider Stock Purchase (High Stock Volatility Firms)

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Negative Past Stock Returns

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	24.34%	15.51%	10.58%	6.66%	6.18%	4.60%	3.35%	2.70%
(+1,+30)	35.16%	23.73%	17.40%	11.63%	10.54%	8.34%	6.80%	5.25%
(+1,+60)	59.19%	32.80%	22.88%	14.94%	15.03%	11.41%	9.71%	7.75%
(+1,+90)	60.63%	36.34%	26.36%	17.38%	17.79%	14.43%	12.28%	10.02%

B. N+:N-

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	42:14>>>	320:163>>>	2762:1369>>>	1741:976>>>	2876:1694>>>	5006:3260>>>	8476:6047>>>	12136:9499>>>
(+1,+30)	42:14>>>	341:142>>>	2779:1352>>>	1741:976>>>	2925:1645>>>	5068:3198>>>	8613:5910>>>	12453:9182>>>
(+1,+60)	43:13>>>	335:148>>>	2747:1384>>>	1715:1002>>>	2887:1683>>>	4993:3273>>>	8661:5862>>>	12474:9161>>>
(+1,+90)	41:15>>>	307:176>>>	2695:1436>>>	1706:1011>>>	2787:1783>>>	4946:3320>>>	8618:5905>>>	12548:9087>>>

C. Number of Firms

RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
49	358	2,301	1,903	2,724	3,788	4,911	5,565

Positive Past Stock Returns

A. Mean Cumulative Abnormal Return

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	2.38%	2.51%	2.60%	3.04%	2.37%	2.71%	1.62%	4.29%
(+1,+30)	4.96%	5.03%	5.74%	6.94%	7.09%	7.40%	7.54%	13.43%
(+1,+60)	8.08%	8.70%	8.81%	11.30%	12.08%	14.97%	17.46%	23.06%
(+1,+90)	10.66%	11.76%	12.53%	15.19%	16.10%	22.17%	28.71%	45.14%

B. N+:N-

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	12384:10436>>>	6453:5580>>>	3604:3135>>>	2071:1832>>>	1164:1088>>>	2070:1982>>>	307:333	90:88
(+1,+30)	12934:9886>>>	6723:5310>>>	3800:2939>>>	2164:1739>>>	1254:998>>>	2252:1800>>>	345:295>>>	109:69>>>
(+1,+60)	13257:9563>>>	6963:5070>>>	3865:2874>>>	2277:1626>>>	1317:935>>>	2457:1595>>>	396:244>>>	121:57>>>
(+1,+90)	13314:9506>>>	7057:4976>>>	3918:2821>>>	2325:1578>>>	1354:898>>>	2528:1524>>>	405:235>>>	128:50>>>

C. Number of Firms

0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
5,655	4,316	3,194	2,223	1,526	1,946	421	121

1. This table accompanies Figure 2-5.

2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

3. The insider stock purchase sample is comprised of 261,128 firm-day observations based on 11,047 publicly traded firms from 1996 to 2013.

4. We divide the insider stock purchase sample into three groups based on stock volatility of the firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: low stock volatility firms with stock volatility less than or equal to 0.01983 (33.33th percentile of the insider stock purchase and sale sample), medium stock volatility firms with stock volatility between 0.01983 and 0.03460 (33.33th percentile to 66.66th percentile), and high stock volatility firms with stock volatility greater than 0.03460 (66.66th percentile).

5. We further divide each stock volatility group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock purchases traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

6. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

7. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock purchases, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

8. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.

Appendix 2-G: Event Study Results with Insider Purchase (Stock Volatility) (Table 2-G) (cont.)

Insider Stock Purchase (Medium Stock Volatility Firms)

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Negative Past Stock Returns

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	N/A	8.07%	3.00%	5.54%	3.68%	2.44%	1.67%	1.11%
(+1,+30)		5.40%	3.13%	6.53%	4.19%	3.32%	2.27%	1.61%
(+1,+60)		14.68%	1.39%	6.59%	3.11%	2.80%	2.02%	2.10%
(+1,+90)		19.13%	0.82%	4.11%	2.49%	2.26%	2.00%	2.24%

B. N+:N-

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	N/A	6:4	135:89>>>	286:115>>>	737:427>>>	2062:1399>>>	5969:4259>>>	13979:11323>>>
(+1,+30)		6:4	122:102>	263:138>>>	692:472>>>	2058:1403>>>	5782:4446>>>	13720:11582>>>
(+1,+60)		9:1>>	125:99>>	249:152>>>	664:500>>>	1977:1484>>>	5515:4713>>>	13654:11648>>>
(+1,+90)		9:1>>	117:107)	213:188>	654:510>>>	1911:1550>>>	5474:4754>>>	13623:11679>>>

C. Number of Firms

	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
	N/A	10	215	373	935	2,199	4,060	5,665

Positive Past Stock Returns

A. Mean Cumulative Abnormal Return

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	1.05%	1.25%	0.96%	1.66%	2.17%	-1.28%	1.13%	N/A
(+1,+30)	1.60%	1.96%	2.09%	2.02%	4.22%	0.57%	-1.95%	
(+1,+60)	2.02%	2.27%	2.43%	2.11%	4.79%	0.60%	-2.14%	
(+1,+90)	2.33%	2.50%	2.59%	1.61%	9.10%	3.78%	-0.71%	

B. N+:N-

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	13336:11474>>>	4053:3565>>>	1153:1112>>	285:252>>	77:66)	30:34	6:1>	N/A
(+1,+30)	13374:11436>>>	4103:3515>>>	1188:1077>>>	274:263)	81:62>	30:34	4:3	
(+1,+60)	13327:11483>>>	4089:3529>>>	1218:1047>>>	290:247>>	83:60>>	30:34	4:3	
(+1,+90)	13230:11580>>>	4044:3574>>>	1205:1060>>>	276:261>	88:55>>>	31:33	3:4	

C. Number of Firms

	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
	5,567	3,413	1,515	448	135	62	7	N/A

1. This table accompanies Figure 2-5.

2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

3. The insider stock purchase sample is comprised of 261,128 firm-day observations based on 11,047 publicly traded firms from 1996 to 2013.

4. We divide the insider stock purchase sample into three groups based on stock volatility of the firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: low stock volatility firms with stock volatility less than or equal to 0.01983 (33.33th percentile of the insider stock purchase and sale sample), medium stock volatility firms with stock volatility between 0.01983 and 0.03460 (33.33th percentile to 66.66th percentile), and high stock volatility firms with stock volatility greater than 0.03460 (66.66th percentile).

5. We further divide each stock volatility group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock purchases traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

6. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

7. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock purchases, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

8. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.

Appendix 2-G: Event Study Results with Insider Purchase (Stock Volatility) (Table 2-G) (cont.)

Insider Stock Purchase (Low Stock Volatility Firms)

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Negative Past Stock Returns

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	N/A	-27.75%	-5.97%	5.54%	4.51%	2.19%	0.99%	0.42%
(+1,+30)		-1.96%	-1.46%	8.47%	6.27%	1.80%	1.27%	0.63%
(+1,+60)		7.90%	9.20%	7.16%	5.61%	1.79%	0.94%	0.68%
(+1,+90)		7.49%	9.14%	5.97%	5.32%	1.44%	0.95%	0.58%

B. N+:N-

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	N/A	0:3(	7:16(	17:9>	86:31>>>	369:214>>>	2618:1916>>>	17238:15151>>>
(+1,+30)		2:1	14:9)	17:9>	89:28>>>	354:229>>>	2546:1988>>>	16870:15519>>>
(+1,+60)		2:1	15:8>	14:12	78:39>>>	344:239>>>	2407:2127>>>	16865:15524>>>
(+1,+90)		2:1	15:8>	15:11	76:41>>>	336:247>>>	2402:2132>>>	16737:15652>>>

C. Number of Firms

	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
	N/A	3	24	26	114	399	2,271	4,835

Positive Past Stock Returns

A. Mean Cumulative Abnormal Return

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	0.42%	0.54%	0.56%	1.31%	-1.00%	4.85%	-6.29%	N/A
(+1,+30)	0.55%	0.72%	3.01%	2.82%	-0.31%	2.39%	-9.56%	
(+1,+60)	0.60%	0.74%	2.96%	4.97%	0.71%	-2.75%	-13.88%	
(+1,+90)	0.51%	1.00%	2.99%	2.15%	1.75%	-4.10%	-12.44%	

B. N+:N-

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	17436:16809>>>	1692:1543>>>	184:148>>	20:24	5:7	7:5	2:2	N/A
(+1,+30)	17501:16744>>>	1657:1578>>>	188:144>>>	25:19)	7:5	8:4)	2:2	
(+1,+60)	17492:16753>>>	1590:1645)	181:151>>	24:20	7:5	5:7	1:3	
(+1,+90)	17524:16721>>>	1617:1618>>	174:158>	21:23	8:4)	6:6	2:2	

C. Number of Firms

	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
	4,886	1,759	274	44	12	12	4	N/A

1. This table accompanies Figure 2-5.

2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

3. The insider stock purchase sample is comprised of 261,128 firm-day observations based on 11,047 publicly traded firms from 1996 to 2013.

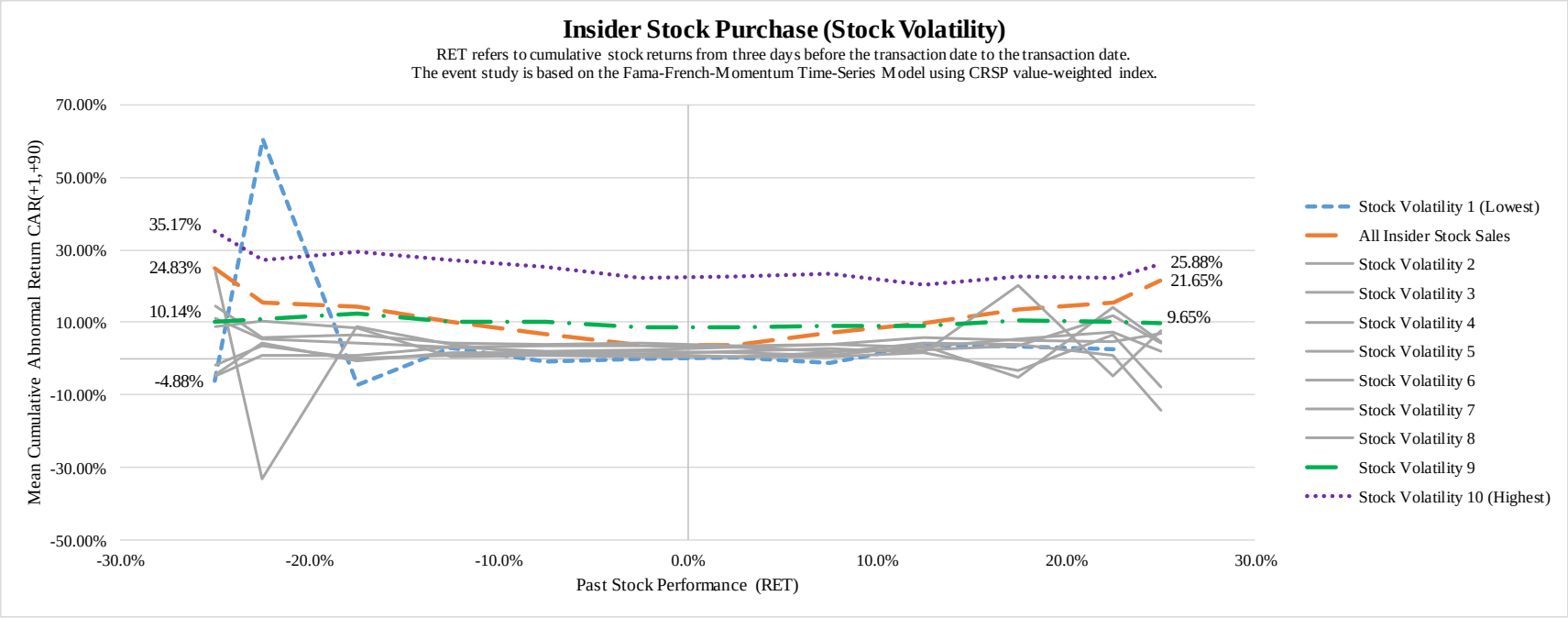
4. We divide the insider stock purchase sample into three groups based on stock volatility of the firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: low stock volatility firms with stock volatility less than or equal to 0.01983 (33.33th percentile of the insider stock purchase and sale sample), medium stock volatility firms with stock volatility between 0.01983 and 0.03460 (33.33th percentile to 66.66th percentile), and high stock volatility firms with stock volatility greater than 0.03460 (66.66th percentile).

5. We further divide each stock volatility group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock purchases traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

6. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

7. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock purchases, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

8. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.



Appendix 2-H: Event Study Results with Insider Purchase (10 Stock Volatility Groups) (Figure 2-H)

1. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

2. The insider stock purchase sample is comprised of 261,128 firm-day observations based on 11,047 publicly traded firms from 1996 to 2013.

3. We divide the insider stock purchase sample into ten groups based on stock volatility of the firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: stock volatility group one (smallest stock volatility) with stock volatility less than or equal to 0.01200 (10th percentile of the insider stock purchase and sale sample), stock volatility group two with stock volatility between 0.01200 and 0.01549 (10th-20th percentile), stock volatility group three with stock volatility between 0.01549 and 0.01873 (20th-30th percentile), stock volatility group four with stock volatility between 0.01873 and 0.02213 (30th-40th percentile), stock volatility group five with stock volatility between 0.02213 and 0.02602 (40th-50th percentile), stock volatility group six with stock volatility between 0.02602 and 0.03074 (50th-60th percentile), stock volatility group seven with stock volatility between 0.03074 and 0.03687 (60th-70th percentile), stock volatility group eight with stock volatility between 0.03687 and 0.04566 (70th-80th percentile), stock volatility group nine with stock volatility between 0.04566 and 0.06190 (80th-90th percentile), and stock volatility group ten (highest stock volatility) with stock volatility greater than 0.06190 (90th percentile).

4. We further divide each stock volatility group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock purchases traded at different levels of past stock performance: RET $\leq$ -75%, RET $\leq$ -50%, RET $\leq$ -25%, -25% < RET $\leq$ -20%, -20% < RET $\leq$ -15%, -15% < RET $\leq$ -10%, -10% < RET $\leq$ -5%, -5% < RET $\leq$ 0%, 0% < RET $\leq$ 5%, 5% < RET $\leq$ 10%, 10% < RET $\leq$ 15%, 15% < RET $\leq$ 20%, 20% < RET $\leq$ 25%, 25% < RET, 50% < RET and 75% < RET.

5. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

6. Mean cumulative abnormal return (+1, +90) refers to 90-day cumulative abnormal return of insider stock purchases. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

Appendix 2-H: Event Study Results with Insider Purchase (10 Stock Volatility Groups) (Table 2-H)

Insider Stock Purchase (Stock Volatility Group One, Lowest Stock Volatility Firms)

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Negative Past Stock Returns

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	N/A	N/A	-9.48%	12.46%	1.27%	3.47%	0.43%	0.21%
(+1,+30)			-9.18%	30.72%	0.85%	3.75%	0.57%	0.11%
(+1,+60)			-8.21%	52.14%	-0.28%	2.64%	-0.59%	0.10%
(+1,+90)			-5.95%	60.54%	-7.13%	3.04%	-0.69%	0.03%

B. N+:N-

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	N/A	N/A	1:4	1:1	2:1	21:12>	320:262>>	5914:5423>>>
(+1,+30)			1:4	2:0)	1:2	23:10>>	309:273>	5687:5650>>>
(+1,+60)			2:3	2:0)	2:1	22:11>	278:304	5798:5539>>>
(+1,+90)			2:3	2:0)	1:2	22:11>	293:289	5784:5553>>>

C. Number of Firms

	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
	N/A	N/A	5	2	3	33	442	2,477

Positive Past Stock Returns

A. Mean Cumulative Abnormal Return

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	0.32%	0.90%	-0.90%	-5.04%	1.98%	N/A	N/A	N/A
(+1,+30)	0.50%	0.50%	2.65%	2.95%	0.31%			
(+1,+60)	0.37%	-0.91%	0.54%	4.11%	2.02%			
(+1,+90)	0.32%	-1.37%	3.64%	3.44%	2.65%			

B. N+:N-

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	6746:6580>>>	208:209	9:17	1:2	1:0	N/A	N/A	N/A
(+1,+30)	6787:6539>>>	201:216	15:11	2:1	1:0			
(+1,+60)	6742:6584>>>	186:231	16:10)	1:2	1:0			
(+1,+90)	6759:6567>>>	190:227	16:10)	1:2	1:0			

C. Number of Firms

	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
	2,649	330	26	3	1	N/A	N/A	N/A

1. This table accompanies Figure 2-H.

2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

3. The insider stock purchase sample is comprised of 261,128 firm-day observations based on 11,047 publicly traded firms from 1996 to 2013.

4. We divide the insider stock purchase sample into ten groups based on stock volatility of the firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: stock volatility group one (smallest stock volatility) with stock volatility less than or equal to 0.01200 (10th percentile of the insider stock purchase and sale sample), stock volatility group two with stock volatility between 0.01200 and 0.01549 (10th-20th percentile), stock volatility group three with stock volatility between 0.01549 and 0.01873 (20th-30th percentile), stock volatility group four with stock volatility between 0.01873 and 0.02213 (30th-40th percentile), stock volatility group five with stock volatility between 0.02213 and 0.02602 (40th-50th percentile), stock volatility group six with stock volatility between 0.02602 and 0.03074 (50th-60th percentile), stock volatility group seven with stock volatility between 0.03074 and 0.03687 (60th-70th percentile), stock volatility group eight with stock volatility between 0.03687 and 0.04566 (70th-80th percentile), stock volatility group nine with stock volatility between 0.04566 and 0.06190 (80th-90th percentile), and stock volatility group ten (highest stock volatility) with stock volatility greater than 0.06190 (90th percentile).

5. We further divide each stock volatility group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock purchases traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

6. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

7. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock purchases, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

8. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.

Appendix 2-H: Event Study Results with Insider Purchase (10 Stock Volatility Groups) (Table 2-H) (cont.)

Insider Stock Purchase (Stock Volatility Group Two)

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Negative Past Stock Returns

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	N/A	-14.85%	5.69%	-11.85%	1.83%	2.39%	1.14%	0.46%
(+1,+30)		0.28%	13.38%	4.69%	7.83%	2.26%	1.26%	0.66%
(+1,+60)		39.81%	32.38%	-2.66%	7.53%	2.21%	0.90%	0.70%
(+1,+90)		5.80%	23.83%	-33.09%	8.87%	3.87%	1.00%	0.63%

B. N+:N-

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	N/A	0:1	3:2	0:2(	15:7>	72:39>>>	770:535>>>	5132:4322>>>
(+1,+30)		1:0	5:0>>	1:1	17:5>>	68:43>>	748:557>>>	5005:4449>>>
(+1,+60)		1:0	4:1)	0:2(	17:5>>	64:47>	701:604>>>	4922:4532>>>
(+1,+90)		1:0	5:0>>	0:2(	17:5>>	67:44>>	703:602>>>	4861:4593>>>

C. Number of Firms

	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
	N/A	1	6	2	22	108	924	2,784

Positive Past Stock Returns

A. Mean Cumulative Abnormal Return

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	0.49%	0.60%	0.34%	1.78%	-4.34%	8.59%	0.53%	N/A
(+1,+30)	0.55%	0.48%	2.12%	10.03%	-3.28%	12.51%	5.39%	
(+1,+60)	0.56%	0.63%	0.93%	16.53%	-5.08%	7.82%	-0.97%	
(+1,+90)	0.46%	0.36%	1.66%	20.10%	-4.66%	7.64%	7.07%	

B. N+:N-

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	4918:4718>>>	476:454>	36:31	3:2	1:1	2:1	1:0	N/A
(+1,+30)	4958:4678>>>	470:460)	33:34	4:1)	1:1	3:0>	1:0	
(+1,+60)	4913:4723>>>	450:480	26:41(	4:1)	1:1	2:1	0:1	
(+1,+90)	4932:4704>>>	444:486	27:40	3:2	1:1	3:0>	1:0	

C. Number of Firms

	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
	2,816	667	62	5	2	3	1	N/A

1. This table accompanies Figure 2-H.

2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

3. The insider stock purchase sample is comprised of 261,128 firm-day observations based on 11,047 publicly traded firms from 1996 to 2013.

4. We divide the insider stock purchase sample into ten groups based on stock volatility of the firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: stock volatility group one (smallest stock volatility) with stock volatility less than or equal to 0.01200 (10th percentile of the insider stock purchase and sale sample), stock volatility group two with stock volatility between 0.01200 and 0.01549 (10th-20th percentile), stock volatility group three with stock volatility between 0.01549 and 0.01873 (20th-30th percentile), stock volatility group four with stock volatility between 0.01873 and 0.02213 (30th-40th percentile), stock volatility group five with stock volatility between 0.02213 and 0.02602 (40th-50th percentile), stock volatility group six with stock volatility between 0.02602 and 0.03074 (50th-60th percentile), stock volatility group seven with stock volatility between 0.03074 and 0.03687 (60th-70th percentile), stock volatility group eight with stock volatility between 0.03687 and 0.04566 (70th-80th percentile), stock volatility group nine with stock volatility between 0.04566 and 0.06190 (80th-90th percentile), and stock volatility group ten (highest stock volatility) with stock volatility greater than 0.06190 (90th percentile).

5. We further divide each stock volatility group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock purchases traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

6. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

7. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock purchases, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

8. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.

Appendix 2-H: Event Study Results with Insider Purchase (10 Stock Volatility Groups) (Table 2-H) (cont.)

Insider Stock Purchase (Stock Volatility Group Three)

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Negative Past Stock Returns

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	N/A	-34.21%	-11.43%	6.26%	6.21%	1.82%	1.08%	0.55%
(+1,+30)		-3.09%	-4.62%	8.66%	7.68%	1.68%	1.44%	1.00%
(+1,+60)		-8.05%	5.16%	5.89%	6.31%	1.88%	1.29%	1.25%
(+1,+90)		8.34%	8.90%	10.27%	8.47%	0.44%	0.88%	1.16%

B. N+:N-

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	N/A	0:2(	2:9<	11:5)	43:13>>>	180:108>>>	1081:787>>>	4723:4129>>>
(+1,+30)		1:1	7:4	9:7	44:12>>>	171:117>>>	1058:810>>>	4721:4131>>>
(+1,+60)		1:1	7:4	7:9	38:18>>	177:111>>>	1001:867>>>	4702:4150>>>
(+1,+90)		1:1	7:4	10:6	38:18>>	166:122>>>	970:898>>>	4672:4180>>>

C. Number of Firms

	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
	N/A	2	11	16	55	268	1,241	2,976

Positive Past Stock Returns

A. Mean Cumulative Abnormal Return

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	0.45%	0.31%	0.35%	2.47%	2.40%	-1.77%	-0.96%	N/A
(+1,+30)	0.53%	0.67%	4.43%	4.61%	0.68%	-6.81%	-2.43%	
(+1,+60)	0.77%	0.87%	4.38%	7.74%	5.22%	-10.02%	-2.43%	
(+1,+90)	0.68%	1.83%	4.44%	3.82%	1.02%	-14.16%	-2.43%	

B. N+:N-

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	4342:4218>>>	712:645>>>	76:67	13:11	2:3	3:3	1:1	N/A
(+1,+30)	4347:4213>>>	692:665>	82:61>	14:10	3:2	3:3	1:1	
(+1,+60)	4424:4136>>>	676:681)	82:61>	15:9)	3:2	2:4	1:1	
(+1,+90)	4424:4136>>>	708:649>>>	82:61>	13:11	3:2	2:4	1:1	

C. Number of Firms

	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
	2,915	932	128	24	5	6	2	N/A

1. This table accompanies Figure 2-H.

2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

3. The insider stock purchase sample is comprised of 261,128 firm-day observations based on 11,047 publicly traded firms from 1996 to 2013.

4. We divide the insider stock purchase sample into ten groups based on stock volatility of the firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: stock volatility group one (smallest stock volatility) with stock volatility less than or equal to 0.01200 (10th percentile of the insider stock purchase and sale sample), stock volatility group two with stock volatility between 0.01200 and 0.01549 (10th-20th percentile), stock volatility group three with stock volatility between 0.01549 and 0.01873 (20th-30th percentile), stock volatility group four with stock volatility between 0.01873 and 0.02213 (30th-40th percentile), stock volatility group five with stock volatility between 0.02213 and 0.02602 (40th-50th percentile), stock volatility group six with stock volatility between 0.02602 and 0.03074 (50th-60th percentile), stock volatility group seven with stock volatility between 0.03074 and 0.03687 (60th-70th percentile), stock volatility group eight with stock volatility between 0.03687 and 0.04566 (70th-80th percentile), stock volatility group nine with stock volatility between 0.04566 and 0.06190 (80th-90th percentile), and stock volatility group ten (highest stock volatility) with stock volatility greater than 0.06190 (90th percentile).

5. We further divide each stock volatility group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock purchases traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

6. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

7. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock purchases, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

8. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.

Appendix 2-H: Event Study Results with Insider Purchase (10 Stock Volatility Groups) (Table 2-H) (cont.)

Insider Stock Purchase (Stock Volatility Group Four)

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Negative Past Stock Returns

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	N/A	6.70%	4.35%	8.46%	2.24%	2.58%	1.31%	0.79%
(+1,+30)		1.38%	-0.84%	5.76%	3.48%	3.04%	1.78%	1.22%
(+1,+60)		4.54%	-1.03%	6.40%	2.45%	2.77%	1.45%	1.33%
(+1,+90)		14.14%	-1.94%	3.65%	-0.02%	0.73%	1.46%	1.13%

B. N+:N-

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	N/A	1:2	10:9	24:5>>>	68:44>>	316:190>>>	1374:989>>>	4366:3687>>>
(+1,+30)		2:1	9:10	22:7>>	70:42>>	321:185>>>	1346:1017>>>	4307:3746>>>
(+1,+60)		3:0>	10:9	23:6>>>	64:48>	296:210>>>	1294:1069>>>	4265:3788>>>
(+1,+90)		3:0>	10:9	17:12	61:51)	274:232>>	1287:1076>>>	4241:3812>>>

C. Number of Firms

	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
	N/A	3	19	30	108	446	1,526	3,058

Positive Past Stock Returns

A. Mean Cumulative Abnormal Return

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	0.74%	0.76%	1.12%	1.72%	-2.62%	7.10%	-23.78%	N/A
(+1,+30)	1.35%	1.52%	1.75%	0.38%	1.69%	5.36%	-38.79%	
(+1,+60)	2.04%	2.24%	2.64%	-1.67%	4.16%	-0.87%	-49.68%	
(+1,+90)	2.08%	2.70%	1.69%	-3.42%	6.49%	-7.72%	-51.98%	

B. N+:N-

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	4271:3793>>>	941:830>>>	212:151>>>	27:22	2:6	6:2)	0:1	N/A
(+1,+30)	4313:3751>>>	936:835>>>	201:162>>	24:25	5:3	4:4	0:1	
(+1,+60)	4348:3716>>>	942:829>>>	195:168>	23:26	5:3	3:5	0:1	
(+1,+90)	4237:3827>>>	944:827>>>	195:168>	24:25	6:2)	3:5	0:1	

C. Number of Firms

	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
	3,017	1,206	305	46	8	8	1	N/A

1. This table accompanies Figure 2-H.

2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

3. The insider stock purchase sample is comprised of 261,128 firm-day observations based on 11,047 publicly traded firms from 1996 to 2013.

4. We divide the insider stock purchase sample into ten groups based on stock volatility of the firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: stock volatility group one (smallest stock volatility) with stock volatility less than or equal to 0.01200 (10th percentile of the insider stock purchase and sale sample), stock volatility group two with stock volatility between 0.01200 and 0.01549 (10th-20th percentile), stock volatility group three with stock volatility between 0.01549 and 0.01873 (20th-30th percentile), stock volatility group four with stock volatility between 0.01873 and 0.02213 (30th-40th percentile), stock volatility group five with stock volatility between 0.02213 and 0.02602 (40th-50th percentile), stock volatility group six with stock volatility between 0.02602 and 0.03074 (50th-60th percentile), stock volatility group seven with stock volatility between 0.03074 and 0.03687 (60th-70th percentile), stock volatility group eight with stock volatility between 0.03687 and 0.04566 (70th-80th percentile), stock volatility group nine with stock volatility between 0.04566 and 0.06190 (80th-90th percentile), and stock volatility group ten (highest stock volatility) with stock volatility greater than 0.06190 (90th percentile).

5. We further divide each stock volatility group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock purchases traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

6. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

7. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock purchases, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

8. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.

Appendix 2-H: Event Study Results with Insider Purchase (10 Stock Volatility Groups) (Table 2-H) (cont.)

Insider Stock Purchase (Stock Volatility Group Five)

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Negative Past Stock Returns

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	N/A	N/A	-5.81%	4.46%	2.31%	2.10%	1.30%	0.88%
(+1,+30)			-4.96%	6.78%	3.63%	2.07%	1.55%	1.27%
(+1,+60)			-4.34%	5.55%	0.37%	1.20%	1.10%	1.65%
(+1,+90)			-4.33%	4.27%	-0.45%	1.49%	1.58%	2.02%

B. N+:N-

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	N/A	N/A	12:14	38:16>>>	129:90>>>	521:374>>>	1659:1202>>>	4181:3526>>>
(+1,+30)			9:17(	38:16>>>	140:79>>>	512:383>>>	1594:1267>>>	4078:3629>>>
(+1,+60)			11:15	31:23)	121:98>	483:412>>>	1500:1361>>>	4080:3627>>>
(+1,+90)			11:15	27:27	117:102)	486:409>>>	1512:1349>>>	4127:3580>>>

C. Number of Firms

	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
	N/A	N/A	26	55	201	729	1,773	3,137

Positive Past Stock Returns

A. Mean Cumulative Abnormal Return

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	0.84%	0.91%	0.27%	0.13%	0.96%	0.29%	-1.34%	N/A
(+1,+30)	1.34%	1.34%	1.51%	-2.36%	2.28%	2.32%	-1.38%	
(+1,+60)	1.64%	0.83%	2.56%	-3.57%	10.59%	3.12%	-0.72%	
(+1,+90)	1.79%	0.94%	3.52%	-5.01%	14.06%	4.58%	6.99%	

B. N+:N-

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	3926:3509>>>	1024:999>>	269:281	43:61	11:8	6:5	3:1	N/A
(+1,+30)	3950:3485>>>	1078:945>>>	279:271)	44:60	10:9	6:5	3:1	
(+1,+60)	3890:3545>>>	1034:989>>	303:247>>>	49:55	16:3>>>	7:4	3:1	
(+1,+90)	3900:3535>>>	1024:999>>	291:259>>	46:58	15:4>>	6:5	3:1	

C. Number of Firms

	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
	2,996	1,362	449	90	22	11	4	N/A

1. This table accompanies Figure 2-H.

2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

3. The insider stock purchase sample is comprised of 261,128 firm-day observations based on 11,047 publicly traded firms from 1996 to 2013.

4. We divide the insider stock purchase sample into ten groups based on stock volatility of the firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: stock volatility group one (smallest stock volatility) with stock volatility less than or equal to 0.01200 (10th percentile of the insider stock purchase and sale sample), stock volatility group two with stock volatility between 0.01200 and 0.01549 (10th-20th percentile), stock volatility group three with stock volatility between 0.01549 and 0.01873 (20th-30th percentile), stock volatility group four with stock volatility between 0.01873 and 0.02213 (30th-40th percentile), stock volatility group five with stock volatility between 0.02213 and 0.02602 (40th-50th percentile), stock volatility group six with stock volatility between 0.02602 and 0.03074 (50th-60th percentile), stock volatility group seven with stock volatility between 0.03074 and 0.03687 (60th-70th percentile), stock volatility group eight with stock volatility between 0.03687 and 0.04566 (70th-80th percentile), stock volatility group nine with stock volatility between 0.04566 and 0.06190 (80th-90th percentile), and stock volatility group ten (highest stock volatility) with stock volatility greater than 0.06190 (90th percentile).

5. We further divide each stock volatility group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock purchases traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

6. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

7. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock purchases, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

8. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.

Appendix 2-H: Event Study Results with Insider Purchase (10 Stock Volatility Groups) (Table 2-H) (cont.)

Insider Stock Purchase (Stock Volatility Group Six)

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Negative Past Stock Returns

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	N/A	-1.53%	3.47%	4.82%	4.05%	2.33%	1.79%	1.23%
(+1,+30)		-17.77%	0.54%	6.00%	3.69%	4.17%	2.58%	1.72%
(+1,+60)		19.34%	-1.69%	5.25%	2.31%	3.99%	2.07%	2.28%
(+1,+90)		23.97%	-4.88%	0.77%	0.97%	2.98%	1.94%	2.34%

B. N+:N-

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	N/A	1:1	48:30>>	109:47>>>	275:160>>>	699:502>>>	1914:1382>>>	4093:3328>>>
(+1,+30)		0:2(	42:36	101:55>>>	244:191>>>	732:469>>>	1845:1451>>>	4060:3361>>>
(+1,+60)		2:0)	42:36	94:62>>>	235:200>>	709:492>>>	1744:1552>>>	4042:3379>>>
(+1,+90)		2:0)	35:43	76:80	238:197>>	668:533>>>	1732:1564>>>	4014:3407>>>

C. Number of Firms

	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
	N/A	2	76	151	390	948	2,033	3,070

Positive Past Stock Returns

A. Mean Cumulative Abnormal Return

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	1.12%	1.70%	1.30%	1.43%	0.74%	0.68%	3.52%	N/A
(+1,+30)	1.82%	2.70%	2.51%	3.05%	4.04%	1.87%	-3.07%	
(+1,+60)	2.41%	3.19%	2.36%	4.72%	2.42%	3.50%	1.26%	
(+1,+90)	3.00%	4.03%	3.00%	5.55%	7.18%	2.11%	-8.06%	

B. N+:N-

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	3890:3294>>>	1379:1106>>>	385:375)	111:87>>	23:22	8:7	2:0)	N/A
(+1,+30)	3866:3318>>>	1358:1127>>>	407:353>>>	108:90>	27:18>	7:8	1:1	
(+1,+60)	3848:3336>>>	1377:1108>>>	406:354>>>	115:83>>	23:22	7:8	1:1	
(+1,+90)	3866:3318>>>	1366:1119>>>	408:352>>>	111:87>>	26:19)	5:10	0:2	

C. Number of Firms

	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
	3,017	1,600	617	180	43	16	2	N/A

1. This table accompanies Figure 2-H.

2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

3. The insider stock purchase sample is comprised of 261,128 firm-day observations based on 11,047 publicly traded firms from 1996 to 2013.

4. We divide the insider stock purchase sample into ten groups based on stock volatility of the firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: stock volatility group one (smallest stock volatility) with stock volatility less than or equal to 0.01200 (10th percentile of the insider stock purchase and sale sample), stock volatility group two with stock volatility between 0.01200 and 0.01549 (10th-20th percentile), stock volatility group three with stock volatility between 0.01549 and 0.01873 (20th-30th percentile), stock volatility group four with stock volatility between 0.01873 and 0.02213 (30th-40th percentile), stock volatility group five with stock volatility between 0.02213 and 0.02602 (40th-50th percentile), stock volatility group six with stock volatility between 0.02602 and 0.03074 (50th-60th percentile), stock volatility group seven with stock volatility between 0.03074 and 0.03687 (60th-70th percentile), stock volatility group eight with stock volatility between 0.03687 and 0.04566 (70th-80th percentile), stock volatility group nine with stock volatility between 0.04566 and 0.06190 (80th-90th percentile), and stock volatility group ten (highest stock volatility) with stock volatility greater than 0.06190 (90th percentile).

5. We further divide each stock volatility group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock purchases traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

6. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

7. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock purchases, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

8. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.

Appendix 2-H: Event Study Results with Insider Purchase (10 Stock Volatility Groups) (Table 2-H) (cont.)

Insider Stock Purchase (Stock Volatility Group Seven)

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Negative Past Stock Returns

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	N/A	8.57%	5.47%	5.50%	4.21%	2.78%	2.03%	1.68%
(+1,+30)		13.94%	7.88%	5.81%	4.54%	3.10%	3.14%	2.64%
(+1,+60)		30.28%	8.91%	6.40%	4.42%	3.15%	3.58%	3.23%
(+1,+90)		24.79%	10.97%	5.32%	4.36%	3.03%	3.67%	3.40%

B. N+:N-

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	N/A	6:4	116:62>>>	184:79>>>	456:233>>>	955:619>>>	2227:1540>>>	4157:3147>>>
(+1,+30)		8:2>	111:67>>>	159:104>>>	413:276>>>	914:660>>>	2178:1589>>>	4104:3200>>>
(+1,+60)		8:2>	115:63>>>	155:108>>>	402:287>>>	892:682>>>	2122:1645>>>	4026:3278>>>
(+1,+90)		7:3)	112:66>>>	141:122>	379:310>>>	876:698>>>	2108:1659>>>	3964:3340>>>

C. Number of Firms

	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
	N/A	10	170	248	610	1,204	2,219	3,158

Positive Past Stock Returns

A. Mean Cumulative Abnormal Return

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	1.64%	1.36%	1.22%	2.69%	3.29%	-2.37%	4.99%	N/A
(+1,+30)	2.28%	1.94%	2.45%	3.54%	5.30%	-1.06%	-3.38%	
(+1,+60)	2.91%	2.35%	2.85%	4.07%	5.43%	-1.56%	-2.93%	
(+1,+90)	3.27%	2.14%	2.43%	3.42%	11.80%	4.31%	-3.55%	

B. N+:N-

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	4042:3289>>>	1535:1347>>>	585:532>>>	189:161>	71:52>	25:41(	2:1	N/A
(+1,+30)	4092:3239>>>	1587:1295>>>	594:523>>>	188:162>	72:51>>	28:38	0:3(	
(+1,+60)	4120:3211>>>	1542:1340>>>	601:516>>>	195:155>>	70:53>	30:36	2:1	
(+1,+90)	4071:3260>>>	1526:1356>>>	591:526>>>	190:160>>	76:47>>	34:32	1:2	

C. Number of Firms

	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
	3,116	1,761	858	303	114	65	3	N/A

1. This table accompanies Figure 2-H.

2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

3. The insider stock purchase sample is comprised of 261,128 firm-day observations based on 11,047 publicly traded firms from 1996 to 2013.

4. We divide the insider stock purchase sample into ten groups based on stock volatility of the firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: stock volatility group one (smallest stock volatility) with stock volatility less than or equal to 0.01200 (10th percentile of the insider stock purchase and sale sample), stock volatility group two with stock volatility between 0.01200 and 0.01549 (10th-20th percentile), stock volatility group three with stock volatility between 0.01549 and 0.01873 (20th-30th percentile), stock volatility group four with stock volatility between 0.01873 and 0.02213 (30th-40th percentile), stock volatility group five with stock volatility between 0.02213 and 0.02602 (40th-50th percentile), stock volatility group six with stock volatility between 0.02602 and 0.03074 (50th-60th percentile), stock volatility group seven with stock volatility between 0.03074 and 0.03687 (60th-70th percentile), stock volatility group eight with stock volatility between 0.03687 and 0.04566 (70th-80th percentile), stock volatility group nine with stock volatility between 0.04566 and 0.06190 (80th-90th percentile), and stock volatility group ten (highest stock volatility) with stock volatility greater than 0.06190 (90th percentile).

5. We further divide each stock volatility group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock purchases traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

6. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

7. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock purchases, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

8. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.

Appendix 2-H: Event Study Results with Insider Purchase (10 Stock Volatility Groups) (Table 2-H) (cont.)

Insider Stock Purchase (Stock Volatility Group Eight)

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Negative Past Stock Returns

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	1.31%	17.07%	7.45%	4.30%	3.35%	2.98%	2.25%	1.76%
(+1,+30)	34.55%	17.90%	10.59%	6.76%	4.69%	3.35%	3.38%	3.10%
(+1,+60)	62.50%	19.21%	13.44%	5.54%	5.93%	3.93%	3.56%	3.55%
(+1,+90)	43.10%	5.27%	14.65%	5.83%	6.43%	4.19%	4.06%	4.11%

B. N+:N-

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	1:0	9:2>>	299:147>>>	321:198>>>	586:386>>>	1214:835>>>	2470:1850>>>	3909:3215>>>
(+1,+30)	1:0	7:4	288:158>>>	306:213>>>	567:405>>>	1140:909>>>	2395:1925>>>	3960:3164>>>
(+1,+60)	1:0	7:4	283:163>>>	298:221>>>	547:425>>>	1107:942>>>	2364:1956>>>	3921:3203>>>
(+1,+90)	1:0	6:5	274:172>>>	285:234>>>	532:440>>>	1092:957>>>	2361:1959>>>	3899:3225>>>

C. Number of Firms

	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
	1	11	387	469	806	1,460	2,380	3,036

Positive Past Stock Returns

A. Mean Cumulative Abnormal Return

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	1.37%	1.52%	1.78%	2.19%	1.87%	1.72%	-5.12%	8.18%
(+1,+30)	2.50%	2.12%	3.01%	4.22%	3.88%	5.31%	4.72%	14.98%
(+1,+60)	3.14%	2.82%	4.01%	3.46%	3.78%	5.49%	1.38%	0.86%
(+1,+90)	3.69%	4.05%	5.68%	5.11%	4.57%	6.90%	-8.73%	-15.73%

B. N+:N-

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	3723:3328>>>	1784:1575>>>	817:682>>>	391:340>>>	171:134>>	101:100	1:4	1:1
(+1,+30)	3794:3257>>>	1758:1601>>>	806:693>>>	392:339>>>	167:138>>	113:88>>	2:3	1:1
(+1,+60)	3815:3236>>>	1793:1566>>>	817:682>>>	381:350>>	163:142>	110:91>	3:2	1:1
(+1,+90)	3796:3255>>>	1822:1537>>>	820:679>>>	386:345>>	172:133>>>	114:87>>	3:2	1:1

C. Number of Firms

	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
	2,962	1,950	1,112	574	273	176	5	2

1. This table accompanies Figure 2-H.

2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

3. The insider stock purchase sample is comprised of 261,128 firm-day observations based on 11,047 publicly traded firms from 1996 to 2013.

4. We divide the insider stock purchase sample into ten groups based on stock volatility of the firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: stock volatility group one (smallest stock volatility) with stock volatility less than or equal to 0.01200 (10th percentile of the insider stock purchase and sale sample), stock volatility group two with stock volatility between 0.01200 and 0.01549 (10th-20th percentile), stock volatility group three with stock volatility between 0.01549 and 0.01873 (20th-30th percentile), stock volatility group four with stock volatility between 0.01873 and 0.02213 (30th-40th percentile), stock volatility group five with stock volatility between 0.02213 and 0.02602 (40th-50th percentile), stock volatility group six with stock volatility between 0.02602 and 0.03074 (50th-60th percentile), stock volatility group seven with stock volatility between 0.03074 and 0.03687 (60th-70th percentile), stock volatility group eight with stock volatility between 0.03687 and 0.04566 (70th-80th percentile), stock volatility group nine with stock volatility between 0.04566 and 0.06190 (80th-90th percentile), and stock volatility group ten (highest stock volatility) with stock volatility greater than 0.06190 (90th percentile).

5. We further divide each stock volatility group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock purchases traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

6. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

7. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock purchases, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

8. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.

Appendix 2-H: Event Study Results with Insider Purchase (10 Stock Volatility Groups) (Table 2-H) (cont.)

Insider Stock Purchase (Stock Volatility Group Nine)

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Negative Past Stock Returns

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	40.98%	0.57%	7.31%	5.74%	5.40%	4.29%	3.27%	2.48%
(+1,+30)	83.31%	10.45%	9.96%	8.68%	8.20%	7.14%	5.89%	4.70%
(+1,+60)	82.67%	8.08%	11.62%	11.06%	10.38%	8.27%	8.64%	6.97%
(+1,+90)	51.16%	6.64%	10.14%	11.03%	12.38%	10.09%	10.04%	8.61%

B. N+:N-

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	1:0	15:12	672:359>>>	524:291>>>	873:531>>>	1595:1018>>>	2735:1890>>>	3692:2864>>>
(+1,+30)	1:0	19:8>	649:382>>>	509:306>>>	879:525>>>	1575:1038>>>	2744:1881>>>	3775:2781>>>
(+1,+60)	1:0	16:11	644:387>>>	501:314>>>	871:533>>>	1541:1072>>>	2756:1869>>>	3740:2816>>>
(+1,+90)	1:0	16:11	614:417>>>	496:319>>>	820:584>>>	1528:1085>>>	2692:1933>>>	3804:2752>>>

C. Number of Firms

	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
	1	25	789	688	1,090	1,682	2,487	2,922

Positive Past Stock Returns

A. Mean Cumulative Abnormal Return

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	1.89%	2.17%	2.10%	2.25%	2.88%	1.60%	-3.90%	-18.34%
(+1,+30)	3.69%	4.19%	4.56%	4.93%	3.73%	4.20%	5.92%	2.37%
(+1,+60)	6.29%	7.36%	6.62%	8.13%	5.58%	7.88%	12.52%	-30.19%
(+1,+90)	8.68%	9.14%	8.91%	10.63%	10.12%	9.65%	20.40%	-35.90%

B. N+:N-

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	3748:3270>>>	2017:1759>>>	1096:988>>>	586:556>>	362:297>>>	316:326	8:9	0:2
(+1,+30)	3887:3131>>>	2100:1676>>>	1180:904>>>	608:534>>>	355:304>>>	359:283>>>	7:10	1:1
(+1,+60)	3992:3026>>>	2181:1595>>>	1187:897>>>	648:494>>>	351:308>>>	380:262>>>	10:7	0:2
(+1,+90)	4026:2992>>>	2153:1623>>>	1167:917>>>	658:484>>>	359:300>>>	368:274>>>	10:7	0:2

C. Number of Firms

	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
	3,028	2,104	1,400	861	561	504	17	2

1. This table accompanies Figure 2-H.

2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

3. The insider stock purchase sample is comprised of 261,128 firm-day observations based on 11,047 publicly traded firms from 1996 to 2013.

4. We divide the insider stock purchase sample into ten groups based on stock volatility of the firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: stock volatility group one (smallest stock volatility) with stock volatility less than or equal to 0.01200 (10th percentile of the insider stock purchase and sale sample), stock volatility group two with stock volatility between 0.01200 and 0.01549 (10th-20th percentile), stock volatility group three with stock volatility between 0.01549 and 0.01873 (20th-30th percentile), stock volatility group four with stock volatility between 0.01873 and 0.02213 (30th-40th percentile), stock volatility group five with stock volatility between 0.02213 and 0.02602 (40th-50th percentile), stock volatility group six with stock volatility between 0.02602 and 0.03074 (50th-60th percentile), stock volatility group seven with stock volatility between 0.03074 and 0.03687 (60th-70th percentile), stock volatility group eight with stock volatility between 0.03687 and 0.04566 (70th-80th percentile), stock volatility group nine with stock volatility between 0.04566 and 0.06190 (80th-90th percentile), and stock volatility group ten (highest stock volatility) with stock volatility greater than 0.06190 (90th percentile).

5. We further divide each stock volatility group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock purchases traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

6. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

7. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock purchases, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

8. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.

Appendix 2-H: Event Study Results with Insider Purchase (10 Stock Volatility Groups) (Table 2-H) (cont.)

Insider Stock Purchase (Stock Volatility Group Ten, Highest Stock Volatility Firms)

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Negative Past Stock Returns

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	24.46%	16.51%	12.54%	8.37%	8.45%	6.31%	4.97%	4.59%
(+1,+30)	34.28%	24.84%	21.82%	16.04%	16.08%	13.76%	12.16%	9.72%
(+1,+60)	58.69%	34.56%	29.30%	22.01%	24.61%	20.49%	18.72%	16.14%
(+1,+90)	61.13%	39.02%	35.17%	27.13%	29.50%	27.07%	25.21%	22.27%

B. N+:N-

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	40:14>>>	294:146>>>	1741:838>>>	832:456>>>	1252:687>>>	1864:1176>>>	2513:1785>>>	3186:2332>>>
(+1,+30)	40:14>>>	311:129>>>	1794:785>>>	874:414>>>	1331:608>>>	2024:1016>>>	2724:1574>>>	3346:2172>>>
(+1,+60)	41:13>>>	308:132>>>	1769:810>>>	867:421>>>	1332:607>>>	2023:1017>>>	2823:1475>>>	3497:2021>>>
(+1,+90)	39:15>>>	282:158>>>	1757:822>>>	880:408>>>	1314:625>>>	2014:1026>>>	2836:1462>>>	3542:1976>>>

C. Number of Firms

	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
	47	329	1,558	999	1,369	1,817	2,244	2,479

Positive Past Stock Returns

A. Mean Cumulative Abnormal Return

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	4.25%	3.96%	3.62%	3.88%	2.19%	3.04%	1.82%	4.51%
(+1,+30)	9.74%	9.16%	8.60%	9.48%	9.71%	8.28%	7.65%	13.54%
(+1,+60)	16.67%	16.82%	13.92%	16.74%	17.77%	17.18%	17.78%	23.92%
(+1,+90)	22.57%	23.31%	20.47%	22.65%	22.11%	25.88%	29.33%	46.78%

B. N+:N-

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	3550:2720>>>	2122:1764>>>	1456:1271>>>	1012:866>>>	602:638	1640:1536>>>	297:319	89:85
(+1,+30)	3815:2455>>>	2303:1583>>>	1579:1148>>>	1079:799>>>	701:539>>>	1767:1409>>>	336:280>>>	107:67>>>
(+1,+60)	3984:2286>>>	2461:1425>>>	1631:1096>>>	1160:718>>>	774:466>>>	1951:1225>>>	381:235>>>	120:54>>>
(+1,+90)	4057:2213>>>	2541:1345>>>	1700:1027>>>	1190:688>>>	791:449>>>	2030:1146>>>	391:225>>>	127:47>>>

C. Number of Firms

	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
	2,576	1,976	1,614	1,223	887	1,542	405	119

1. This table accompanies Figure 2-H.

2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

3. The insider stock purchase sample is comprised of 261,128 firm-day observations based on 11,047 publicly traded firms from 1996 to 2013.

4. We divide the insider stock purchase sample into ten groups based on stock volatility of the firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: stock volatility group one (smallest stock volatility) with stock volatility less than or equal to 0.01200 (10th percentile of the insider stock purchase and sale sample), stock volatility group two with stock volatility between 0.01200 and 0.01549 (10th-20th percentile), stock volatility group three with stock volatility between 0.01549 and 0.01873 (20th-30th percentile), stock volatility group four with stock volatility between 0.01873 and 0.02213 (30th-40th percentile), stock volatility group five with stock volatility between 0.02213 and 0.02602 (40th-50th percentile), stock volatility group six with stock volatility between 0.02602 and 0.03074 (50th-60th percentile), stock volatility group seven with stock volatility between 0.03074 and 0.03687 (60th-70th percentile), stock volatility group eight with stock volatility between 0.03687 and 0.04566 (70th-80th percentile), stock volatility group nine with stock volatility between 0.04566 and 0.06190 (80th-90th percentile), and stock volatility group ten (highest stock volatility) with stock volatility greater than 0.06190 (90th percentile).

5. We further divide each stock volatility group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock purchases traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

6. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

7. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock purchases, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

8. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.

Appendix 2-I: Event Study Results with Insider Sale (Stock Volatility) (Table 2-I)

Insider Stock Sale (High Stock Volatility Firms)

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Negative Past Stock Returns

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	5.69%	6.06%	1.83%	-0.14%	-1.26%	-1.54%	-1.76%	-1.73%
(+1,+30)	16.98%	7.76%	1.89%	-3.26%	-4.84%	-4.73%	-5.13%	-4.88%
(+1,+60)	32.39%	14.39%	1.48%	-5.47%	-9.37%	-9.25%	-9.76%	-9.35%
(+1,+90)	39.12%	14.89%	-1.46%	-10.98%	-14.83%	-14.94%	-15.42%	-13.89%

B. N+:N-

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	22:32	144:113>>>	1294:1202>>>	1028:1072>>	1936:2210	4054:4692	8444:10519<<<	15143:20296<<<
(+1,+30)	24:30	134:123>	1188:1308)	965:1135	1829:2317<<	3740:5006<<<	8004:10959<<<	14705:20734<<<
(+1,+60)	28:26	155:102>>>	1227:1269>>	930:1170<	1734:2412<<<	3584:5162<<<	7610:11353<<<	14028:21411<<<
(+1,+90)	25:29	137:120>	1178:1318	920:1180<	1682:2464<<<	3470:5276<<<	7192:11771<<<	13573:21866<<<

C. Number of Firms

RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
40	183	1,197	1,225	1,979	3,189	4,736	5,971

Positive Past Stock Returns

A. Mean Cumulative Abnormal Return

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	-1.90%	-2.50%	-2.85%	-3.06%	-2.78%	-3.71%	-8.87%	-14.02%
(+1,+30)	-4.87%	-6.15%	-6.62%	-6.78%	-6.63%	-5.79%	-10.67%	-16.73%
(+1,+60)	-8.95%	-10.90%	-12.09%	-12.75%	-12.39%	-11.76%	-12.46%	-16.47%
(+1,+90)	-13.56%	-16.95%	-18.80%	-19.51%	-18.84%	-16.97%	-14.87%	-19.52%

B. N+:N-

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	17496:24188<<<	10624:16090<<<	5863:9375<<<	3274:5012<<<	1762:2696<<<	2662:4104<<<	390:764<<<	122:302<<<
(+1,+30)	17027:24657<<<	10428:16286<<<	5850:9388<<<	3253:5033<<<	1746:2712<<<	2820:3946<<<	438:716<<<	139:285<<<
(+1,+60)	16401:25283<<<	9914:16800<<<	5574:9664<<<	3058:5228<<<	1700:2758<<<	2613:4153<<<	449:705<<<	153:271<<<
(+1,+90)	15885:25799<<<	9577:17137<<<	5267:9971<<<	2872:5414<<<	1611:2847<<<	2534:4232<<<	435:719<<<	148:276<<<

C. Number of Firms

0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
6,264	5,268	4,251	3,203	2,236	2,549	654	276

1. This table accompanies Figure 2-6.

2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

3. The insider stock sale sample is comprised of 591,104 firm-day observations based on 10,860 publicly traded firms from 1996 to 2013.

4. We divide the insider stock purchase sample into three groups based on stock volatility of the firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: low stock volatility firms with stock volatility less than or equal to 0.01983 (33.33th percentile of the insider stock purchase and sale sample), medium stock volatility firms with stock volatility between 0.01983 and 0.03460 (33.33th percentile to 66.66th percentile), and high stock volatility firms with stock volatility greater than 0.03460 (66.66th percentile).

5. We further divide each stock volatility group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock sales traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

6. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

7. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock sales, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

8. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.

Appendix 2-I: Event Study Results with Insider Sale (Stock Volatility) (Table 2-I) (cont.)

Insider Stock Sale (Medium Stock Volatility Firms)

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Negative Past Stock Returns

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	-11.60%	-11.14%	-1.76%	0.51%	0.19%	-0.36%	-0.77%	-0.82%
(+1,+30)	-13.90%	-18.56%	-3.44%	-1.67%	-1.49%	-2.69%	-2.80%	-2.48%
(+1,+60)	-8.47%	7.85%	-4.47%	-3.68%	-2.83%	-5.89%	-5.46%	-4.88%
(+1,+90)	-8.36%	10.15%	-11.57%	-4.96%	-5.60%	-9.21%	-8.40%	-7.19%

B. N+:N-

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	0:2(	0:9<<	38:39	76:84	343:347	1572:1642>	7395:8338	26790:32767<<<
(+1,+30)	0:2(	2:7(	34:43	76:84	324:366	1439:1775<<	6853:8880<<<	25728:33829<<<
(+1,+60)	0:2(	5:4	35:42	68:92	329:361	1358:1856<<<	6523:9210<<<	24686:34871<<<
(+1,+90)	1:1	6:3	34:43	64:96<	302:388<	1269:1945<<<	6202:9531<<<	24051:35506<<<

C. Number of Firms

RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
2	9	74	145	566	1,888	4,439	6,520

Positive Past Stock Returns

A. Mean Cumulative Abnormal Return

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	-0.98%	-1.32%	-1.55%	-1.13%	-1.48%	-1.64%	-5.27%	-10.82%
(+1,+30)	-2.63%	-3.30%	-3.68%	-2.47%	-2.72%	-2.57%	-7.95%	-13.52%
(+1,+60)	-4.94%	-5.78%	-6.37%	-4.39%	-5.75%	-5.50%	-14.95%	-37.47%
(+1,+90)	-7.15%	-8.53%	-9.32%	-7.83%	-7.24%	-9.74%	-17.00%	-43.13%

B. N+:N-

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	34717:45401<<<	14068:19894<<<	4022:5927<<<	1094:1447<<<	227:318<<	117:172<	13:18	1:5(
(+1,+30)	33664:46454<<<	13661:20301<<<	4014:5935<<<	1064:1477<<<	226:319<<	115:174<<	11:20	2:4
(+1,+60)	32706:47412<<<	13552:20410<<<	3886:6063<<<	1075:1466<<<	224:321<<	115:174<<	10:21(	1:5(
(+1,+90)	32002:48116<<<	13239:20723<<<	3760:6189<<<	1041:1500<<<	223:322<<	119:170<	12:19	1:5(

C. Number of Firms

0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
6,691	5,290	3,539	1,615	465	266	30	6

1. This table accompanies Figure 2-6.

2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

3. The insider stock sale sample is comprised of 591,104 firm-day observations based on 10,860 publicly traded firms from 1996 to 2013.

4. We divide the insider stock purchase sample into three groups based on stock volatility of the firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: low stock volatility firms with stock volatility less than or equal to 0.01983 (33.33th percentile of the insider stock purchase and sale sample), medium stock volatility firms with stock volatility between 0.01983 and 0.03460 (33.33th percentile to 66.66th percentile), and high stock volatility firms with stock volatility greater than 0.03460 (66.66th percentile).

5. We further divide each stock volatility group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock sales traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

6. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

7. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock sales, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

8. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.

Appendix 2-I: Event Study Results with Insider Sale (Stock Volatility) (Table 2-I) (cont.)

Insider Stock Sale (Low Stock Volatility Firms)

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Negative Past Stock Returns

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	N/A	N/A	-4.18%	4.51%	-0.78%	-0.40%	-0.37%	-0.37%
(+1,+30)			-36.96%	1.66%	-2.09%	-1.89%	-1.22%	-1.06%
(+1,+60)			-9.97%	8.10%	-7.95%	-5.48%	-2.71%	-1.92%
(+1,+90)			-18.10%	4.91%	-15.30%	-7.09%	-3.80%	-2.70%

B. N+:N-

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	N/A	N/A	2:2	5:5	24:20	190:194	2792:3067	32682:38020<<<
(+1,+30)			2:2	5:5	23:21	187:197	2682:3177<<<	31808:38894<<<
(+1,+60)			3:1	7:3)	18:26	148:236<<<	2618:3241<<<	31459:39243<<<
(+1,+90)			2:2	5:5	15:29<	159:225<<	2586:3273<<<	31262:39440<<<

C. Number of Firms

RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
N/A	N/A	4	10	43	326	2,561	5,855

Positive Past Stock Returns

A. Mean Cumulative Abnormal Return

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	-0.41%	-0.54%	-0.83%	-0.44%	-0.57%	0.75%	-1.90%	-5.11%
(+1,+30)	-1.07%	-1.41%	-1.59%	0.09%	-0.77%	0.68%	-5.37%	-16.00%
(+1,+60)	-2.01%	-2.57%	-2.67%	-0.69%	0.48%	-1.25%	-7.28%	-26.80%
(+1,+90)	-2.81%	-3.79%	-4.39%	-3.40%	-3.22%	-0.14%	0.20%	-19.31%

B. N+:N-

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	50854:61955<<<	7306:9148<<<	664:858<<<	86:118(	31:35	27:30	1:5(	0:2(
(+1,+30)	49758:63051<<<	7185:9269<<<	630:892<<<	89:115	29:37	33:24)	2:4	0:2(
(+1,+60)	48881:63928<<<	7052:9402<<<	651:871<<<	102:102	33:33	26:31	2:4	0:2(
(+1,+90)	48615:64194<<<	6913:9541<<<	634:888<<<	99:105	34:32	26:31	3:3	0:2(

C. Number of Firms

0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
6,177	3,726	1,047	185	63	56	6	2

1. This table accompanies Figure 2-6.

2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

3. The insider stock sale sample is comprised of 591,104 firm-day observations based on 10,860 publicly traded firms from 1996 to 2013.

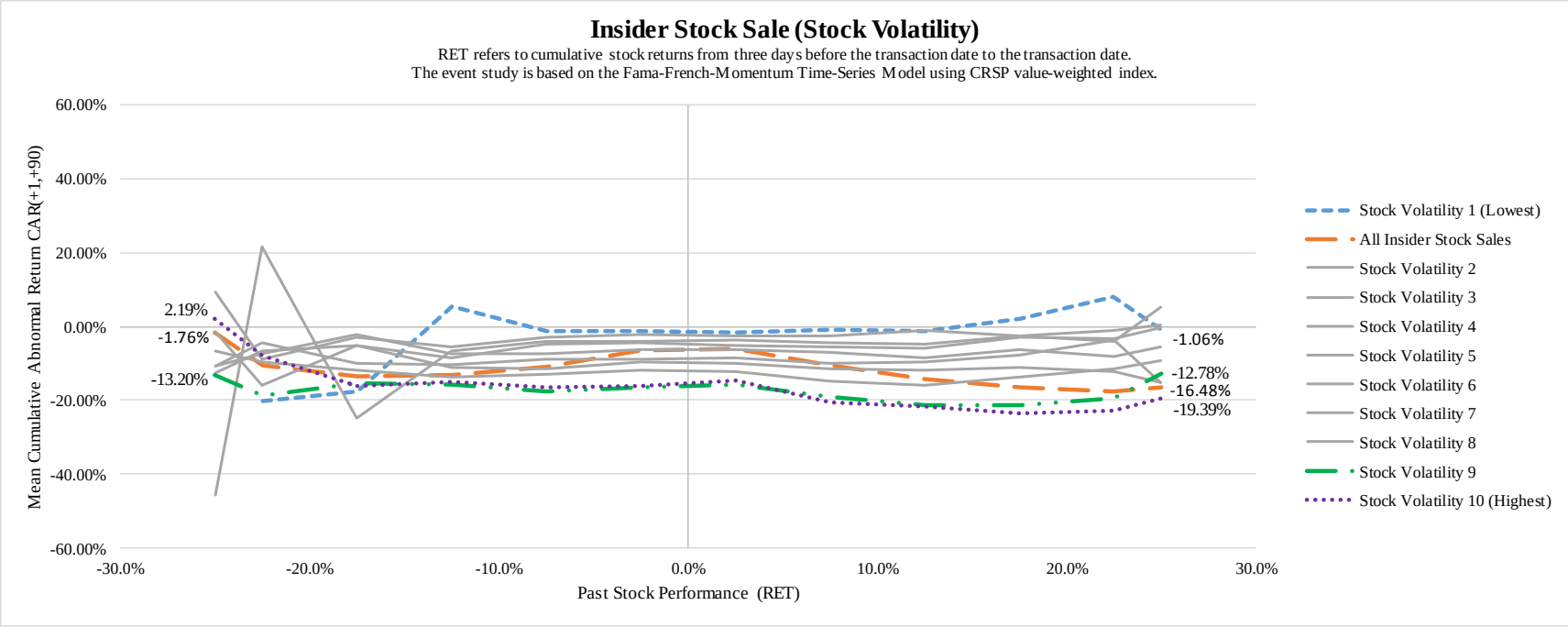
4. We divide the insider stock purchase sample into three groups based on stock volatility of the firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: low stock volatility firms with stock volatility less than or equal to 0.01983 (33.33th percentile of the insider stock purchase and sale sample), medium stock volatility firms with stock volatility between 0.01983 and 0.03460 (33.33th percentile to 66.66th percentile), and high stock volatility firms with stock volatility greater than 0.03460 (66.66th percentile).

5. We further divide each stock volatility group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock sales traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

6. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

7. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock sales, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

8. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.



Appendix 2-J: Event Study Results with Insider Sale (10 Stock Volatility Groups) (Figure 2-J)

1. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

2. The insider stock sale sample is comprised of 591,104 firm-day observations based on 10,860 publicly traded firms from 1996 to 2013.

3. We divide the insider stock sale sample into ten groups based on stock volatility of the firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: stock volatility group one (smallest stock volatility) with stock volatility less than or equal to 0.01200 (10 percentile of the insider stock purchase and sale sample), stock volatility group two with stock volatility between 0.01200 and 0.01549 (10-20 percentile), stock volatility group three with stock volatility between 0.01549 and 0.01873 (20-30 percentile), stock volatility group four with stock volatility between 0.01873 and 0.02213 (30-40 percentile), stock volatility group five with stock volatility between 0.02213 and 0.02602 (40-50 percentile), stock volatility group six with stock volatility between 0.02602 and 0.03074 (50-60 percentile), stock volatility group seven with stock volatility between 0.03074 and 0.03687 (60-70 percentile), stock volatility group eight with stock volatility between 0.03687 and 0.04566 (70-80 percentile), stock volatility group nine with stock volatility between 0.04566 and 0.06190 (80-90 percentile), and stock volatility group ten (highest stock volatility) with stock volatility greater than 0.06190 (90 percentile).

4. We further divide each stock volatility group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock sales traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

5. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

6. Mean cumulative abnormal return (+1, +90) refers to a 90-day cumulative abnormal return of insider stock sales. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

Appendix 2-J: Event Study Results with Insider Sale (10 Stock Volatility Groups) (Table 2-J)

Insider Stock Sale (Stock Volatility Group One, Lowest Stock Volatility Firms)

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Negative Past Stock Returns

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	N/A	N/A	N/A	2.42%	2.52%	4.04%	0.28%	-0.21%
(+1,+30)				2.74%	-0.69%	7.21%	-0.04%	-0.65%
(+1,+60)				-18.69%	-17.92%	7.64%	-0.81%	-1.04%
(+1,+90)				-20.36%	-17.73%	5.43%	-1.14%	-1.35%

B. N+:N-

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	N/A	N/A	N/A	1:0	2:0)	4:0>	260:233>	9768:11362<<<
(+1,+30)				1:0	1:1	4:0>	241:252	9643:11487<<<
(+1,+60)				0:1	0:2(	3:1	232:261	9701:11429<<<
(+1,+90)				0:1	0:2(	3:1	237:256	9624:11506<<<

C. Number of Firms

	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
	N/A	N/A	N/A	1	2	4	377	3,245

Positive Past Stock Returns

A. Mean Cumulative Abnormal Return

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	-0.23%	0.03%	-1.33%	0.90%	3.13%	1.43%	N/A	N/A
(+1,+30)	-0.67%	-0.27%	-0.78%	1.26%	3.26%	2.60%		
(+1,+60)	-1.26%	-0.55%	-0.84%	2.33%	3.16%	4.52%		
(+1,+90)	-1.74%	-1.03%	-1.36%	2.15%	7.94%	-1.06%		

B. N+:N-

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	16669:19419<<<	781:854	29:52<	8:6	5:0>	3:2	N/A	N/A
(+1,+30)	16275:19813<<<	796:839	36:45	9:5	5:0>	4:1)		
(+1,+60)	15999:20089<<<	775:860	36:45	9:5	4:1)	2:3		
(+1,+90)	15845:20243<<<	746:889<	37:44	8:6	4:1)	2:3		

C. Number of Firms

	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
	3,649	963	77	14	5	5	N/A	N/A

1. This table accompanies Figure 2-J.

2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

3. The insider stock sale sample is comprised of 591,104 firm-day observations based on 10,860 publicly traded firms from 1996 to 2013.

4. We divide the insider stock purchase sample into ten groups based on stock volatility of the firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: stock volatility group one (smallest stock volatility) with stock volatility less than or equal to 0.01200 (10th percentile of the insider stock purchase and sale sample), stock volatility group two with stock volatility between 0.01200 and 0.01549 (10th-20th percentile), stock volatility group three with stock volatility between 0.01549 and 0.01873 (20th-30th percentile), stock volatility group four with stock volatility between 0.01873 and 0.02213 (30th-40th percentile), stock volatility group five with stock volatility between 0.02213 and 0.02602 (40th-50th percentile), stock volatility group six with stock volatility between 0.02602 and 0.03074 (50th-60th percentile), stock volatility group seven with stock volatility between 0.03074 and 0.03687 (60th-70th percentile), stock volatility group eight with stock volatility between 0.03687 and 0.04566 (70th-80th percentile), stock volatility group nine with stock volatility between 0.04566 and 0.06190 (80th-90th percentile), and stock volatility group ten (highest stock volatility) with stock volatility greater than 0.06190 (90th percentile).

5. We further divide each stock volatility group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock sales traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

6. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

7. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock sales, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

8. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.

Appendix 2-J: Event Study Results with Insider Sale (10 Stock Volatility Groups) (Table 2-J) (cont.)

Insider Stock Sale (Stock Volatility Group Two)

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Negative Past Stock Returns

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	N/A	N/A	-0.74%	2.37%	-2.58%	-1.37%	-0.04%	-0.32%
(+1,+30)			10.10%	-0.13%	4.88%	-3.70%	-0.91%	-0.93%
(+1,+60)			26.89%	3.46%	0.50%	-4.15%	-1.80%	-1.66%
(+1,+90)			9.46%	-9.01%	-2.91%	-5.61%	-2.85%	-2.30%

B. N+:N-

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	N/A	N/A	1:1	1:0	5:7	29:33	751:797	10198:11579<<<
(+1,+30)			2:0)	0:1	8:4	23:39<	711:837<	9933:11844<<<
(+1,+60)			2:0)	1:0	6:6	24:38(	708:840<	9794:11983<<<
(+1,+90)			1:1	0:1	6:6	27:35	692:856<<	9771:12006<<<

C. Number of Firms

	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
	N/A	N/A	2	1	12	58	1,009	3,787

Positive Past Stock Returns

A. Mean Cumulative Abnormal Return

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	-0.35%	-0.25%	0.34%	0.47%	1.99%	0.15%	-0.60%	N/A
(+1,+30)	-1.02%	-0.91%	0.02%	2.55%	1.47%	-1.54%	-0.12%	
(+1,+60)	-1.92%	-1.98%	-0.01%	-0.27%	2.09%	-1.94%	-0.12%	
(+1,+90)	-2.61%	-2.77%	-0.95%	-2.67%	-1.17%	0.55%	-0.12%	

B. N+:N-

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	15879:19178<<<	2215:2521<	136:146	22:23	11:12	7:8	0:1	N/A
(+1,+30)	15435:19622<<<	2092:2644<<<	121:161<	21:24	10:13	7:8	0:1	
(+1,+60)	15205:19852<<<	2052:2684<<<	135:147	21:24	12:11	6:9	0:1	
(+1,+90)	15295:19762<<<	2057:2679<<<	131:151	19:26	11:12	7:8	0:1	

C. Number of Firms

	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
	4,128	2,027	256	45	23	15	1	N/A

1. This table accompanies Figure 2-J.

2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

3. The insider stock sale sample is comprised of 591,104 firm-day observations based on 10,860 publicly traded firms from 1996 to 2013.

4. We divide the insider stock purchase sample into ten groups based on stock volatility of the firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: stock volatility group one (smallest stock volatility) with stock volatility less than or equal to 0.01200 (10th percentile of the insider stock purchase and sale sample), stock volatility group two with stock volatility between 0.01200 and 0.01549 (10th-20th percentile), stock volatility group three with stock volatility between 0.01549 and 0.01873 (20th-30th percentile), stock volatility group four with stock volatility between 0.01873 and 0.02213 (30th-40th percentile), stock volatility group five with stock volatility between 0.02213 and 0.02602 (40th-50th percentile), stock volatility group six with stock volatility between 0.02602 and 0.03074 (50th-60th percentile), stock volatility group seven with stock volatility between 0.03074 and 0.03687 (60th-70th percentile), stock volatility group eight with stock volatility between 0.03687 and 0.04566 (70th-80th percentile), stock volatility group nine with stock volatility between 0.04566 and 0.06190 (80th-90th percentile), and stock volatility group ten (highest stock volatility) with stock volatility greater than 0.06190 (90th percentile).

5. We further divide each stock volatility group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock sales traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

6. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

7. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock sales, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

8. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.

Appendix 2-J: Event Study Results with Insider Sale (10 Stock Volatility Groups) (Table 2-J) (cont.)

Insider Stock Sale (Stock Volatility Group Three)

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Negative Past Stock Returns

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	N/A	N/A	-7.62%	12.22%	-1.54%	-0.38%	-0.83%	-0.50%
(+1,+30)			-84.03%	12.57%	-7.51%	-1.87%	-1.52%	-1.44%
(+1,+60)			-46.82%	20.04%	-15.38%	-5.67%	-3.33%	-2.75%
(+1,+90)			-45.66%	21.47%	-24.73%	-6.55%	-4.25%	-3.92%

B. N+:N-

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	N/A	N/A	1:1	3:2	11:7	101:106	1233:1438<	9656:11331<<<
(+1,+30)			0:2(	4:1)	9:9	100:107	1213:1458<<	9278:11709<<<
(+1,+60)			1:1	4:1)	8:10	81:126<<	1178:1493<<<	9071:11916<<<
(+1,+90)			1:1	4:1)	7:11	88:119(	1170:1501<<<	9047:11940<<<

C. Number of Firms

	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
	N/A	N/A	2	5	18	187	1,523	4,143

Positive Past Stock Returns

A. Mean Cumulative Abnormal Return

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	-0.58%	-0.74%	-1.01%	-0.29%	-0.81%	1.21%	-2.15%	-5.11%
(+1,+30)	-1.37%	-1.77%	-1.77%	-0.55%	-2.50%	3.25%	-6.42%	-16.00%
(+1,+60)	-2.55%	-2.91%	-3.12%	0.40%	3.52%	1.22%	-8.71%	-26.80%
(+1,+90)	-3.58%	-4.38%	-4.82%	-2.76%	-4.20%	5.04%	0.26%	-19.31%

B. N+:N-

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	13989:17804<<<	3127:4121<<<	330:432<<	41:56	9:13	12:13	1:4(	0:2(
(+1,+30)	13845:17948<<<	3071:4177<<<	313:449<<<	37:60<	9:13	17:8>	2:3	0:2(
(+1,+60)	13603:18190<<<	3069:4179<<<	315:447<<<	51:46	9:13	12:13	2:3	0:2(
(+1,+90)	13393:18400<<<	2988:4260<<<	316:446<<<	51:46	10:12	13:12	3:2	0:2(

C. Number of Firms

	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
	4,468	2,661	606	94	21	25	5	2

1. This table accompanies Figure 2-J.

2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

3. The insider stock sale sample is comprised of 591,104 firm-day observations based on 10,860 publicly traded firms from 1996 to 2013.

4. We divide the insider stock purchase sample into ten groups based on stock volatility of the firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: stock volatility group one (smallest stock volatility) with stock volatility less than or equal to 0.01200 (10th percentile of the insider stock purchase and sale sample), stock volatility group two with stock volatility between 0.01200 and 0.01549 (10th-20th percentile), stock volatility group three with stock volatility between 0.01549 and 0.01873 (20th-30th percentile), stock volatility group four with stock volatility between 0.01873 and 0.02213 (30th-40th percentile), stock volatility group five with stock volatility between 0.02213 and 0.02602 (40th-50th percentile), stock volatility group six with stock volatility between 0.02602 and 0.03074 (50th-60th percentile), stock volatility group seven with stock volatility between 0.03074 and 0.03687 (60th-70th percentile), stock volatility group eight with stock volatility between 0.03687 and 0.04566 (70th-80th percentile), stock volatility group nine with stock volatility between 0.04566 and 0.06190 (80th-90th percentile), and stock volatility group ten (highest stock volatility) with stock volatility greater than 0.06190 (90th percentile).

5. We further divide each stock volatility group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock sales traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

6. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

7. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock sales, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

8. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.

Appendix 2-J: Event Study Results with Insider Sale (10 Stock Volatility Groups) (Table 2-J) (cont.)

Insider Stock Sale (Stock Volatility Group Four)

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Negative Past Stock Returns

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	N/A	-3.67%	-10.05%	-1.74%	1.89%	-0.24%	-0.38%	-0.58%
(+1,+30)		-7.59%	-6.62%	-8.01%	-0.41%	-1.71%	-1.54%	-1.71%
(+1,+60)		5.23%	-0.82%	-7.53%	-0.82%	-4.70%	-3.19%	-3.03%
(+1,+90)		20.00%	-1.44%	-15.79%	-5.34%	-8.58%	-4.88%	-4.47%

B. N+:N-

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	N/A	0:2(	1:6<	3:7	19:16	194:210	1705:1892	9259:11013<<<
(+1,+30)		1:1	3:4	4:6	19:16	188:216	1613:1984<<<	8806:11466<<<
(+1,+60)		2:0)	4:3	5:5	16:19	164:240<<	1594:2003<<<	8711:11561<<<
(+1,+90)		2:0)	4:3	4:6	15:20	163:241<<	1537:2060<<<	8565:11707<<<

C. Number of Firms

	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
	N/A	2	7	10	33	356	1,915	4,276

Positive Past Stock Returns

A. Mean Cumulative Abnormal Return

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	-0.74%	-0.92%	-1.18%	-1.26%	-2.43%	-0.15%	-5.58%	N/A
(+1,+30)	-1.91%	-2.27%	-2.45%	-1.22%	-2.41%	-0.12%	-3.29%	
(+1,+60)	-3.52%	-3.82%	-4.12%	-1.58%	-2.85%	-1.32%	-3.15%	
(+1,+90)	-5.15%	-5.57%	-5.77%	-2.92%	-3.41%	-0.37%	14.10%	

B. N+:N-

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	12450:15971<<<	3779:5313<<<	623:875<<<	96:129(	19:28	20:15	2:4	N/A
(+1,+30)	12108:16313<<<	3786:5306<<<	619:879<<<	96:129(	19:28	17:18	2:4	
(+1,+60)	11838:16583<<<	3757:5335<<<	614:884<<<	97:128(	24:23	19:16	2:4	
(+1,+90)	11762:16659<<<	3662:5430<<<	600:898<<<	98:127	25:22	18:17	4:2	

C. Number of Firms

	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
	4,603	3,033	1,089	206	47	35	6	N/A

1. This table accompanies Figure 2-J.

2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

3. The insider stock sale sample is comprised of 591,104 firm-day observations based on 10,860 publicly traded firms from 1996 to 2013.

4. We divide the insider stock purchase sample into ten groups based on stock volatility of the firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: stock volatility group one (smallest stock volatility) with stock volatility less than or equal to 0.01200 (10th percentile of the insider stock purchase and sale sample), stock volatility group two with stock volatility between 0.01200 and 0.01549 (10th-20th percentile), stock volatility group three with stock volatility between 0.01549 and 0.01873 (20th-30th percentile), stock volatility group four with stock volatility between 0.01873 and 0.02213 (30th-40th percentile), stock volatility group five with stock volatility between 0.02213 and 0.02602 (40th-50th percentile), stock volatility group six with stock volatility between 0.02602 and 0.03074 (50th-60th percentile), stock volatility group seven with stock volatility between 0.03074 and 0.03687 (60th-70th percentile), stock volatility group eight with stock volatility between 0.03687 and 0.04566 (70th-80th percentile), stock volatility group nine with stock volatility between 0.04566 and 0.06190 (80th-90th percentile), and stock volatility group ten (highest stock volatility) with stock volatility greater than 0.06190 (90th percentile).

5. We further divide each stock volatility group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock sales traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

6. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

7. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock sales, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

8. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.

Appendix 2-J: Event Study Results with Insider Sale (10 Stock Volatility Groups) (Table 2-J) (cont.)

Insider Stock Sale (Stock Volatility Group Five)

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Negative Past Stock Returns

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	-6.39%	-3.84%	1.10%	-1.09%	-0.97%	-0.68%	-0.69%	-0.70%
(+1,+30)	-10.99%	-0.02%	1.87%	-2.49%	-0.14%	-2.65%	-2.75%	-2.24%
(+1,+60)	-0.13%	-1.67%	-0.99%	-0.39%	-0.28%	-5.24%	-5.10%	-4.47%
(+1,+90)	0.09%	8.09%	-10.58%	-7.54%	-2.34%	-7.57%	-7.57%	-6.43%

B. N+:N-

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	0:1	0:2(	12:7)	7:10	65:76	381:421	2070:2373	8363:10221<<<
(+1,+30)	0:1	1:1	10:9	8:9	68:73	336:466<<	1895:2548<<<	7980:10604<<<
(+1,+60)	0:1	0:2(	8:11	7:10	74:67	335:467<<<	1849:2594<<<	7742:10842<<<
(+1,+90)	1:0	2:0)	8:11	6:11	66:75	304:498<<<	1760:2683<<<	7561:11023<<<

C. Number of Firms

	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
	1	2	19	18	132	641	2,190	4,319

Positive Past Stock Returns

A. Mean Cumulative Abnormal Return

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	-0.86%	-1.17%	-1.53%	-0.68%	-2.53%	1.24%	-2.87%	N/A
(+1,+30)	-2.28%	-2.89%	-3.27%	-2.08%	-3.06%	-0.05%	-3.38%	
(+1,+60)	-4.41%	-4.73%	-5.62%	-3.54%	-5.75%	1.72%	-14.99%	
(+1,+90)	-6.25%	-7.05%	-8.51%	-6.22%	-8.29%	-5.46%	-13.04%	

B. N+:N-

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	11319:14551<<<	4278:5840<<<	976:1496<<<	198:259<	27:49<	21:34(	2:2	N/A
(+1,+30)	10979:14891<<<	4147:5971<<<	1008:1464<<<	182:275<<<	30:46(	18:37<	1:3	
(+1,+60)	10675:15195<<<	4152:5966<<<	987:1485<<<	203:254(	29:47(	21:34(	1:3	
(+1,+90)	10441:15429<<<	4121:5997<<<	949:1523<<<	196:261<	30:46(	19:36<	1:3	

C. Number of Firms

	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
	4,624	3,296	1,545	406	75	54	4	N/A

1. This table accompanies Figure 2-J.

2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

3. The insider stock sale sample is comprised of 591,104 firm-day observations based on 10,860 publicly traded firms from 1996 to 2013.

4. We divide the insider stock purchase sample into ten groups based on stock volatility of the firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: stock volatility group one (smallest stock volatility) with stock volatility less than or equal to 0.01200 (10th percentile of the insider stock purchase and sale sample), stock volatility group two with stock volatility between 0.01200 and 0.01549 (10th-20th percentile), stock volatility group three with stock volatility between 0.01549 and 0.01873 (20th-30th percentile), stock volatility group four with stock volatility between 0.01873 and 0.02213 (30th-40th percentile), stock volatility group five with stock volatility between 0.02213 and 0.02602 (40th-50th percentile), stock volatility group six with stock volatility between 0.02602 and 0.03074 (50th-60th percentile), stock volatility group seven with stock volatility between 0.03074 and 0.03687 (60th-70th percentile), stock volatility group eight with stock volatility between 0.03687 and 0.04566 (70th-80th percentile), stock volatility group nine with stock volatility between 0.04566 and 0.06190 (80th-90th percentile), and stock volatility group ten (highest stock volatility) with stock volatility greater than 0.06190 (90th percentile).

5. We further divide each stock volatility group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock sales traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

6. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

7. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock sales, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

8. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.

Appendix 2-J: Event Study Results with Insider Sale (10 Stock Volatility Groups) (Table 2-J) (cont.)

Insider Stock Sale (Stock Volatility Group Six)

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Negative Past Stock Returns

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	N/A	-14.09%	0.70%	0.49%	-0.78%	-0.74%	-0.75%	-0.96%
(+1,+30)		-34.57%	-3.99%	2.14%	-5.91%	-3.21%	-2.83%	-2.83%
(+1,+60)		8.09%	-5.14%	-5.04%	-7.07%	-6.52%	-5.63%	-5.76%
(+1,+90)		18.67%	-10.63%	-4.47%	-10.15%	-10.44%	-8.98%	-8.77%

B. N+:N-

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	N/A	0:1	10:7	25:27	118:136	535:583	2415:2671	7596:9457<<<
(+1,+30)		0:1	9:8	28:24	110:144	506:612	2256:2830<<<	7393:9660<<<
(+1,+60)		1:0	10:7	21:31	115:139	455:663<<<	2076:3010<<<	6835:10218<<<
(+1,+90)		1:0	10:7	23:29	102:152<	439:679<<<	1997:3089<<<	6628:10425<<<

C. Number of Firms

	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
	N/A	1	17	50	229	835	2,494	4,354

Positive Past Stock Returns

A. Mean Cumulative Abnormal Return

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	-1.10%	-1.41%	-1.64%	-1.37%	-0.89%	-3.56%	-9.04%	-10.82%
(+1,+30)	-3.01%	-3.75%	-3.85%	-2.68%	-0.60%	-4.54%	-14.68%	-13.52%
(+1,+60)	-5.69%	-6.91%	-6.72%	-4.08%	-4.56%	-8.94%	-28.83%	-37.47%
(+1,+90)	-8.35%	-9.92%	-9.63%	-7.71%	-3.86%	-15.18%	-36.05%	-43.13%

B. N+:N-

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	9735:12885<<<	4352:6236<<<	1437:2147<<<	400:536<<	77:95	38:75<<	4:9	1:5(
(+1,+30)	9416:13204<<<	4136:6452<<<	1442:2142<<<	393:543<<<	78:94	46:67	4:9	2:4
(+1,+60)	9061:13559<<<	4055:6533<<<	1383:2201<<<	389:547<<<	72:100(	40:73<<	3:10(	1:5(
(+1,+90)	8799:13821<<<	3958:6630<<<	1349:2235<<<	378:558<<<	77:95	44:69(	3:10(	1:5(

C. Number of Firms

	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
	4,672	3,414	2,006	738	163	106	13	6

1. This table accompanies Figure 2-J.

2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

3. The insider stock sale sample is comprised of 591,104 firm-day observations based on 10,860 publicly traded firms from 1996 to 2013.

4. We divide the insider stock purchase sample into ten groups based on stock volatility of the firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: stock volatility group one (smallest stock volatility) with stock volatility less than or equal to 0.01200 (10th percentile of the insider stock purchase and sale sample), stock volatility group two with stock volatility between 0.01200 and 0.01549 (10th-20th percentile), stock volatility group three with stock volatility between 0.01549 and 0.01873 (20th-30th percentile), stock volatility group four with stock volatility between 0.01873 and 0.02213 (30th-40th percentile), stock volatility group five with stock volatility between 0.02213 and 0.02602 (40th-50th percentile), stock volatility group six with stock volatility between 0.02602 and 0.03074 (50th-60th percentile), stock volatility group seven with stock volatility between 0.03074 and 0.03687 (60th-70th percentile), stock volatility group eight with stock volatility between 0.03687 and 0.04566 (70th-80th percentile), stock volatility group nine with stock volatility between 0.04566 and 0.06190 (80th-90th percentile), and stock volatility group ten (highest stock volatility) with stock volatility greater than 0.06190 (90th percentile).

5. We further divide each stock volatility group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock sales traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

6. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

7. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock sales, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

8. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.

Appendix 2-J: Event Study Results with Insider Sale (10 Stock Volatility Groups) (Table 2-J) (cont.)

Insider Stock Sale (Stock Volatility Group Seven)

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Negative Past Stock Returns

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	-16.81%	-14.97%	-3.73%	1.29%	1.07%	-0.03%	-1.08%	-1.18%
(+1,+30)	-16.81%	-20.79%	-7.85%	-3.06%	0.52%	-2.90%	-3.71%	-3.40%
(+1,+60)	-16.81%	18.69%	-11.34%	-6.20%	-3.55%	-7.42%	-7.45%	-6.77%
(+1,+90)	-16.81%	11.76%	-12.45%	-6.69%	-5.17%	-11.29%	-11.66%	-9.77%

B. N+:N-

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	1:1	0:5<	26:34	76:73	236:213>	777:775>>	2642:3019	6773:8598<<<
(+1,+30)	1:1	1:4	22:38(	71:78	218:231	705:847(	2416:3245<<<	6575:8796<<<
(+1,+60)	1:1	3:2	23:37(	65:84	198:251(	659:893<<<	2293:3368<<<	6254:9117<<<
(+1,+90)	1:1	2:3	24:36	63:86	190:259<	600:952<<<	2105:3556<<<	6017:9354<<<

C. Number of Firms

	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
	1	5	60	136	380	1,080	2,586	4,169

Positive Past Stock Returns

A. Mean Cumulative Abnormal Return

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	-1.42%	-1.72%	-1.69%	-1.48%	-1.50%	-1.18%	0.33%	12.51%
(+1,+30)	-3.71%	-4.16%	-4.43%	-3.58%	-4.79%	-3.18%	-3.28%	34.40%
(+1,+60)	-6.83%	-7.65%	-8.00%	-6.88%	-8.45%	-9.92%	1.71%	80.99%
(+1,+90)	-10.03%	-11.50%	-11.75%	-11.28%	-12.26%	-15.10%	-9.34%	75.03%

B. N+:N-

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	8077:11099<<<	4216:6159<<<	1741:2535<<<	662:922<<<	191:274<<	79:96	6:4	1:1
(+1,+30)	7866:11310<<<	4172:6203<<<	1686:2590<<<	655:929<<<	173:292<<<	69:106<	5:5	1:1
(+1,+60)	7614:11562<<<	4042:6333<<<	1625:2651<<<	642:942<<<	178:287<<<	67:108<	5:5	1:1
(+1,+90)	7438:11738<<<	3911:6464<<<	1579:2697<<<	606:978<<<	168:297<<<	65:110<<	5:5	1:1

C. Number of Firms

	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
	4,465	3,409	2,179	1,111	396	172	10	1

1. This table accompanies Figure 2-J.

2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

3. The insider stock sale sample is comprised of 591,104 firm-day observations based on 10,860 publicly traded firms from 1996 to 2013.

4. We divide the insider stock purchase sample into ten groups based on stock volatility of the firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: stock volatility group one (smallest stock volatility) with stock volatility less than or equal to 0.01200 (10th percentile of the insider stock purchase and sale sample), stock volatility group two with stock volatility between 0.01200 and 0.01549 (10th-20th percentile), stock volatility group three with stock volatility between 0.01549 and 0.01873 (20th-30th percentile), stock volatility group four with stock volatility between 0.01873 and 0.02213 (30th-40th percentile), stock volatility group five with stock volatility between 0.02213 and 0.02602 (40th-50th percentile), stock volatility group six with stock volatility between 0.02602 and 0.03074 (50th-60th percentile), stock volatility group seven with stock volatility between 0.03074 and 0.03687 (60th-70th percentile), stock volatility group eight with stock volatility between 0.03687 and 0.04566 (70th-80th percentile), stock volatility group nine with stock volatility between 0.04566 and 0.06190 (80th-90th percentile), and stock volatility group ten (highest stock volatility) with stock volatility greater than 0.06190 (90th percentile).

5. We further divide each stock volatility group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock sales traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

6. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

7. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock sales, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

8. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.

Appendix 2-J: Event Study Results with Insider Sale (10 Stock Volatility Groups) (Table 2-J) (cont.)

Insider Stock Sale (Stock Volatility Group Eight)

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Negative Past Stock Returns

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	-80.41%	-31.63%	1.70%	-1.01%	-0.42%	-0.41%	-1.41%	-1.39%
(+1,+30)	-78.43%	-26.58%	-1.75%	-6.35%	-2.73%	-2.69%	-3.98%	-4.04%
(+1,+60)	-76.31%	-18.26%	-8.11%	-9.15%	-7.38%	-7.89%	-8.19%	-7.76%
(+1,+90)	-113.92%	-18.93%	-6.65%	-9.76%	-11.99%	-13.83%	-13.15%	-11.81%

B. N+:N-

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	0:2(	2:5	106:70>>>	137:161	328:341	1014:1049>	2667:3244<<	5676:7447<<<
(+1,+30)	0:2(	3:4	85:91	119:179<<	299:370	895:1168<<	2502:3409<<<	5437:7686<<<
(+1,+60)	0:2(	4:3	80:96	133:165	271:398<<<	815:1248<<<	2367:3544<<<	5234:7889<<<
(+1,+90)	0:2(	4:3	83:93	128:170(	252:417<<<	786:1277<<<	2195:3716<<<	5008:8115<<<

C. Number of Firms

	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
	2	7	150	256	534	1,304	2,656	3,886

Positive Past Stock Returns

A. Mean Cumulative Abnormal Return

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	-1.71%	-2.22%	-2.56%	-2.21%	-1.98%	-2.15%	-1.64%	-0.94%
(+1,+30)	-4.21%	-5.35%	-5.58%	-4.99%	-3.34%	-2.23%	-1.35%	0.16%
(+1,+60)	-8.07%	-9.88%	-10.38%	-9.43%	-7.07%	-5.58%	-6.84%	-13.68%
(+1,+90)	-12.33%	-14.84%	-15.78%	-13.84%	-11.36%	-9.20%	-13.28%	-11.74%

B. N+:N-

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	6606:9169<<<	3806:5823<<<	1825:2999<<<	921:1302<<<	399:583<<<	232:358<<<	9:14	4:6
(+1,+30)	6381:9394<<<	3713:5916<<<	1836:2988<<<	933:1290<<<	418:564<<	245:345<<	8:15	3:7
(+1,+60)	6170:9605<<<	3487:6142<<<	1740:3084<<<	835:1388<<<	411:571<<	234:356<<<	10:13	3:7
(+1,+90)	5873:9902<<<	3376:6253<<<	1660:3164<<<	802:1421<<<	376:606<<<	224:366<<<	9:14	3:7

C. Number of Firms

	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
	4,112	3,299	2,354	1,416	751	496	23	10

1. This table accompanies Figure 2-J.

2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

3. The insider stock sale sample is comprised of 591,104 firm-day observations based on 10,860 publicly traded firms from 1996 to 2013.

4. We divide the insider stock purchase sample into ten groups based on stock volatility of the firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: stock volatility group one (smallest stock volatility) with stock volatility less than or equal to 0.01200 (10th percentile of the insider stock purchase and sale sample), stock volatility group two with stock volatility between 0.01200 and 0.01549 (10th-20th percentile), stock volatility group three with stock volatility between 0.01549 and 0.01873 (20th-30th percentile), stock volatility group four with stock volatility between 0.01873 and 0.02213 (30th-40th percentile), stock volatility group five with stock volatility between 0.02213 and 0.02602 (40th-50th percentile), stock volatility group six with stock volatility between 0.02602 and 0.03074 (50th-60th percentile), stock volatility group seven with stock volatility between 0.03074 and 0.03687 (60th-70th percentile), stock volatility group eight with stock volatility between 0.03687 and 0.04566 (70th-80th percentile), stock volatility group nine with stock volatility between 0.04566 and 0.06190 (80th-90th percentile), and stock volatility group ten (highest stock volatility) with stock volatility greater than 0.06190 (90th percentile).

5. We further divide each stock volatility group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock sales traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET

6. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

7. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock sales, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

8. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.

Appendix 2-J: Event Study Results with Insider Sale (10 Stock Volatility Groups) (Table 2-J) (cont.)

Insider Stock Sale (Stock Volatility Group Nine)

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Negative Past Stock Returns

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	-5.71%	2.87%	0.23%	-0.64%	-1.83%	-1.96%	-1.65%	-2.19%
(+1,+30)	1.81%	4.43%	-3.74%	-5.53%	-4.82%	-6.26%	-5.32%	-5.49%
(+1,+60)	3.36%	3.51%	-7.97%	-11.88%	-10.27%	-11.53%	-11.59%	-11.31%
(+1,+90)	-13.26%	-8.51%	-13.20%	-18.54%	-15.34%	-15.93%	-17.51%	-16.57%

B. N+:N-

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	1:2	4:5	240:232>	249:279	585:677	1278:1479	2591:3205<<	4323:6032<<<
(+1,+30)	1:2	4:5	215:257	244:284	557:705<	1153:1604<<<	2474:3322<<<	4280:6075<<<
(+1,+60)	1:2	3:6	209:263	223:305<	522:740<<<	1090:1667<<<	2294:3502<<<	3987:6368<<<
(+1,+90)	1:2	4:5	205:267(	220:308<	510:752<<<	1088:1669<<<	2181:3615<<<	3865:6490<<<

C. Number of Firms

	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
	3	9	348	411	831	1,516	2,499	3,342

Positive Past Stock Returns

A. Mean Cumulative Abnormal Return

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	-2.08%	-2.97%	-3.33%	-3.08%	-2.50%	-2.39%	-8.72%	-15.08%
(+1,+30)	-5.43%	-6.87%	-7.19%	-6.88%	-6.66%	-3.23%	-6.14%	-17.20%
(+1,+60)	-10.33%	-12.03%	-13.31%	-13.49%	-12.66%	-7.59%	-3.76%	-10.94%
(+1,+90)	-15.80%	-19.03%	-21.15%	-21.50%	-19.54%	-12.78%	-7.11%	4.31%

B. N+:N-

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	5146:7005<<<	3307:4978<<<	1925:3094<<<	1087:1725<<<	606:860<<<	648:955<<<	19:43<<	4:11(
(+1,+30)	4993:7158<<<	3242:5043<<<	1888:3131<<<	1087:1725<<<	589:877<<<	729:874	25:37	6:9
(+1,+60)	4694:7457<<<	3053:5232<<<	1812:3207<<<	1021:1791<<<	554:912<<<	663:940<<<	29:33	9:6
(+1,+90)	4553:7598<<<	2910:5375<<<	1649:3370<<<	955:1857<<<	527:939<<<	637:966<<<	26:36	8:7

C. Number of Firms

	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
	3,597	2,945	2,220	1,587	979	1,047	60	15

1. This table accompanies Figure 2-J.

2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

3. The insider stock sale sample is comprised of 591,104 firm-day observations based on 10,860 publicly traded firms from 1996 to 2013.

4. We divide the insider stock purchase sample into ten groups based on stock volatility of the firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: stock volatility group one (smallest stock volatility) with stock volatility less than or equal to 0.01200 (10th percentile of the insider stock purchase and sale sample), stock volatility group two with stock volatility between 0.01200 and 0.01549 (10th-20th percentile), stock volatility group three with stock volatility between 0.01549 and 0.01873 (20th-30th percentile), stock volatility group four with stock volatility between 0.01873 and 0.02213 (30th-40th percentile), stock volatility group five with stock volatility between 0.02213 and 0.02602 (40th-50th percentile), stock volatility group six with stock volatility between 0.02602 and 0.03074 (50th-60th percentile), stock volatility group seven with stock volatility between 0.03074 and 0.03687 (60th-70th percentile), stock volatility group eight with stock volatility between 0.03687 and 0.04566 (70th-80th percentile), stock volatility group nine with stock volatility between 0.04566 and 0.06190 (80th-90th percentile), and stock volatility group ten (highest stock volatility) with stock volatility greater than 0.06190 (90th percentile).

5. We further divide each stock volatility group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock sales traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

6. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

7. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock sales, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

8. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.

Appendix 2-J: Event Study Results with Insider Sale (10 Stock Volatility Groups) (Table 2-J) (cont.)

Insider Stock Sale (Stock Volatility Group Ten, Highest Stock Volatility Firms)

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Negative Past Stock Returns

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	9.90%	7.32%	2.35%	0.18%	-1.32%	-2.02%	-2.47%	-1.98%
(+1,+30)	21.80%	8.86%	3.88%	-1.55%	-5.83%	-4.86%	-6.65%	-6.45%
(+1,+60)	38.61%	15.66%	5.12%	-1.50%	-9.56%	-8.18%	-10.11%	-10.81%
(+1,+90)	48.57%	16.64%	2.19%	-7.99%	-16.05%	-14.85%	-16.52%	-16.17%

B. N+:N-

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	21:28	138:102>>>	937:885>>>	607:602>>>	934:1104	1503:1872(	2297:3052<<<	3003:4043<<<
(+1,+30)	23:26	126:114>	878:944>	567:642	887:1151<	1456:1919<<	2218:3131<<<	2916:4130<<<
(+1,+60)	27:22	147:93>>>	928:894>>>	546:663	871:1167<<	1464:1911<<	2160:3189<<<	2844:4202<<<
(+1,+90)	24:25	128:112>	878:944>	541:668	851:1187<<<	1400:1975<<<	2106:3243<<<	2800:4246<<<

C. Number of Firms

	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
	36	170	864	730	1,090	1,563	2,099	2,449

Positive Past Stock Returns

A. Mean Cumulative Abnormal Return

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	-2.28%	-2.75%	-2.99%	-3.99%	-3.61%	-4.43%	-9.06%	-14.37%
(+1,+30)	-6.19%	-7.54%	-7.94%	-8.60%	-8.48%	-7.21%	-11.15%	-17.27%
(+1,+60)	-9.76%	-12.66%	-13.79%	-15.69%	-15.28%	-14.04%	-13.13%	-16.99%
(+1,+90)	-14.53%	-20.58%	-21.76%	-23.53%	-22.71%	-19.39%	-15.38%	-20.85%

B. N+:N-

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	3197:4463<<<	2137:3287<<<	1527:2384<<<	1019:1619<<<	676:1135<<<	1746:2750<<<	361:706<<<	113:285<<<
(+1,+30)	3151:4509<<<	2119:3305<<<	1545:2366<<<	993:1645<<<	670:1141<<<	1816:2680<<<	404:663<<<	129:269<<<
(+1,+60)	3129:4531<<<	2076:3348<<<	1464:2447<<<	967:1671<<<	664:1147<<<	1690:2806<<<	409:658<<<	140:258<<<
(+1,+90)	3103:4557<<<	2000:3424<<<	1391:2520<<<	899:1739<<<	640:1171<<<	1650:2846<<<	399:668<<<	136:262<<<

C. Number of Firms

	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
	2,564	2,141	1,754	1,407	1,081	1,785	616	263

1. This table accompanies Figure 2-J.

2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

3. The insider stock sale sample is comprised of 591,104 firm-day observations based on 10,860 publicly traded firms from 1996 to 2013.

4. We divide the insider stock purchase sample into ten groups based on stock volatility of the firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: stock volatility group one (smallest stock volatility) with stock volatility less than or equal to 0.01200 (10th percentile of the insider stock purchase and sale sample), stock volatility group two with stock volatility between 0.01200 and 0.01549 (10th-20th percentile), stock volatility group three with stock volatility between 0.01549 and 0.01873 (20th-30th percentile), stock volatility group four with stock volatility between 0.01873 and 0.02213 (30th-40th percentile), stock volatility group five with stock volatility between 0.02213 and 0.02602 (40th-50th percentile), stock volatility group six with stock volatility between 0.02602 and 0.03074 (50th-60th percentile), stock volatility group seven with stock volatility between 0.03074 and 0.03687 (60th-70th percentile), stock volatility group eight with stock volatility between 0.03687 and 0.04566 (70th-80th percentile), stock volatility group nine with stock volatility between 0.04566 and 0.06190 (80th-90th percentile), and stock volatility group ten (highest stock volatility) with stock volatility greater than 0.06190 (90th percentile).

5. We further divide each stock volatility group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock sales traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

6. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

7. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock sales, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

8. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.

Appendix 2-K: Event Study Results with Insider Purchase (Stock Volatility with Firm Size) (Table 2-K)

Insider Stock Purchase (Small Firms with High Stock Volatility)

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Negative Past Stock Returns

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	24.59%	19.35%	13.63%	8.31%	7.52%	5.31%	3.77%	3.05%
(+1,+30)	36.31%	29.43%	22.21%	15.07%	13.31%	10.45%	8.23%	6.37%
(+1,+60)	63.76%	40.35%	29.92%	20.00%	19.82%	14.90%	12.37%	10.04%
(+1,+90)	67.05%	48.29%	36.42%	24.20%	24.98%	19.99%	16.41%	13.46%

B. N+:N-

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	34:12>>>	254:107>>>	1921:837>>>	1212:629>>>	2054:1136>>>	3631:2299>>>	6319:4455>>>	9107:7073>>>
(+1,+30)	36:10>>>	269:92>>>	1923:835>>>	1240:601>>>	2128:1062>>>	3783:2147>>>	6497:4277>>>	9451:6729>>>
(+1,+60)	36:10>>>	253:108>>>	1899:859>>>	1223:618>>>	2116:1074>>>	3730:2200>>>	6613:4161>>>	9639:6541>>>
(+1,+90)	35:11>>>	247:114>>>	1904:854>>>	1236:605>>>	2094:1096>>>	3756:2174>>>	6684:4090>>>	9793:6387>>>

C. Number of Firms

	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
	40	273	1,619	1,320	1,942	2,719	3,577	4,058

Positive Past Stock Returns

A. Mean Cumulative Abnormal Return

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	2.64%	2.76%	2.95%	3.29%	2.66%	3.09%	2.06%	4.50%
(+1,+30)	5.87%	6.05%	6.70%	7.84%	8.31%	8.03%	8.10%	13.91%
(+1,+60)	10.20%	11.09%	11.30%	13.47%	14.29%	16.42%	17.93%	23.24%
(+1,+90)	13.87%	15.50%	16.34%	18.12%	19.04%	24.78%	30.50%	47.30%

B. N+:N-

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	9499:8093>>>	4812:4243>>>	2733:2433>>>	1606:1470>>>	950:887>>>	1759:1666>>>	279:300	83:81
(+1,+30)	10111:7481>>>	5106:3949>>>	2934:2232>>>	1707:1369>>>	1032:805>>>	1903:1522>>>	306:273>>	98:66>>>
(+1,+60)	10536:7056>>>	5397:3658>>>	3068:2098>>>	1834:1242>>>	1099:738>>>	2100:1325>>>	355:224>>>	109:55>>>
(+1,+90)	10680:6912>>>	5561:3494>>>	3134:2032>>>	1888:1188>>>	1133:704>>>	2165:1260>>>	368:211>>>	117:47>>>

C. Number of Firms

	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
	4,120	3,165	2,392	1,740	1,230	1,585	373	112

1. This table accompanies Figure 2-7.

2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

3. The insider stock purchase sample is comprised of 261,128 firm-day observations based on 11,047 publicly traded firms from 1996 to 2013.

4. We divide the insider stock purchase sample into three groups based on stock volatility of the firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: low stock volatility firms with stock volatility less than or equal to 0.01983 (33.33th percentile of the insider stock purchase and sale sample), medium stock volatility firms with stock volatility between 0.01983 and 0.03460 (33.33th percentile to 66.66th percentile), and high stock volatility firms with stock volatility greater than 0.03460 (66.66th percentile).

5. We further divide high stock volatility group into three subgroups based on their firm size (i.e., market capitalization): small firms with market capitalization less than or equal to $206,986,006 (33.33 percentile of the insider stock purchase and sale sample), medium firms with market capitalization between $206,986,006 and $1,102,269,828 (33.33 percentile to 66.66 percentile), and large firms with market capitalization greater than $1,102,269,828 (66.66 percentile).

6. We finally divide each firm size group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock purchases traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

7. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

8. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock purchases, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

9. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.

Appendix 2-K: Event Study Results with Insider Purchase (Stock Volatility with Firm Size) (Table 2-K) (cont.)

Insider Stock Purchase (Medium Firms with High Stock Volatility)

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Negative Past Stock Returns

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	13.65%	4.12%	4.92%	3.28%	3.19%	2.90%	2.20%	1.84%
(+1,+30)	18.72%	7.19%	8.41%	4.92%	4.32%	3.67%	2.68%	2.31%
(+1,+60)	29.92%	11.73%	8.91%	4.04%	3.66%	2.99%	1.63%	1.41%
(+1,+90)	27.78%	0.72%	6.37%	3.15%	0.75%	0.84%	-0.27%	0.57%

B. N+:N-

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	7:2>	51:45	642:386>>>	390:257>>>	605:401>>>	1023:682>>>	1617:1176>>>	2303:1867>>>
(+1,+30)	5:4	55:41>	651:377>>>	377:270>>>	586:420>>>	970:735>>>	1580:1213>>>	2316:1854>>>
(+1,+60)	6:3	65:31>>>	628:400>>>	363:284>>>	565:441>>>	931:774>>>	1497:1296>>>	2169:2001>>>
(+1,+90)	5:4	45:51	589:439>>>	356:291>>>	501:505)	885:820>>>	1420:1373>>>	2114:2056>>>

C. Number of Firms

	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
	8	74	679	503	734	1,050	1,448	1,697

Positive Past Stock Returns

A. Mean Cumulative Abnormal Return

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	1.70%	2.00%	1.93%	2.61%	1.60%	1.21%	-2.71%	4.98%
(+1,+30)	2.11%	2.13%	3.60%	4.84%	2.73%	4.78%	1.84%	2.83%
(+1,+60)	0.63%	1.73%	1.48%	4.85%	3.10%	7.47%	9.34%	20.17%
(+1,+90)	-0.44%	0.76%	1.31%	6.12%	4.23%	6.93%	5.54%	27.19%

B. N+:N-

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	2212:1777>>>	1305:1029>>>	700:529>>>	354:269>>>	179:156>	257:259	19:24	6:3
(+1,+30)	2150:1839>>>	1262:1072>>>	693:536>>>	349:274>>>	182:153>>	295:221>>>	26:17>	6:3
(+1,+60)	2054:1935>>>	1238:1096>>>	625:604>	333:290>>	179:156>	294:222>>>	28:15>>	7:2>
(+1,+90)	1987:2002>>	1171:1163>>	622:607>	327:296>>	182:153>>	293:223>>>	22:21	6:3

C. Number of Firms

	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
	1,665	1,202	778	434	271	356	38	7

1. This table accompanies Figure 2-7.

2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

3. The insider stock purchase sample is comprised of 261,128 firm-day observations based on 11,047 publicly traded firms from 1996 to 2013.

4. We divide the insider stock purchase sample into three groups based on stock volatility of the firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: low stock volatility firms with stock volatility less than or equal to 0.01983 (33.33th percentile of the insider stock purchase and sale sample), medium stock volatility firms with stock volatility between 0.01983 and 0.03460 (33.33th percentile to 66.66th percentile), and high stock volatility firms with stock volatility greater than 0.03460 (66.66th percentile).

5. We further divide high stock volatility group into three subgroups based on their firm size (i.e., market capitalization): small firms with market capitalization less than or equal to $206,986,006 (33.33 percentile of the insider stock purchase and sale sample), medium firms with market capitalization between $206,986,006 and $1,102,269,828 (33.33 percentile to 66.66 percentile), and large firms with market capitalization greater than $1,102,269,828 (66.66 percentile).

6. We finally divide each firm size group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock purchases traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

7. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

8. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock purchases, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

9. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.

Appendix 2-K: Event Study Results with Insider Purchase (Stock Volatility with Firm Size) (Table 2-K) (cont.)

Insider Stock Purchase (Large Firms with High Stock Volatility)

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Negative Past Stock Returns

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	109.25%	4.32%	3.08%	2.95%	2.79%	2.55%	2.00%	1.13%
(+1,+30)	130.25%	5.71%	5.69%	3.00%	3.62%	1.18%	2.71%	0.63%
(+1,+60)	112.46%	5.90%	8.19%	5.01%	4.83%	1.38%	3.30%	-0.53%
(+1,+90)	61.18%	2.02%	5.53%	2.79%	2.26%	-1.03%	2.42%	-2.58%

B. N+:N-

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	1:0	15:11	199:146>>>	139:90>>>	217:157>>>	352:279>>>	540:416>>>	726:559>>>
(+1,+30)	1:0	17:9>	205:140>>>	124:105>	211:163>>>	315:316	536:420>>>	686:599>>>
(+1,+60)	1:0	17:9>	220:125>>>	129:100>>	206:168>>	332:299>	551:405>>>	666:619>>
(+1,+90)	1:0	15:11	202:143>>>	114:115	192:182	305:326	514:442>>>	641:644)

C. Number of Firms

	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
	1	20	213	180	275	422	515	648

Positive Past Stock Returns

A. Mean Cumulative Abnormal Return

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	0.83%	0.80%	-0.38%	0.58%	-1.05%	-2.24%	-2.31%	-3.79%
(+1,+30)	1.16%	1.17%	-1.07%	-0.22%	-2.54%	0.19%	3.21%	16.78%
(+1,+60)	2.03%	0.29%	-2.45%	-1.72%	-1.05%	5.02%	21.89%	22.33%
(+1,+90)	0.84%	-0.89%	-4.69%	-1.32%	-1.76%	12.65%	26.52%	6.87%

B. N+:N-

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	673:566>>>	336:308>	171:173	111:93>	35:45	54:57	9:9	1:4
(+1,+30)	673:566>>>	355:289>>>	173:171	108:96)	40:40	54:57	13:5>	5:0>
(+1,+60)	667:572>>>	328:316)	172:172	110:94>	39:41	63:48>	13:5>	5:0>
(+1,+90)	647:592>>	325:319	162:182	110:94>	39:41	70:41>>	15:3>>	5:0>

C. Number of Firms

	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
	653	419	263	168	71	84	13	2

1. This table accompanies Figure 2-7.

2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

3. The insider stock purchase sample is comprised of 261,128 firm-day observations based on 11,047 publicly traded firms from 1996 to 2013.

4. We divide the insider stock purchase sample into three groups based on stock volatility of the firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: low stock volatility firms with stock volatility less than or equal to 0.01983 (33.33th percentile of the insider stock purchase and sale sample), medium stock volatility firms with stock volatility between 0.01983 and 0.03460 (33.33th percentile to 66.66th percentile), and high stock volatility firms with stock volatility greater than 0.03460 (66.66th percentile).

5. We further divide high stock volatility group into three subgroups based on their firm size (i.e., market capitalization): small firms with market capitalization less than or equal to $206,986,006 (33.33 percentile of the insider stock purchase and sale sample), medium firms with market capitalization between $206,986,006 and $1,102,269,828 (33.33 percentile to 66.66 percentile), and large firms with market capitalization greater than $1,102,269,828 (66.66 percentile).

6. We finally divide each firm size group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock purchases traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

7. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

8. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock purchases, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

9. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.

Appendix 2-L: Event Study Results with Insider Sale (Stock Volatility with Firm Size) (Table 2-L)

Insider Stock Sale (Small Firms with High Stock Volatility)

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Negative Past Stock Returns

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	6.70%	6.02%	3.73%	1.95%	0.22%	-0.28%	-0.64%	-1.10%
(+1,+30)	17.65%	10.15%	7.29%	2.65%	0.26%	-0.41%	-1.93%	-2.83%
(+1,+60)	33.07%	17.75%	11.55%	5.17%	0.34%	-1.16%	-3.94%	-5.41%
(+1,+90)	40.14%	19.13%	11.92%	4.20%	0.81%	-2.84%	-6.09%	-6.81%

B. N+:N-

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	22:30	113:89>>	857:743>>>	585:545>>>	1024:1085>>	2042:2205>>	3811:4440	5806:7673<<<
(+1,+30)	23:29	108:94>	813:787>>>	584:546>>>	1031:1078>>	2001:2246)	3776:4475	5933:7546<<<
(+1,+60)	27:25	124:78>>>	858:742>>>	566:564>>	1017:1092>	1986:2261	3731:4520<	5867:7612<<<
(+1,+90)	24:28	110:92>	840:760>>>	584:546>>>	1033:1076>>	2003:2244)	3710:4541<	5902:7577<<<

C. Number of Firms

	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
	38	139	786	712	1,176	1,862	2,804	3,411

Positive Past Stock Returns

A. Mean Cumulative Abnormal Return

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	-1.09%	-1.56%	-1.47%	-1.95%	-2.00%	-3.84%	-10.16%	-14.33%
(+1,+30)	-2.00%	-3.50%	-2.84%	-3.64%	-2.49%	-3.82%	-11.21%	-16.91%
(+1,+60)	-3.90%	-5.67%	-5.32%	-7.31%	-5.20%	-6.77%	-9.82%	-14.57%
(+1,+90)	-5.40%	-8.99%	-9.72%	-11.57%	-8.52%	-9.54%	-11.64%	-17.41%

B. N+:N-

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	6207:8186<<<	3305:4701<<<	1923:2685<<<	1161:1628<<<	653:1000<<<	1308:2087<<<	258:538<<<	94:233<<<
(+1,+30)	6452:7941<<<	3418:4588<<<	1997:2611<<<	1175:1614<<<	702:951<<	1440:1955<<<	293:503<<<	106:221<<<
(+1,+60)	6410:7983<<<	3394:4612<<<	2004:2604<<<	1166:1623<<<	702:951<<	1401:1994<<<	316:480<<<	119:208<<<
(+1,+90)	6470:7923<<<	3388:4618<<<	1918:2690<<<	1130:1659<<<	710:943<<	1383:2012<<<	304:492<<<	113:214<<<

C. Number of Firms

	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
	3,498	2,672	2,060	1,491	1,033	1,444	459	216

1. This table accompanies Figure 2-8.

2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

3. The insider stock sale sample is comprised of 591,104 firm-day observations based on 10,860 publicly traded firms from 1996 to 2013.

4. We divide the insider stock purchase sample into three groups based on stock volatility of the firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: low stock volatility firms with stock volatility less than or equal to 0.01983 (33.33th percentile of the insider stock purchase and sale sample), medium stock volatility firms with stock volatility between 0.01983 and 0.03460 (33.33th percentile to 66.66th percentile), and high stock volatility firms with stock volatility greater than 0.03460 (66.66th percentile).

5. We further divide high stock volatility group into three subgroups based on their firm size (i.e., market capitalization): small firms with market capitalization less than or equal to $206,986,006 (33.33 percentile of the insider stock purchase and sale sample), medium firms with market capitalization between $206,986,006 and $1,102,269,828 (33.33 percentile to 66.66 percentile), and large firms with market capitalization greater than $1,102,269,828 (66.66 percentile).

6. We finally divide each firm size group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock sales traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

7. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

8. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock sales, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

9. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.

Appendix 2-L: Event Study Results with Insider Sale (Stock Volatility with Firm Size) (Table 2-L) (cont.)

Insider Stock Sale (Medium Firms with High Stock Volatility)

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Negative Past Stock Returns

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	-20.66%	2.21%	-1.67%	-2.46%	-2.16%	-2.01%	-2.29%	-1.95%
(+1,+30)	-0.27%	1.03%	-6.49%	-9.43%	-7.96%	-7.83%	-7.10%	-5.86%
(+1,+60)	14.70%	4.99%	-14.89%	-17.51%	-16.76%	-16.31%	-13.50%	-11.64%
(+1,+90)	12.72%	-3.44%	-20.58%	-27.52%	-26.07%	-24.43%	-21.11%	-17.63%

B. N+:N-

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	0:2(	20:20	277:301	286:326	568:685	1316:1526	3060:3927<<<	6038:8029<<<
(+1,+30)	1:1	20:20	242:336<	247:365<<	499:754<<<	1121:1721<<<	2755:4232<<<	5652:8415<<<
(+1,+60)	1:1	24:16>	238:340<<	232:380<<<	446:807<<<	1003:1839<<<	2536:4451<<<	5287:8780<<<
(+1,+90)	1:1	18:22	223:355<<<	218:394<<<	417:836<<<	951:1891<<<	2321:4666<<<	4989:9078<<<

C. Number of Firms

	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
	2	32	365	420	720	1,302	2,192	2,912

Positive Past Stock Returns

A. Mean Cumulative Abnormal Return

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	-2.04%	-2.63%	-3.21%	-3.17%	-2.39%	-2.69%	-5.87%	-14.65%
(+1,+30)	-5.99%	-7.00%	-7.75%	-7.62%	-7.84%	-6.59%	-9.06%	-19.06%
(+1,+60)	-11.39%	-13.05%	-14.73%	-14.90%	-15.16%	-14.75%	-16.20%	-25.52%
(+1,+90)	-17.06%	-19.82%	-21.97%	-22.17%	-23.51%	-22.12%	-20.86%	-28.84%

B. N+:N-

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	7021:9740<<<	4445:6652<<<	2350:3891<<<	1324:2005<<<	698:1024<<<	953:1262<<	88:159<<	17:50<<<
(+1,+30)	6657:10104<<<	4170:6927<<<	2322:3919<<<	1300:2029<<<	666:1056<<<	957:1258<<	105:142	24:43(
(+1,+60)	6198:10563<<<	3853:7244<<<	2086:4155<<<	1150:2179<<<	626:1096<<<	811:1404<<<	96:151<	25:42(
(+1,+90)	5889:10872<<<	3708:7389<<<	1971:4270<<<	1070:2259<<<	575:1147<<<	781:1434<<<	90:157<<	24:43(

C. Number of Firms

	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
	3,091	2,685	2,111	1,536	1,030	1,077	162	47

1. This table accompanies Figure 2-8.

2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

3. The insider stock sale sample is comprised of 591,104 firm-day observations based on 10,860 publicly traded firms from 1996 to 2013.

4. We divide the insider stock purchase sample into three groups based on stock volatility of the firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: low stock volatility firms with stock volatility less than or equal to 0.01983 (33.33th percentile of the insider stock purchase and sale sample), medium stock volatility firms with stock volatility between 0.01983 and 0.03460 (33.33th percentile to 66.66th percentile), and high stock volatility firms with stock volatility greater than 0.03460 (66.66th percentile).

5. We further divide high stock volatility group into three subgroups based on their firm size (i.e., market capitalization): small firms with market capitalization less than or equal to $206,986,006 (33.33 percentile of the insider stock purchase and sale sample), medium firms with market capitalization between $206,986,006 and $1,102,269,828 (33.33 percentile to 66.66 percentile), and large firms with market capitalization greater than $1,102,269,828 (66.66 percentile).

6. We finally divide each firm size group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock sales traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

7. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

8. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock sales, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

9. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.

Appendix 2-L: Event Study Results with Insider Sale (Stock Volatility with Firm Size) (Table 2-L) (cont.)

Insider Stock Sale (Large Firms with High Stock Volatility)

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Negative Past Stock Returns

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	N/A	16.82%	-1.39%	-2.78%	-3.80%	-3.96%	-3.25%	-2.41%
(+1,+30)		-6.46%	-10.05%	-11.32%	-13.55%	-10.46%	-8.55%	-6.66%
(+1,+60)		-5.72%	-19.44%	-18.48%	-23.68%	-17.90%	-15.61%	-11.99%
(+1,+90)		6.57%	-34.06%	-30.63%	-38.95%	-29.67%	-25.40%	-19.32%

B. N+:N-

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	N/A	11:4>	160:158)	157:201	344:440(	696:961<<<	1573:2152<<<	3299:4594<<<
(+1,+30)		6:9	133:185<	134:224<<<	299:485<<<	618:1039<<<	1473:2252<<<	3120:4773<<<
(+1,+60)		7:8	131:187<	132:226<<<	271:513<<<	595:1062<<<	1343:2382<<<	2874:5019<<<
(+1,+90)		9:6	115:203<<<	118:240<<<	232:552<<<	516:1141<<<	1161:2564<<<	2682:5211<<<

C. Number of Firms

	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
	N/A	14	164	223	370	630	1,035	1,560

Positive Past Stock Returns

A. Mean Cumulative Abnormal Return

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	-2.80%	-3.30%	-3.81%	-4.34%	-4.59%	-5.26%	-6.33%	-9.20%
(+1,+30)	-7.02%	-7.71%	-8.99%	-9.53%	-11.01%	-10.05%	-10.39%	-9.61%
(+1,+60)	-11.95%	-13.27%	-15.44%	-16.43%	-18.95%	-20.72%	-23.05%	-16.95%
(+1,+90)	-19.14%	-21.15%	-23.83%	-25.63%	-27.19%	-28.91%	-24.69%	-21.67%

B. N+:N-

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	4268:6262<<<	2874:4737<<<	1590:2799<<<	789:1379<<<	411:672<<<	401:755<<<	44:67(	11:19
(+1,+30)	3918:6612<<<	2840:4771<<<	1531:2858<<<	778:1390<<<	378:705<<<	423:733<<<	40:71<	9:21<
(+1,+60)	3793:6737<<<	2667:4944<<<	1484:2905<<<	742:1426<<<	372:711<<<	401:755<<<	37:74<<	9:21<
(+1,+90)	3526:7004<<<	2481:5130<<<	1378:3011<<<	672:1496<<<	326:757<<<	370:786<<<	41:70<	11:19

C. Number of Firms

	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
	1,727	1,533	1,194	854	545	493	76	21

1. This table accompanies Figure 2-8.

2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

3. The insider stock sale sample is comprised of 591,104 firm-day observations based on 10,860 publicly traded firms from 1996 to 2013.

4. We divide the insider stock purchase sample into three groups based on stock volatility of the firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: low stock volatility firms with stock volatility less than or equal to 0.01983 (33.33th percentile of the insider stock purchase and sale sample), medium stock volatility firms with stock volatility between 0.01983 and 0.03460 (33.33th percentile to 66.66th percentile), and high stock volatility firms with stock volatility greater than 0.03460 (66.66th percentile).

5. We further divide high stock volatility group into three subgroups based on their firm size (i.e., market capitalization): small firms with market capitalization less than or equal to $206,986,006 (33.33 percentile of the insider stock purchase and sale sample), medium firms with market capitalization between $206,986,006 and $1,102,269,828 (33.33 percentile to 66.66 percentile), and large firms with market capitalization greater than $1,102,269,828 (66.66 percentile).

6. We finally divide each firm size group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock sales traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

7. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

8. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock sales, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

9. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.

Appendix 2-M: Event Study Results with Insider Purchase (2008 Financial Crisis) (Table 2-M)

Insider Stock Purchase (Financial Crisis of 2008)

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Negative Past Stock Returns

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	27.48%	19.88%	14.43%	8.36%	5.61%	4.63%	2.82%	2.15%
(+1,+30)	42.48%	38.13%	25.63%	15.34%	9.60%	8.51%	5.25%	3.40%
(+1,+60)	58.32%	44.11%	30.61%	20.75%	14.42%	11.91%	6.42%	4.44%
(+1,+90)	75.92%	58.22%	40.48%	25.55%	20.71%	17.78%	9.86%	6.32%

B. N+:N-

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	19:5>>	93:40>>>	851:321>>>	518:239>>>	752:458>>>	1263:841>>>	2279:1607>>>	3966:3002>>>
(+1,+30)	19:5>>	101:32>>>	885:287>>>	516:241>>>	755:455>>>	1317:787>>>	2274:1612>>>	3836:3132>>>
(+1,+60)	18:6>>	105:28>>>	856:316>>>	521:236>>>	763:447>>>	1307:797>>>	2226:1660>>>	3848:3120>>>
(+1,+90)	20:4>>>	99:34>>>	884:288>>>	521:236>>>	778:432>>>	1331:773>>>	2269:1617>>>	3808:3160>>>

C. Number of Firms

	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
	21	95	704	574	873	1,204	1,722	2,190

Positive Past Stock Returns

A. Mean Cumulative Abnormal Return

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	2.29%	3.21%	4.11%	5.60%	4.56%	5.32%	3.57%	8.09%
(+1,+30)	3.02%	5.28%	7.71%	10.49%	8.87%	12.65%	13.12%	18.05%
(+1,+60)	4.74%	8.78%	11.60%	18.35%	16.48%	21.73%	29.71%	30.56%
(+1,+90)	6.72%	11.94%	18.11%	26.59%	26.02%	33.46%	37.71%	43.80%

B. N+:N-

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	3492:2690>>>	1551:1130>>>	799:570>>>	431:296>>>	228:164>>>	490:373>>>	72:77	26:19
(+1,+30)	3366:2816>>>	1503:1178>>>	808:561>>>	441:286>>>	229:163>>>	554:309>>>	99:50>>>	35:10>>>
(+1,+60)	3380:2802>>>	1566:1115>>>	814:555>>>	474:253>>>	249:143>>>	574:289>>>	110:39>>>	37:8>>>
(+1,+90)	3360:2822>>>	1606:1075>>>	851:518>>>	488:239>>>	256:136>>>	623:240>>>	112:37>>>	39:6>>>

C. Number of Firms

	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
	2,087	1,317	885	520	315	513	103	29

1. This table accompanies Figure 2-9.

2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

3. The insider stock purchase sample is comprised of 261,128 firm-day observations based on 11,047 publicly traded firms from 1996 to 2013.

4. We divide the sample into three groups based on whether insider stock transactions made during the period of 2008 financial crisis: transactions made before 2008 financial crisis (i.e., January 1996 to November 2007), transactions made during 2008 financial crisis (i.e., December 2007 to June 2009), and transactions made after 2008 financial crisis (July 2009 to December 2013). According to the National Bureau of Economic Research, the 2008 financial crisis began in December 2007 and ended in June 2009.

5. We then divide each time period group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock purchases traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

6. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

7. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock purchases, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

8. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.

Appendix 2-M: Event Study Results with Insider Purchase (2008 Financial Crisis) (Table 2-M) (cont.)

Insider Stock Purchase (Before Financial Crisis of 2008)

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Negative Past Stock Returns

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	21.66%	14.03%	8.98%	6.17%	5.92%	3.86%	2.32%	1.16%
(+1,+30)	29.32%	18.72%	14.07%	10.06%	9.72%	6.79%	4.51%	2.17%
(+1,+60)	62.50%	28.75%	19.61%	12.16%	13.08%	8.58%	6.10%	3.08%
(+1,+90)	52.65%	27.89%	20.27%	13.00%	14.10%	9.88%	7.14%	3.59%

B. N+:N-

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	21:9>>	208:120>>>	1858:1041>>>	1341:768>>>	2607:1478>>>	5294:3476>>>	12369:9132>>>	32683:27828>>>
(+1,+30)	21:9>>	228:100>>>	1857:1042>>>	1337:772>>>	2627:1458>>>	5344:3426>>>	12431:9070>>>	32790:27721>>>
(+1,+60)	23:7>>>	217:111>>>	1851:1048>>>	1295:814>>>	2546:1539>>>	5189:3581>>>	12263:9238>>>	32830:27681>>>
(+1,+90)	20:10>	198:130>>>	1763:1136>>>	1263:846>>>	2425:1660>>>	5057:3713>>>	12100:9401>>>	32707:27804>>>

C. Number of Firms

RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
26	250	1,686	1,535	2,414	3,970	6,058	7,905

Positive Past Stock Returns

A. Mean Cumulative Abnormal Return

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	1.05%	1.48%	1.59%	2.14%	1.84%	1.40%	0.93%	2.73%
(+1,+30)	2.09%	3.04%	4.25%	5.62%	6.84%	5.42%	5.24%	10.89%
(+1,+60)	3.14%	4.96%	6.44%	8.87%	11.25%	12.66%	13.15%	19.64%
(+1,+90)	3.89%	6.62%	8.61%	11.30%	14.40%	18.69%	25.00%	44.61%

B. N+:N-

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	33377:30778>>>	8975:8300>>>	3535:3390>>>	1687:1624>>>	896:896>>	1438:1554)	224:247	60:67
(+1,+30)	34205:29950>>>	9300:7975>>>	3784:3141>>>	1798:1513>>>	990:802>>>	1571:1421>>>	235:236)	69:58>
(+1,+60)	34577:29578>>>	9380:7895>>>	3861:3064>>>	1878:1433>>>	1033:759>>>	1748:1244>>>	270:201>>>	78:49>>>
(+1,+90)	34600:29555>>>	9453:7822>>>	3846:3079>>>	1885:1426>>>	1070:722>>>	1772:1220>>>	279:192>>>	83:44>>>

C. Number of Firms

0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
7,954	5,370	3,248	1,920	1,229	1,449	302	88

1. This table accompanies Figure 2-9.

2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

3. The insider stock purchase sample is comprised of 261,128 firm-day observations based on 11,047 publicly traded firms from 1996 to 2013.

4. We divide the sample into three groups based on whether insider stock transactions made during the period of 2008 financial crisis: transactions made before 2008 financial crisis (i.e., January 1996 to November 2007), transactions made during 2008 financial crisis (i.e., December 2007 to June 2009), and transactions made after 2008 financial crisis (July 2009 to December 2013). According to the National Bureau of Economic Research, the 2008 financial crisis began in December 2007 and ended in June 2009.

5. We then divide each time period group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock purchases traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

6. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

7. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock purchases, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

8. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.

Appendix 2-M: Event Study Results with Insider Purchase (2008 Financial Crisis) (Table 2-M) (cont.)

Insider Stock Purchase (After Financial Crisis of 2008)

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Negative Past Stock Returns

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	27.05%	6.91%	4.18%	4.03%	3.71%	2.90%	2.44%	1.29%
(+1,+30)	34.93%	8.61%	5.54%	5.83%	4.40%	2.82%	2.64%	1.66%
(+1,+60)	19.93%	20.54%	7.49%	7.40%	3.77%	3.29%	2.51%	2.17%
(+1,+90)	-3.13%	25.08%	10.14%	8.21%	3.82%	2.71%	2.89%	2.59%

B. N+:N-

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	2:0)	25:10>>	195:112>>>	185:93>>>	340:216>>>	880:556>>>	2415:1483>>>	6704:5143>>>
(+1,+30)	2:0)	20:15	173:134>>>	168:110>>>	324:232>>>	819:617>>>	2236:1662>>>	6417:5430>>>
(+1,+60)	2:0)	24:11>>	180:127>>>	162:116>>>	320:236>>>	818:618>>>	2094:1804>>>	6315:5532>>>
(+1,+90)	1:1	21:14)	180:127>>>	150:128>	314:242>>>	805:631>>>	2125:1773>>>	6393:5454>>>

C. Number of Firms

	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
	2	23	239	240	440	939	1,767	2,807

Positive Past Stock Returns

A. Mean Cumulative Abnormal Return

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	1.14%	2.45%	3.06%	3.74%	2.40%	7.90%	1.49%	8.98%
(+1,+30)	1.64%	3.79%	4.23%	4.62%	3.75%	10.76%	11.41%	32.55%
(+1,+60)	2.13%	5.18%	5.10%	6.12%	5.73%	14.79%	15.71%	38.99%
(+1,+90)	2.37%	5.96%	6.60%	7.82%	7.01%	19.16%	30.05%	66.51%

B. N+:N-

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	6287:5251>>>	1672:1258>>>	607:435>>>	258:188>>>	122:101>	179:94>>>	19:12)	4:2
(+1,+30)	6238:5300>>>	1680:1250>>>	584:458>>>	224:222	123:100>	165:108>>>	17:14	5:1>
(+1,+60)	6119:5419>>>	1696:1234>>>	589:453>>>	239:207>>	125:98>>	170:103>>>	21:10>	6:0>>
(+1,+90)	6108:5430>>>	1659:1271>>>	600:442>>>	249:197>>>	124:99>>	170:103>>>	19:12)	6:0>>

C. Number of Firms

	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
	2,800	1,360	639	319	178	166	26	5

1. This table accompanies Figure 2-9.

2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

3. The insider stock purchase sample is comprised of 261,128 firm-day observations based on 11,047 publicly traded firms from 1996 to 2013.

4. We divide the sample into three groups based on whether insider stock transactions made during the period of 2008 financial crisis: transactions made before 2008 financial crisis (i.e., January 1996 to November 2007), transactions made during 2008 financial crisis (i.e., December 2007 to June 2009), and transactions made after 2008 financial crisis (July 2009 to December 2013). According to the National Bureau of Economic Research, the 2008 financial crisis began in December 2007 and ended in June 2009.

5. We then divide each time period group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock purchases traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

6. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

7. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock purchases, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

8. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.

Appendix 2-N: Event Study Results with Insider Sale (2008 Financial Crisis) (Table 2-N)

Insider Stock Sale (Financial Crisis of 2008)

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Negative Past Stock Returns

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	-32.35%	-5.62%	0.21%	3.33%	-0.47%	-0.53%	-1.31%	-1.21%
(+1,+30)	-0.87%	4.50%	3.42%	6.45%	5.60%	-0.02%	-2.01%	-2.74%
(+1,+60)	127.13%	33.28%	18.48%	16.87%	7.38%	-0.64%	-4.06%	-5.18%
(+1,+90)	113.06%	34.94%	20.39%	23.74%	8.78%	-4.12%	-5.86%	-7.28%

B. N+:N-

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	1:4	19:22	192:171>	142:113>>	267:264	585:630	1609:1834	4168:5278<<<
(+1,+30)	3:2	23:18	198:165>>	145:110>>	283:248>>	587:628	1551:1892<<<	4125:5321<<<
(+1,+60)	3:2	30:11>>>	227:136>>>	137:118>	287:244>>	572:643	1500:1943<<<	3939:5507<<<
(+1,+90)	3:2	24:17)	221:142>>>	146:109>>	274:257>	553:662<	1445:1998<<<	3846:5600<<<

C. Number of Firms

RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
5	34	226	199	356	733	1,395	2,316

Positive Past Stock Returns

A. Mean Cumulative Abnormal Return

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	-1.39%	-1.59%	-2.34%	-2.22%	-2.74%	-3.04%	-9.68%	-13.79%
(+1,+30)	-2.80%	-3.65%	-4.63%	-3.79%	-2.76%	-0.12%	-2.88%	-5.05%
(+1,+60)	-5.07%	-6.54%	-6.44%	-6.34%	-3.22%	0.54%	-1.21%	-6.80%
(+1,+90)	-7.46%	-10.03%	-9.73%	-9.26%	-5.76%	0.54%	3.64%	-7.96%

B. N+:N-

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	5021:6890<<<	2283:3267<<<	785:1294<<<	343:493<<<	159:203(	213:297<<	30:61<<	11:30<<
(+1,+30)	5091:6820<<<	2284:3266<<<	820:1259<<<	351:485<<<	161:201	243:267	38:53(	17:24
(+1,+60)	4979:6932<<<	2253:3297<<<	830:1249<<<	348:488<<<	160:202(	237:273	41:50	19:22
(+1,+90)	4799:7112<<<	2130:3420<<<	783:1296<<<	316:520<<<	154:208<	228:282(	40:51	16:25(

C. Number of Firms

0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
2,431	1,854	1,136	591	297	347	60	31

1. This table accompanies Figure 2-10.

2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

3. The insider stock sale sample is comprised of 591,104 firm-day observations based on 10,860 publicly traded firms from 1996 to 2013.

4. We divide the sample into three groups based on whether insider stock transactions made during the period of 2008 financial crisis: transactions made before 2008 financial crisis (i.e., January 1996 to November 2007), transactions made during 2008 financial crisis (i.e., December 2007 to June 2009), and transactions made after 2008 financial crisis (July 2009 to December 2013). According to the National Bureau of Economic Research, the 2008 financial crisis began in December 2007 and ended in June 2009.

5. We then divide each time period group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock sales traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

6. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

7. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock sales, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

8. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.

Appendix 2-N: Event Study Results with Insider Sale (2008 Financial Crisis) (Table 2-N) (cont.)

Insider Stock Sale (Before Financial Crisis of 2008)

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Negative Past Stock Returns

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	20.66%	11.50%	2.28%	-0.36%	-1.10%	-1.24%	-1.20%	-0.86%
(+1,+30)	24.04%	8.08%	1.50%	-4.50%	-5.97%	-4.70%	-4.18%	-2.64%
(+1,+60)	27.92%	10.52%	-1.69%	-8.42%	-10.84%	-9.57%	-7.91%	-4.99%
(+1,+90)	24.09%	7.82%	-6.15%	-15.40%	-17.15%	-15.03%	-12.42%	-7.38%

B. N+:N-

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	19:15	118:72>>>	1060:981>>>	902:961>	1860:2102	4605:5126>	14053:16399<<	54222:66202<<<
(+1,+30)	16:18	101:89>	950:1091	841:1022	1723:2239<<<	4183:5548<<<	13039:17413<<<	52026:68398<<<
(+1,+60)	19:15	115:75>>>	960:1081	796:1067<<	1624:2338<<<	3952:5779<<<	12490:17962<<<	50647:69777<<<
(+1,+90)	17:17	103:87>	916:1125	775:1088<<<	1566:2396<<<	3774:5957<<<	11834:18618<<<	49696:70728<<<

C. Number of Firms

	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
	24	133	934	1,068	1,873	3,444	6,033	8,187

Positive Past Stock Returns

A. Mean Cumulative Abnormal Return

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	-0.93%	-1.67%	-2.40%	-2.78%	-2.75%	-3.71%	-8.85%	-13.77%
(+1,+30)	-2.58%	-4.24%	-5.61%	-6.17%	-6.71%	-6.20%	-11.53%	-17.79%
(+1,+60)	-4.79%	-7.47%	-10.33%	-11.55%	-12.78%	-12.52%	-13.24%	-16.38%
(+1,+90)	-7.00%	-11.45%	-15.92%	-18.10%	-19.41%	-18.24%	-16.20%	-20.20%

B. N+:N-

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	73533:93525<<<	23387:33201<<<	8159:12523<<<	3578:5401<<<	1647:2589<<<	2324:3633<<<	338:641<<<	107:242<<<
(+1,+30)	70875:96183<<<	22772:33816<<<	8092:12590<<<	3542:5437<<<	1652:2584<<<	2464:3493<<<	368:611<<<	114:235<<<
(+1,+60)	69136:97922<<<	22069:34519<<<	7711:12971<<<	3408:5571<<<	1604:2632<<<	2265:3692<<<	374:605<<<	123:226<<<
(+1,+90)	68012:99046<<<	21576:35012<<<	7372:13310<<<	3239:5740<<<	1527:2709<<<	2193:3764<<<	364:615<<<	119:230<<<

C. Number of Firms

	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
	8,391	6,589	4,777	3,245	2,068	2,153	546	211

1. This table accompanies Figure 2-10.

2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

3. The insider stock sale sample is comprised of 591,104 firm-day observations based on 10,860 publicly traded firms from 1996 to 2013.

4. We divide the sample into three groups based on whether insider stock transactions made during the period of 2008 financial crisis: transactions made before 2008 financial crisis (i.e., January 1996 to November 2007), transactions made during 2008 financial crisis (i.e., December 2007 to June 2009), and transactions made after 2008 financial crisis (July 2009 to December 2013). According to the National Bureau of Economic Research, the 2008 financial crisis began in December 2007 and ended in June 2009.

5. We then divide each time period group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock sales traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

6. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

7. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock sales, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

8. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.

Appendix 2-N: Event Study Results with Insider Sale (2008 Financial Crisis) (Table 2-N) (cont.)

Insider Stock Sale (After Financial Crisis of 2008)

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Negative Past Stock Returns

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	-15.10%	-14.20%	-1.84%	-2.33%	-1.34%	-1.45%	-0.98%	-0.57%
(+1,+30)	4.48%	3.07%	-0.02%	-2.25%	-1.22%	-3.51%	-2.16%	-1.45%
(+1,+60)	8.67%	11.64%	0.36%	-4.00%	-5.45%	-5.75%	-4.77%	-3.01%
(+1,+90)	41.85%	28.56%	3.07%	-7.69%	-7.09%	-8.39%	-7.26%	-4.29%

B. N+:N-

Days	RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
(+1,+10)	2:15<<	7:28<<<	82:91	65:87	176:211	626:772(	2969:3691<<<	16225:19603<<<
(+1,+30)	5:12(	12:23(	76:97	60:92<	170:217	596:802<<<	2949:3711<<<	16090:19738<<<
(+1,+60)	6:11	15:20	78:95	72:80	170:217	566:832<<<	2761:3899<<<	15587:20241<<<
(+1,+90)	6:11	16:19	77:96	68:84	159:228<	571:827<<<	2701:3959<<<	15344:20484<<<

C. Number of Firms

RET ≤ -75%	RET ≤ -50%	RET ≤ -25%	-25% < RET ≤ -20%	-20% < RET ≤ -15%	-15% < RET ≤ -10%	-10% < RET ≤ -5%	-5% < RET ≤ 0%
13	24	121	119	296	794	2,161	3,663

Positive Past Stock Returns

A. Mean Cumulative Abnormal Return

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	-0.71%	-1.14%	-1.44%	-1.24%	-1.32%	-2.89%	-7.16%	-15.43%
(+1,+30)	-1.54%	-2.64%	-3.60%	-3.15%	-3.49%	-4.46%	-8.62%	-18.85%
(+1,+60)	-2.92%	-4.75%	-6.25%	-6.52%	-6.40%	-10.72%	-14.93%	-30.16%
(+1,+90)	-4.20%	-6.77%	-9.19%	-9.83%	-8.18%	-14.27%	-17.78%	-28.52%

B. N+:N-

Days	0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
(+1,+10)	24513:31129<<<	6328:8664<<<	1605:2343<<<	533:683<<	214:257	269:376<	36:85<<<	5:37<<<
(+1,+30)	24483:31159<<<	6218:8774<<<	1582:2366<<<	513:703<<<	188:283<<	261:384<<	45:76<	10:32<<
(+1,+60)	23873:31769<<<	6196:8796<<<	1570:2378<<<	479:737<<<	193:278<<	252:393<<<	46:75(	12:30<
(+1,+90)	23691:31951<<<	6023:8969<<<	1506:2442<<<	457:759<<<	187:284<<	258:387<<<	46:75(	14:28(

C. Number of Firms

0% < RET ≤ 5%	5% < RET ≤ 10%	10% < RET ≤ 15%	15% < RET ≤ 20%	20% < RET ≤ 25%	25% < RET	50% < RET	75% < RET
3,800	2,843	1,609	773	347	384	82	31

1. This table accompanies Figure 2-10.

2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.

3. The insider stock sale sample is comprised of 591,104 firm-day observations based on 10,860 publicly traded firms from 1996 to 2013.

4. We divide the sample into three groups based on whether insider stock transactions made during the period of 2008 financial crisis: transactions made before 2008 financial crisis (i.e., January 1996 to November 2007), transactions made during 2008 financial crisis (i.e., December 2007 to June 2009), and transactions made after 2008 financial crisis (July 2009 to December 2013). According to the National Bureau of Economic Research, the 2008 financial crisis began in December 2007 and ended in June 2009.

5. We then divide each time period group into 16 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock sales traded at different levels of past stock performance: RET ≤ -75%, RET ≤ -50%, RET ≤ -25%, -25% < RET ≤ -20%, -20% < RET ≤ -15%, -15% < RET ≤ -10%, -10% < RET ≤ -5%, -5% < RET ≤ 0%, 0% < RET ≤ 5%, 5% < RET ≤ 10%, 10% < RET ≤ 15%, 15% < RET ≤ 20%, 20% < RET ≤ 25%, 25% < RET, 50% < RET and 75% < RET.

6. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results. Interesting, the abnormal returns are slightly higher when we use two day past stock performance as stock return classification method.

7. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock sales, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using CRSP equal-weighted index as robustness checks and get similar results.

8. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.

Appendix 2-O: Regression Results with Insider Purchase (Accrual Quality) (Table 2-O)

Insider Stock Purchase

Cumulative Abnormal Return (CAR) Ordinary Least Squares Regression Model with Heteroscedasticity-Consistent Standard Errors

Number of Transactions = 117,754; Number of Insiders = 24,900 ; Number of Firms = 4,345; Sample Period = 1996 to 2013

Event Study is based on the Market Model using:	A. CRSP Value-Weighted Index				B. CRSP Equal-Weighted Index			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Independent Variables								
Insider Type								
CEO	0.0061***	0.0235***	0.0462***	0.0699***	0.0082***	0.0257***	0.0449***	0.0680***
	(0.0015)	(0.0023)	(0.0033)	(0.0043)	(0.0014)	(0.0023)	(0.0033)	(0.0042)
CFO	0.0121***	0.0373***	0.0749***	0.1071***	0.0142***	0.0402***	0.0769***	0.1078***
	(0.0022)	(0.0035)	(0.0051)	(0.0066)	(0.0021)	(0.0034)	(0.0049)	(0.0065)
Director	0.0034***	0.0153***	0.0260***	0.0403***	0.0044***	0.0165***	0.0275***	0.0427***
	(0.0010)	(0.0016)	(0.0023)	(0.0030)	(0.0009)	(0.0016)	(0.0023)	(0.0030)
Officer	0.0096***	0.0292***	0.0608***	0.0811***	0.0099***	0.0295***	0.0601***	0.0798***
	(0.0013)	(0.0022)	(0.0032)	(0.0040)	(0.0013)	(0.0021)	(0.0031)	(0.0039)
Large Shareholders	0.0625***	0.0743***	0.0918***	0.0688**	0.0394***	0.0250*	0.0479**	0.0527**
	(0.0098)	(0.0172)	(0.0246)	(0.0331)	(0.0073)	(0.0134)	(0.0205)	(0.0264)
Past Stock Performance								
RET <= -25%	0.0588***	0.0905***	0.1150***	0.1249***	0.0631***	0.0807***	0.0880***	0.0783***
	(0.0051)	(0.0073)	(0.0097)	(0.0124)	(0.0049)	(0.0070)	(0.0096)	(0.0121)
-25% < RET <= -20%	0.0332***	0.0588***	0.0821***	0.0854***	0.0387***	0.0546***	0.0637***	0.0575***
	(0.0046)	(0.0069)	(0.0095)	(0.0120)	(0.0045)	(0.0068)	(0.0093)	(0.0118)
20% < RET <= 25%	-0.0053	0.0242***	0.0421***	0.0590***	-0.0126**	0.0139	0.0316**	0.0520***
	(0.0053)	(0.0089)	(0.0124)	(0.0156)	(0.0052)	(0.0087)	(0.0123)	(0.0153)
RET > 25%	0.0108*	0.0664***	0.1284***	0.1711***	-0.0014	0.0403***	0.1006***	0.1429***
	(0.0055)	(0.0087)	(0.0127)	(0.0157)	(0.0054)	(0.0087)	(0.0128)	(0.0160)
CEO * RET <= -25%	0.0164	0.0276	0.0167	0.0182	0.0100	0.0121	0.0062	0.0075
	(0.0162)	(0.0196)	(0.0252)	(0.0326)	(0.0157)	(0.0190)	(0.0248)	(0.0323)
CEO * RET > 25%	-0.0260*	-0.0518**	-0.0302	-0.0217	-0.0247*	-0.0418**	-0.0223	-0.0060
	(0.0133)	(0.0201)	(0.0307)	(0.0344)	(0.0132)	(0.0196)	(0.0305)	(0.0338)
Information Uncertainty								
Small Firms	0.0150***	0.0323***	0.0562***	0.0762***	0.0131***	0.0281***	0.0504***	0.0694***
	(0.0009)	(0.0017)	(0.0025)	(0.0032)	(0.0009)	(0.0017)	(0.0025)	(0.0032)
Medium Firms	0.0116***	0.0169***	0.0290***	0.0344***	0.0106***	0.0147***	0.0258***	0.0309***
	(0.0009)	(0.0016)	(0.0024)	(0.0030)	(0.0009)	(0.0016)	(0.0024)	(0.0031)
High Stock Volatility Firms	0.0110***	0.0160***	0.0212***	0.0250***	0.0096***	0.0089***	-0.0012	-0.0107**
	(0.0013)	(0.0022)	(0.0033)	(0.0042)	(0.0013)	(0.0022)	(0.0033)	(0.0042)
Medium Stock Volatility Firms	0.0091***	0.0069***	0.0115***	0.0134***	0.0098***	0.0094***	0.0111***	0.0101***
	(0.0007)	(0.0013)	(0.0019)	(0.0025)	(0.0007)	(0.0013)	(0.0019)	(0.0025)
Small Firm Size * High Stock Volatility Firms	0.0196***	0.0353***	0.0709***	0.0974***	0.0194***	0.0368***	0.0771***	0.1077***
	(0.0016)	(0.0026)	(0.0039)	(0.0050)	(0.0015)	(0.0026)	(0.0039)	(0.0050)
Accrual Quality (FLOS, 2005)	<0.0000***	<0.0000***	<0.0000***	0.0001***	<0.0000***	<0.0000***	<0.0000***	0.0001***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)

(continued on next page)

Appendix 2-O: Regression Results with Insider Purchase (Accrual Quality) (Table 2-O) (cont.)

Insider Stock Purchase (cont.)

Event Study is based on the Market Model using:	A. CRSP Value-Weighted Index				B. CRSP Equal-Weighted Index			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Control Variables								
Number of insider shares traded at insider level	<0.0000	<0.0000***	<0.0000***	<0.0000***	<0.0000	<0.0000***	<0.0000***	<0.0000***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Number of insider shares traded at company level (%)	0.0007	0.0001	-0.0000	-0.0005	0.0007	0.0002	-0.0001	-0.0005
	(0.0009)	(0.0007)	(0.0008)	(0.0007)	(0.0009)	(0.0008)	(0.0008)	(0.0007)
Market to book ratio (MTB)	-0.0000	0.0000*	0.0000*	0.0000	-0.0000	0.0000	0.0000*	0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Loss (binary variable for net income < 0)	0.0006	-0.0057***	-0.0138***	-0.0072**	0.0018*	-0.0028*	-0.0082***	-0.0003
	(0.0010)	(0.0017)	(0.0023)	(0.0030)	(0.0010)	(0.0017)	(0.0023)	(0.0029)
Return on assets (ROA)	-0.0185**	-0.0404***	0.0236	0.0160	-0.0145**	-0.0173	0.0406***	0.0536***
	(0.0077)	(0.0120)	(0.0148)	(0.0187)	(0.0073)	(0.0127)	(0.0147)	(0.0176)
Leverage ratio (long-term debt/ equity)	-0.0000*	-0.0003***	-0.0004***	-0.0002***	-0.0000**	-0.0003***	-0.0004***	-0.0003***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Insurance industry	0.0066	0.0278**	0.0361**	0.0441**	0.0027	0.0164	0.0166	0.0204
	(0.0073)	(0.0115)	(0.0168)	(0.0212)	(0.0072)	(0.0115)	(0.0167)	(0.0215)
January	-0.0013	-0.0378***	-0.0624***	-0.0534***	-0.0038*	0.0022	-0.0003	-0.0033
	(0.0021)	(0.0034)	(0.0047)	(0.0060)	(0.0020)	(0.0034)	(0.0046)	(0.0060)
Fourth Quarter	0.0116***	0.0420***	0.0589***	0.0746***	0.0008	-0.0035**	0.0010	0.0126***
	(0.0011)	(0.0018)	(0.0025)	(0.0032)	(0.0011)	(0.0017)	(0.0025)	(0.0032)
Constant	-0.0241***	-0.0846***	-0.1697***	-0.2230***	-0.0130***	-0.0495***	-0.0968***	-0.1099***
	(0.0041)	(0.0069)	(0.0110)	(0.0135)	(0.0040)	(0.0068)	(0.0107)	(0.0135)
Year Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Sector Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
R-squared	3.34%	5.81%	8.16%	8.93%	2.66%	3.20%	4.27%	4.63%

1. Heteroscedasticity-consistent standard errors are in parentheses.

2. The symbols ***, **, * show the significance at the 0.01, 0.05, and 0.10 levels of the t-test, respectively.

3. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock purchases, respectively. We employ the event study method based on the Market Model using CRSP value-weighted index and CRSP equal-weighted index, respectively.

4. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares. We employ five binary variables to proxy CEO, CFO, director, officer, and large shareholders who purchased the firm's stocks from 1996 to 2013, respectively.

5. We use four binary variables to proxy significant changes in firm's stock prices (i.e., past stock performance): RET is less than -25%, RET lies between -25% and -20%, RET lies between 20% and 25%, and RET is greater than 25%. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., 4 day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., 2 day past stock performance) to proxy RET and get similar results.

6. We employ two binary variables for firm size based on market capitalization: small firms with market capitalization less than or equal to $206,986,006 (33th percentile of the insider stock purchase and sale sample), medium firms with market capitalization between $206,986,006 and $1,102,269,828 (33.33th percentile to 66.66th percentile), and large firms with market capitalization greater than $1,102,269,828 (66.66th percentile).

7. We employ two binary variables for stock volatility of the firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: low stock volatility firms with stock volatility less than or equal to 0.01983 (33.33th percentile of the insider stock purchase and sale sample), medium stock volatility firms with stock volatility between 0.01983 and 0.03460 (33.33th percentile to 66.66th percentile), and high stock volatility firms with stock volatility greater than 0.03460 (66.66th percentile).

8. We calculate accruals quality based on Francis, LaFond, Olsson, and Schipper (2005) and use it to proxy information risk of a firm (Eckles, Halek, and Zhang, 2013).

Appendix 2-P: Regression Results with Insider Sale (Accrual Quality) (Table 2-P)

Insider Stock Sale

Cumulative Abnormal Return (CAR) Ordinary Least Squares Regression Model with Heteroscedasticity-Consistent Standard Errors

Number of Transactions = 387,289; Number of Insiders = 47,104; Number of Firms = 4,489; Sample Period = 1996 to 2013

Event Study is based on the Market Model using:	**A. CRSP Value-Weighted Index**				**B. CRSP Equal-Weighted Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Independent Variables								
Insider Type								
CEO	-0.0027***	-0.0116***	-0.0251***	-0.0377***	-0.0025***	-0.0107***	-0.0229***	-0.0355***
	(0.0006)	(0.0012)	(0.0018)	(0.0023)	(0.0006)	(0.0012)	(0.0018)	(0.0023)
CFO	-0.0032***	-0.0112***	-0.0230***	-0.0379***	-0.0034***	-0.0107***	-0.0209***	-0.0350***
	(0.0007)	(0.0013)	(0.0020)	(0.0026)	(0.0007)	(0.0013)	(0.0020)	(0.0026)
Director	-0.0010*	-0.0049***	-0.0091***	-0.0179***	-0.0007	-0.0039***	-0.0073***	-0.0165***
	(0.0005)	(0.0010)	(0.0015)	(0.0019)	(0.0005)	(0.0010)	(0.0015)	(0.0019)
Officer	-0.0009*	-0.0062***	-0.0130***	-0.0215***	-0.0010*	-0.0062***	-0.0120***	-0.0205***
	(0.0005)	(0.0009)	(0.0014)	(0.0018)	(0.0005)	(0.0009)	(0.0014)	(0.0018)
Large Shareholders	-0.0120	-0.0547***	-0.1721***	-0.3523***	-0.0206***	-0.0655***	-0.1668***	-0.3429***
	(0.0075)	(0.0161)	(0.0272)	(0.0492)	(0.0075)	(0.0161)	(0.0248)	(0.0484)
Past Stock Performance								
RET <= -25%	0.0069	0.0237	0.0711***	0.0836***	0.0118	0.0114	0.0379*	0.0377
	(0.0090)	(0.0162)	(0.0215)	(0.0256)	(0.0086)	(0.0155)	(0.0203)	(0.0244)
-25% < RET <= -20%	0.0186***	0.0187*	0.0561**	0.0618**	0.0219***	0.0169	0.0408*	0.0383
	(0.0060)	(0.0110)	(0.0249)	(0.0280)	(0.0057)	(0.0106)	(0.0246)	(0.0276)
20% < RET <= 25%	-0.0076***	-0.0077	-0.0202***	-0.0381***	-0.0134***	-0.0212***	-0.0241***	-0.0405***
	(0.0028)	(0.0051)	(0.0071)	(0.0089)	(0.0027)	(0.0049)	(0.0069)	(0.0088)
RET > 25%	-0.0083**	-0.0016	-0.0255***	-0.0479***	-0.0148***	-0.0125**	-0.0275***	-0.0442***
	(0.0035)	(0.0064)	(0.0090)	(0.0106)	(0.0034)	(0.0062)	(0.0088)	(0.0103)
CEO * RET <= -25%	-0.0131	-0.0352	0.1279	0.1309	-0.0185	-0.0411	0.1096	0.1095
	(0.0227)	(0.0367)	(0.1450)	(0.1481)	(0.0220)	(0.0349)	(0.1441)	(0.1463)
CEO * RET > 25%	-0.0214**	-0.0262	-0.0438*	-0.0580*	-0.0199*	-0.0339*	-0.0525**	-0.0636**
	(0.0104)	(0.0185)	(0.0254)	(0.0307)	(0.0103)	(0.0178)	(0.0250)	(0.0304)
Information Uncertainty								
Large Firms	-0.0073***	-0.0181***	-0.0259***	-0.0353***	-0.0072***	-0.0164***	-0.0216***	-0.0256***
	(0.0005)	(0.0009)	(0.0014)	(0.0019)	(0.0005)	(0.0009)	(0.0014)	(0.0019)
Medium Firms	-0.0049***	-0.0136***	-0.0209***	-0.0318***	-0.0037***	-0.0102***	-0.0115***	-0.0164***
	(0.0005)	(0.0010)	(0.0015)	(0.0020)	(0.0005)	(0.0010)	(0.0015)	(0.0020)
High Stock Volatility Firms	-0.0167***	-0.0433***	-0.0875***	-0.1299***	-0.0185***	-0.0470***	-0.0992***	-0.1451***
	(0.0005)	(0.0010)	(0.0015)	(0.0019)	(0.0005)	(0.0010)	(0.0015)	(0.0019)
Medium Stock Volatility Firms	-0.0070***	-0.0184***	-0.0362***	-0.0511***	-0.0066***	-0.0170***	-0.0345***	-0.0490***
	(0.0003)	(0.0005)	(0.0007)	(0.0010)	(0.0003)	(0.0005)	(0.0008)	(0.0010)
Small Size * High Stock Volatility Firms	0.0032***	0.0137***	0.0343***	0.0408***	0.0050***	0.0167***	0.0449***	0.0545***
	(0.0012)	(0.0022)	(0.0033)	(0.0043)	(0.0012)	(0.0022)	(0.0033)	(0.0043)
Accrual Quality (FLOS, 2005)	<0.0000***	<0.0000***	<0.0000***	<0.0000***	<0.0000***	<0.0000***	<0.0000***	<0.0000***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)

(continued on next page)

Appendix 2-P: Regression Results with Insider Sale (Accrual Quality) (Table 2-P) (cont.)

Insider Stock Sale (cont.)

Event Study is based on the Market Model using:	A. CRSP Value-Weighted Index				B. CRSP Equal-Weighted Index			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Control Variables								
Number of insider shares traded at insider level	<0.0000	<0.0000**	<0.0000**	<0.0000***	<0.0000	<0.0000**	<0.0000**	<0.0000**
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Number of insider shares traded at company level (%)	-0.0000	-0.0004***	-0.0008***	-0.0010***	-0.0001	-0.0004***	-0.0007***	-0.0008***
	(0.0001)	(0.0001)	(0.0002)	(0.0002)	(0.0001)	(0.0001)	(0.0002)	(0.0002)
Market to book ratio (MTB)	-0.0000***	-0.0000***	0.0000	0.0000	-0.0000***	-0.0000***	0.0000	-0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Loss (binary variable for net income < 0)	-0.0020***	-0.0122***	-0.0207***	-0.0200***	-0.0019***	-0.0115***	-0.0173***	-0.0143***
	(0.0006)	(0.0011)	(0.0015)	(0.0021)	(0.0006)	(0.0011)	(0.0015)	(0.0021)
Return on assets (ROA)	0.0143***	0.0104	-0.0439***	-0.1058***	0.0168***	0.0134*	-0.0486***	-0.1133***
	(0.0046)	(0.0083)	(0.0109)	(0.0171)	(0.0046)	(0.0079)	(0.0108)	(0.0170)
Leverage ratio (long-term debt/ equity)	0.0000***	0.0000***	0.0000	0.0000	0.0000***	0.0000***	0.0000	0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Insurance industry	-0.0103***	-0.0179***	-0.0383***	-0.0659***	-0.0127***	-0.0274***	-0.0493***	-0.0853***
	(0.0030)	(0.0052)	(0.0082)	(0.0116)	(0.0032)	(0.0056)	(0.0086)	(0.0122)
January	0.0027***	-0.0085***	-0.0149***	-0.0252***	-0.0040***	0.0070***	0.0239***	0.0102***
	(0.0007)	(0.0015)	(0.0023)	(0.0028)	(0.0007)	(0.0014)	(0.0023)	(0.0028)
Fourth Quarter	0.0026***	0.0144***	0.0269***	0.0308***	-0.0020***	-0.0138***	-0.0230***	-0.0151***
	(0.0004)	(0.0007)	(0.0010)	(0.0013)	(0.0004)	(0.0007)	(0.0010)	(0.0014)
Constant	0.0129***	0.0178***	0.0405***	0.0707***	0.0093***	0.0108**	0.0279***	0.0433***
	(0.0026)	(0.0042)	(0.0064)	(0.0083)	(0.0026)	(0.0043)	(0.0065)	(0.0083)
Year Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Sector Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
R-squared	0.97%	2.37%	3.97%	5.03%	1.47%	2.76%	4.03%	4.96%

1. Heteroscedasticity-consistent standard errors are in parentheses.
2. The symbols ***, **, * show the significance at the 0.01, 0.05, and 0.10 levels of the t-test, respectively.
3. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock sales, respectively. We employ the event study method based on the Market Model using CRSP value-weighted index and CRSP equal-weighted index, respectively.
4. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares. We employ five binary variables to proxy CEO, CFO, director, officer, and large shareholders who sold the firm's stocks from 1996 to 2013, respectively.
5. We use four binary variables to proxy significant changes in firm's stock prices (i.e., past stock performance): RET is less than -25%, RET lies between -25% and -20%, RET lies between 20% and 25%, and RET is greater than 25%. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., 4 day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., 2 day past stock performance) to proxy RET and get similar results.
6. We employ two binary variables for firm size based on market capitalization: small firms with market capitalization less than or equal to $206,986,006 (33th percentile of the insider stock purchase and sale sample), medium firms with market capitalization between $206,986,006 and $1,102,269,828 (33.33th percentile to 66.66th percentile), and large firms with market capitalization greater than $1,102,269,828 (66.66th percentile).
7. We employ two binary variables for stock volatility of the firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: low stock volatility firms with stock volatility less than or equal to 0.01983 (33.33th percentile of the insider stock purchase and sale sample), medium stock volatility firms with stock volatility between 0.01983 and 0.03460 (33.33th percentile to 66.66th percentile), and high stock volatility firms with stock volatility greater than 0.03460 (66.66th percentile).
8. We calculate accruals quality based on Francis, LaFond, Olsson, and Schipper (2005) and use it to proxy information risk of a firm (Eckles, Halek, and Zhang, 2013).

Appendix 2-Q: Regression Results with Insider Purchase (Information Quality) (Table 2-Q)

Insider Stock Purchase

Cumulative Abnormal Return (CAR) Ordinary Least Squares Regression Model with Heteroscedasticity-Consistent Standard Errors

Number of Transactions = 131,915; Number of Insiders = 32,980; Number of Firms = 6,074; Sample Period = 1996 to 2013

Event Study is based on the Market Model using:	A. CRSP Value-Weighted Index				B. CRSP Equal-Weighted Index			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Independent Variables								
Insider Type								
CEO	0.0080***	0.0326***	0.0574***	0.0670***	0.0093***	0.0342***	0.0545***	0.0641***
	(0.0013)	(0.0022)	(0.0032)	(0.0043)	(0.0013)	(0.0021)	(0.0031)	(0.0042)
CFO	0.0088***	0.0302***	0.0532***	0.0647***	0.0115***	0.0333***	0.0576***	0.0703***
	(0.0018)	(0.0030)	(0.0044)	(0.0058)	(0.0018)	(0.0029)	(0.0043)	(0.0057)
Director	0.0026***	0.0168***	0.0312***	0.0392***	0.0041***	0.0201***	0.0343***	0.0459***
	(0.0009)	(0.0015)	(0.0023)	(0.0032)	(0.0009)	(0.0015)	(0.0023)	(0.0032)
Officer	0.0070***	0.0259***	0.0525***	0.0633***	0.0086***	0.0288***	0.0553***	0.0684***
	(0.0011)	(0.0019)	(0.0027)	(0.0038)	(0.0011)	(0.0018)	(0.0027)	(0.0037)
Large Shareholders	0.0048	-0.0401***	-0.0457***	-0.0988***	0.0052	-0.0312***	-0.0325**	-0.0546***
	(0.0053)	(0.0111)	(0.0164)	(0.0222)	(0.0053)	(0.0112)	(0.0163)	(0.0194)
Past Stock Performance								
RET <= -25%	0.0556***	0.0818***	0.1065***	0.1008***	0.0563***	0.0795***	0.0676***	0.0582***
	(0.0045)	(0.0065)	(0.0089)	(0.0119)	(0.0045)	(0.0112)	(0.0088)	(0.0134)
-25% < RET <= -20%	0.0269***	0.0374***	0.0533***	0.0438***	0.0292***	0.0326***	0.0286***	0.0134
	(0.0042)	(0.0066)	(0.0091)	(0.0121)	(0.0040)	(0.0063)	(0.0090)	(0.0120)
20% < RET <= 25%	0.0024	0.0064	0.0387***	0.0531***	-0.0094	-0.0123	0.0195	0.0375**
	(0.0058)	(0.0092)	(0.0134)	(0.0181)	(0.0057)	(0.0088)	(0.0132)	(0.0178)
RET > 25%	0.0113*	0.0312***	0.0852***	0.1346***	-0.0060	-0.0021	0.0411***	0.0787***
	(0.0058)	(0.0091)	(0.0145)	(0.0187)	(0.0058)	(0.0090)	(0.0143)	(0.0185)
CEO * RET <= -25%	-0.0049	-0.0208	-0.0424*	-0.0483	-0.0042	-0.0375*	-0.0315	-0.0530
	(0.0128)	(0.0172)	(0.0241)	(0.0325)	(0.0121)	(0.0194)	(0.0232)	(0.0325)
CEO * RET > 25%	-0.0410***	-0.0564**	-0.0305	-0.0057	-0.0382***	-0.0407*	-0.0157	0.0083
	(0.0138)	(0.0234)	(0.0377)	(0.0520)	(0.0135)	(0.0218)	(0.0363)	(0.0504)
Information Uncertainty								
Small Firms	0.0087***	0.0183***	0.0294***	0.0494***	0.0076***	0.0156***	0.0249***	0.0415***
	(0.0009)	(0.0015)	(0.0023)	(0.0032)	(0.0009)	(0.0015)	(0.0023)	(0.0031)
Medium Firms	0.0073***	0.0106***	0.0154***	0.0190***	0.0068***	0.0096***	0.0125***	0.0158***
	(0.0007)	(0.0012)	(0.0018)	(0.0024)	(0.0007)	(0.0012)	(0.0018)	(0.0024)
High Stock Volatility Firms	0.0091***	0.0121***	0.0080***	0.0059*	0.0082***	0.0048**	-0.0141***	-0.0332***
	(0.0010)	(0.0018)	(0.0027)	(0.0036)	(0.0010)	(0.0020)	(0.0028)	(0.0037)
Medium Stock Volatility Firms	0.0054***	0.0057***	0.0073***	0.0114***	0.0066***	0.0088***	0.0078***	0.0086***
	(0.0006)	(0.0010)	(0.0015)	(0.0020)	(0.0006)	(0.0010)	(0.0015)	(0.0020)
Small Firm Size * High Stock Volatility Firms	0.0274***	0.0636***	0.1147***	0.1606***	0.0260***	0.0609***	0.1079***	0.1584***
	(0.0016)	(0.0027)	(0.0040)	(0.0053)	(0.0016)	(0.0028)	(0.0040)	(0.0053)
Information Quality (Transparency)	0.0011	0.0145***	0.0279***	0.0374***	0.0009	0.0141***	0.0318***	0.0429***
	(0.0010)	(0.0016)	(0.0024)	(0.0035)	(0.0010)	(0.0017)	(0.0024)	(0.0035)

(continued on next page)

Appendix 2-Q: Regression Results with Insider Purchase (Information Quality) (Table 2-Q) (cont.)

Insider Stock Purchase (cont.)

Event Study is based on the Market Model using:	A. CRSP Value-Weighted Index				B. CRSP Equal-Weighted Index			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Control Variables								
Number of insider shares traded at insider level	<0.0000	<0.0000	<0.0000*	<0.0000*	<0.0000	<0.0000	<0.0000	<0.0000*
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Number of insider shares traded at company level (%)	0.0023**	0.0016**	0.0023**	0.0013	0.0021**	0.0019**	0.0027**	0.0018*
	(0.0010)	(0.0008)	(0.0011)	(0.0008)	(0.0009)	(0.0009)	(0.0012)	(0.0009)
Market to book ratio (MTB)	-0.0000**	-0.0001**	-0.0002**	-0.0002**	-0.0000**	-0.0001**	-0.0001**	-0.0002**
	(0.0000)	(0.0000)	(0.0001)	(0.0001)	(0.0000)	(0.0000)	(0.0001)	(0.0001)
Loss (binary variable for net income < 0)	0.0020**	-0.0059***	-0.0196***	-0.0163***	0.0032***	-0.0021	-0.0156***	-0.0100***
	(0.0010)	(0.0018)	(0.0025)	(0.0032)	(0.0010)	(0.0018)	(0.0025)	(0.0032)
Return on assets (ROA)	-0.0331***	-0.0845***	-0.0575***	-0.1109***	-0.0246***	-0.0441***	-0.0198	-0.0462**
	(0.0087)	(0.0176)	(0.0207)	(0.0229)	(0.0078)	(0.0163)	(0.0200)	(0.0231)
Leverage ratio (long-term debt/ equity)	0.0001***	0.0002**	0.0004**	0.0006***	0.0001***	0.0001*	0.0003**	0.0005**
	(0.0000)	(0.0001)	(0.0002)	(0.0002)	(0.0000)	(0.0001)	(0.0001)	(0.0002)
Insurance industry	0.0098***	0.0207***	0.0192***	0.0279***	0.0073***	0.0173***	0.0185***	0.0230***
	(0.0016)	(0.0025)	(0.0036)	(0.0049)	(0.0015)	(0.0025)	(0.0035)	(0.0045)
Banking industry	-0.0025**	-0.0098***	-0.0053**	-0.0019	-0.0010	-0.0056***	0.0025	0.0086**
	(0.0010)	(0.0017)	(0.0025)	(0.0033)	(0.0010)	(0.0018)	(0.0026)	(0.0034)
January	-0.0046***	-0.0421***	-0.0378***	-0.0300***	-0.0084***	-0.0062**	0.0202***	0.0096**
	(0.0015)	(0.0025)	(0.0038)	(0.0049)	(0.0015)	(0.0026)	(0.0038)	(0.0049)
Fourth Quarter	0.0039***	0.0247***	0.0180***	0.0249***	-0.0037***	-0.0184***	-0.0395***	-0.0340***
	(0.0009)	(0.0015)	(0.0021)	(0.0028)	(0.0009)	(0.0015)	(0.0021)	(0.0028)
Constant	-0.0131***	-0.0149***	-0.0369***	-0.0504***	-0.0108***	-0.0097***	-0.0138***	-0.0042
	(0.0019)	(0.0033)	(0.0048)	(0.0064)	(0.0019)	(0.0032)	(0.0048)	(0.0062)
Year Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Sector Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
R-squared	4.44%	6.95%	7.86%	8.19%	3.97%	4.55%	5.74%	6.21%

1. Heteroscedasticity-consistent standard errors are in parentheses.

2. The symbols ***, **, * show the significance at the 0.01, 0.05, and 0.10 levels of the t-test, respectively.

3. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock purchases, respectively. We employ the event study method based on the Market Model using CRSP value-weighted index and CRSP equal-weighted index, respectively.

4. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares. We employ five binary variables to proxy CEO, CFO, director, officer, and large shareholders who purchased the firm's stocks from 1996 to 2013, respectively.

5. We use four binary variables to proxy significant changes in firm's stock prices (i.e., past stock performance): RET is less than -25%, RET lies between -25% and -20%, RET lies between 20% and 25%, and RET is greater than 25%. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., 4 day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., 2 day past stock performance) to proxy RET and get similar results.

6. We employ two binary variables for firm size based on market capitalization: small firms with market capitalization less than or equal to $206,986,006 (33th percentile of the insider stock purchase and sale sample), medium firms with market capitalization between $206,986,006 and $1,102,269,828 (33.33th percentile to 66.66th percentile), and large firms with market capitalization greater than $1,102,269,828 (66.66th percentile).

7. We employ two binary variables for stock volatility of the firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: low stock volatility firms with stock volatility less than or equal to 0.01983 (33.33th percentile of the insider stock purchase and sale sample), medium stock volatility firms with stock volatility between 0.01983 and 0.03460 (33.33th percentile to 66.66th percentile), and high stock volatility firms with stock volatility greater than 0.03460 (66.66th percentile).

8. As for information quality (transparency) variable, we follow Wade, Hoyt, and Liebenberg (2015) and calculate dispersion (DISP) based on Diether, Malloy, and Scherbina (2002).

Appendix 2-R: Regression Results with Insider Sale (Information Quality) (Table 2-R)

Insider Stock Sale

Cumulative Abnormal Return (CAR) Ordinary Least Squares Regression Model with Heteroscedasticity-Consistent Standard Errors

Number of Transactions = 501,885; Number of Insiders = 63,139; Number of Firms = 6,107; Sample Period = 1996 to 2013

Event Study is based on the Market Model using:	A. CRSP Value-Weighted Index				B. CRSP Equal-Weighted Index			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Independent Variables								
Insider Type								
CEO	-0.0016***	-0.0095***	-0.0224***	-0.0359***	-0.0012**	-0.0091***	-0.0206***	-0.0316***
	(0.0005)	(0.0010)	(0.0015)	(0.0020)	(0.0005)	(0.0010)	(0.0015)	(0.0020)
CFO	-0.0021***	-0.0092***	-0.0220***	-0.0342***	-0.0022***	-0.0102***	-0.0225***	-0.0326***
	(0.0006)	(0.0012)	(0.0018)	(0.0023)	(0.0006)	(0.0012)	(0.0018)	(0.0023)
Director	0.0004	-0.0025***	-0.0080***	-0.0166***	0.0006	-0.0031***	-0.0079***	-0.0155***
	(0.0005)	(0.0009)	(0.0013)	(0.0017)	(0.0005)	(0.0009)	(0.0013)	(0.0017)
Officer	-0.0003	-0.0041***	-0.0090***	-0.0161***	0.0000	-0.0046***	-0.0090***	-0.0143***
	(0.0004)	(0.0008)	(0.0013)	(0.0016)	(0.0004)	(0.0008)	(0.0013)	(0.0016)
Large Shareholders	-0.0054	-0.0025	-0.0375***	-0.0885***	0.0010	0.0042	-0.0217**	-0.0695***
	(0.0033)	(0.0061)	(0.0103)	(0.0149)	(0.0032)	(0.0061)	(0.0102)	(0.0149)
Past Stock Performance								
RET <= -25%	0.0066	0.0652***	0.1032***	0.1102***	0.0181**	0.0584***	0.0663***	0.0637***
	(0.0084)	(0.0129)	(0.0174)	(0.0220)	(0.0083)	(0.0126)	(0.0170)	(0.0216)
-25% < RET <= -20%	0.0067	-0.0043	0.0005	0.0067	0.0217***	0.0199**	0.0126	0.0162
	(0.0052)	(0.0088)	(0.0124)	(0.0163)	(0.0050)	(0.0089)	(0.0130)	(0.0165)
20% < RET <= 25%	0.0011	-0.0033	-0.0117*	-0.0042	-0.0095***	-0.0222***	-0.0245***	-0.0169**
	(0.0022)	(0.0042)	(0.0061)	(0.0079)	(0.0023)	(0.0043)	(0.0061)	(0.0079)
RET > 25%	-0.0010	0.0189***	0.0029	0.0124	-0.0124***	-0.0035	-0.0105	0.0019
	(0.0027)	(0.0049)	(0.0071)	(0.0088)	(0.0027)	(0.0049)	(0.0073)	(0.0089)
CEO * RET <= -25%	0.0372*	0.0409	0.0647	0.1489**	0.0408**	0.0394	0.0745*	0.1292**
	(0.0201)	(0.0270)	(0.0396)	(0.0587)	(0.0196)	(0.0267)	(0.0388)	(0.0571)
CEO * RET > 25%	-0.0128	-0.0224	0.0020	-0.0063	-0.0102	-0.0136	0.0013	-0.0120
	(0.0084)	(0.0145)	(0.0216)	(0.0272)	(0.0083)	(0.0144)	(0.0214)	(0.0273)
Information Uncertainty								
Large Firms	-0.0100***	-0.0215***	-0.0322***	-0.0415***	-0.0103***	-0.0195***	-0.0294***	-0.0346***
	(0.0006)	(0.0011)	(0.0017)	(0.0022)	(0.0006)	(0.0011)	(0.0017)	(0.0022)
Medium Firms	-0.0072***	-0.0145***	-0.0239***	-0.0327***	-0.0064***	-0.0114***	-0.0176***	-0.0223***
	(0.0006)	(0.0011)	(0.0017)	(0.0022)	(0.0006)	(0.0011)	(0.0017)	(0.0022)
High Stock Volatility Firms	-0.0154***	-0.0420***	-0.0893***	-0.1376***	-0.0183***	-0.0478***	-0.1058***	-0.1594***
	(0.0004)	(0.0008)	(0.0012)	(0.0016)	(0.0004)	(0.0008)	(0.0013)	(0.0016)
Medium Stock Volatility Firms	-0.0065***	-0.0174***	-0.0342***	-0.0499***	-0.0064***	-0.0174***	-0.0346***	-0.0513***
	(0.0002)	(0.0004)	(0.0007)	(0.0009)	(0.0002)	(0.0004)	(0.0007)	(0.0009)
Small Size * High Stock Volatility Firms	0.0140***	0.0505***	0.1176***	0.1682***	0.0146***	0.0491***	0.1160***	0.1615***
	(0.0013)	(0.0024)	(0.0036)	(0.0045)	(0.0013)	(0.0024)	(0.0036)	(0.0046)
Information Quality (Transparency)	0.0020***	0.0096***	0.0211***	0.0317***	0.0027***	0.0128***	0.0272***	0.0412***
	(0.0004)	(0.0006)	(0.0009)	(0.0012)	(0.0004)	(0.0006)	(0.0010)	(0.0012)

(continued on next page)

Appendix 2-R: Regression Results with Insider Sale (Information Quality) (Table 2-R) (cont.)

Insider Stock Sale (cont.)

Event Study is based on the Market Model using:	**A. CRSP Value-Weighted Index**				**B. CRSP Equal-Weighted Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Control Variables								
Number of insider shares traded at insider level	<0.0000**	<0.0000***	<0.0000***	<0.0000***	<0.0000**	<0.0000***	<0.0000***	<0.0000***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Number of insider shares traded at company level (%)	-0.0003***	-0.0012***	-0.0026***	-0.0034***	-0.0003***	-0.0010***	-0.0022***	-0.0029***
	(0.0001)	(0.0001)	(0.0002)	(0.0003)	(0.0001)	(0.0001)	(0.0002)	(0.0003)
Market to book ratio (MTB)	-0.0000***	-0.0000***	-0.0000***	-0.0000***	-0.0000***	-0.0000***	-0.0000***	-0.0000***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Loss (binary variable for net income < 0)	-0.0023***	-0.0144***	-0.0254***	-0.0278***	-0.0020***	-0.0131***	-0.0241***	-0.0238***
	(0.0005)	(0.0010)	(0.0015)	(0.0019)	(0.0005)	(0.0010)	(0.0015)	(0.0019)
Return on assets (ROA)	0.0072	0.0236***	0.0270**	-0.0329**	0.0113***	0.0270***	0.0400***	-0.0172
	(0.0046)	(0.0081)	(0.0112)	(0.0139)	(0.0043)	(0.0071)	(0.0103)	(0.0134)
Leverage ratio (long-term debt/ equity)	0.0000***	0.0001***	0.0002***	0.0002***	0.0000***	0.0001***	0.0002***	0.0002***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Insurance industry	0.0018***	0.0070***	0.0127***	0.0191***	0.0017**	0.0059***	0.0114***	0.0183***
	(0.0007)	(0.0011)	(0.0018)	(0.0023)	(0.0007)	(0.0012)	(0.0018)	(0.0024)
Banking industry	0.0030***	0.0064***	0.0101***	0.0156***	0.0033***	0.0049***	0.0063***	0.0117***
	(0.0005)	(0.0010)	(0.0015)	(0.0020)	(0.0006)	(0.0011)	(0.0016)	(0.0021)
January	-0.0002	-0.0138***	-0.0192***	-0.0178***	-0.0066***	0.0054***	0.0299***	0.0201***
	(0.0006)	(0.0012)	(0.0017)	(0.0021)	(0.0006)	(0.0012)	(0.0017)	(0.0021)
Fourth Quarter	0.0011***	0.0100***	0.0150***	0.0132***	-0.0028***	-0.0208***	-0.0447***	-0.0412***
	(0.0003)	(0.0006)	(0.0009)	(0.0012)	(0.0003)	(0.0006)	(0.0009)	(0.0012)
Constant	0.0041***	0.0032*	0.0003	-0.0029	0.0058***	0.0158***	0.0439***	0.0578***
	(0.0010)	(0.0019)	(0.0030)	(0.0039)	(0.0010)	(0.0019)	(0.0030)	(0.0039)
Year Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Sector Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
R-squared	0.89%	2.69%	4.59%	5.92%	1.61%	3.47%	5.90%	6.98%

1. Heteroscedasticity-consistent standard errors are in parentheses.

2. The symbols ***, **, * show the significance at the 0.01, 0.05, and 0.10 levels of the t-test, respectively.

3. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock sales, respectively. We employ the event study method based on the Market Model using CRSP value-weighted index and CRSP equal-weighted index, respectively.

4. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares. We employ five binary variables to proxy CEO, CFO, director, officer, and large shareholders who sold the firm's stocks from 1996 to 2013, respectively.

5. We use four binary variables to proxy significant changes in firm's stock prices (i.e., past stock performance): RET is less than -25%, RET lies between -25% and -20%, RET lies between 20% and 25%, and RET is greater than 25%. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., 4 day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., 2 day past stock performance) to proxy RET and get similar results.

6. We employ two binary variables for firm size based on market capitalization: small firms with market capitalization less than or equal to $206,986,006 (33th percentile of the insider stock purchase and sale sample), medium firms with market capitalization between $206,986,006 and $1,102,269,828 (33.33th percentile to 66.66th percentile), and large firms with market capitalization greater than $1,102,269,828 (66.66th percentile).

7. We employ two binary variables for stock volatility of the firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: low stock volatility firms with stock volatility less than or equal to 0.01983 (33.33th percentile of the insider stock purchase and sale sample), medium stock volatility firms with stock volatility between 0.01983 and 0.03460 (33.33th percentile to 66.66th percentile), and high stock volatility firms with stock volatility greater than 0.03460 (66.66th percentile).

8. As for information quality (transparency) variable, we follow Wade, Hoyt, and Liebenberg (2015) and calculate dispersion (DISP) based on Diether, Malloy, and Scherbina (2002).

Appendix 2-S: Regression Results with 90-Day Holding Period Return (Table 2-S)

Insider Stock Purchase and Sale: 90-Day Holding Period Return (HPR(+1,+90))
Ordinary Least Squares Regression Model with Heteroscedasticity-Consistent Standard Errors

	Inisder Stock Purchase				Insider Stock Sale			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**HPR(+1,+90)**	**HPR(+1,+90)**	**HPR(+1,+90)**	**HPR(+1,+90)**	**HPR(+1,+90)**	**HPR(+1,+90)**	**HPR(+1,+90)**	**HPR(+1,+90)**
Independent Variables								
Insider Type								
CEO	-0.0174	-0.0169	-0.0227	0.0035	-0.1631***	-0.1629***	-0.1165***	-0.0808***
	(0.0186)	(0.0186)	(0.0205)	(0.0161)	(0.0135)	(0.0135)	(0.0133)	(0.0091)
CFO	-0.0331*	-0.0323*	0.0147	0.0322	-0.1659***	-0.1657***	-0.1131***	-0.0820***
	(0.0188)	(0.0188)	(0.0257)	(0.0280)	(0.0144)	(0.0144)	(0.0144)	(0.0103)
Director	-0.0058	-0.0051	-0.0358**	-0.0006	-0.1391***	-0.1393***	-0.1022***	-0.0590***
	(0.0132)	(0.0132)	(0.0167)	(0.0125)	(0.0149)	(0.0149)	(0.0144)	(0.0096)
Officer	0.0240	0.0244	0.0057	0.0286*	-0.1378***	-0.1378***	-0.0959***	-0.0726***
	(0.0181)	(0.0181)	(0.0182)	(0.0147)	(0.0137)	(0.0137)	(0.0135)	(0.0091)
Large Shareholders	-0.0389*	-0.0389*	0.1598***	-0.1923***	0.3270*	0.3269*	-0.3232***	-0.1283***
	(0.0231)	(0.0231)	(0.0411)	(0.0221)	(0.1669)	(0.1669)	(0.0414)	(0.0168)
Past Stock Performance								
RET <= -25%	0.4112***	0.4096***	0.3499***	0.2700***	2.4091***	2.4068***	0.9424**	0.3612***
	(0.0769)	(0.0769)	(0.0722)	(0.0849)	(0.3609)	(0.3611)	(0.4536)	(0.1298)
-25% < RET <= -20%	0.0584*	0.0568*	0.2120***	0.0496*	0.6501***	0.6487***	0.1018	0.0874
	(0.0341)	(0.0340)	(0.0545)	(0.0268)	(0.2213)	(0.2214)	(0.0958)	(0.0869)
20% < RET <= 25%	0.0586	0.0579	0.0348	-0.0372	-0.0330	-0.0320	-0.0821***	-0.0131
	(0.0696)	(0.0696)	(0.0736)	(0.0473)	(0.0211)	(0.0211)	(0.0154)	(0.0154)
RET > 25%	0.5629***	0.5608***	0.5826***	-0.0292	0.3295***	0.3298***	0.1016	0.1772*
	(0.1696)	(0.1697)	(0.1884)	(0.0534)	(0.0771)	(0.0771)	(0.0939)	(0.0955)
CEO * RET <= -25%	0.2798	0.2801	0.0833	-0.1683	-0.5122	-0.5119	-1.0490**	-0.2753
	(0.2786)	(0.2786)	(0.1623)	(0.1077)	(0.9352)	(0.9352)	(0.4739)	(0.1969)
CEO * RET > 25%	-0.4918**	-0.4898**	-0.3472	-0.0746	-0.4025***	-0.4012***	-0.2772***	-0.1500
	(0.1971)	(0.1971)	(0.2537)	(0.0689)	(0.0995)	(0.0995)	(0.0958)	(0.1301)
Information Uncertainty								
Small Firms	0.0861***	0.0865***	0.1174***	0.0667***				
	(0.0055)	(0.0055)	(0.0085)	(0.0110)				
Medium Firms	0.0361***	0.0371***	0.0344***	0.0211***	-0.0758***	-0.0752***	-0.0610***	-0.0892***
	(0.0039)	(0.0039)	(0.0063)	(0.0071)	(0.0054)	(0.0054)	(0.0046)	(0.0099)
Large Firms					-0.1085***	-0.1087***	-0.1053***	-0.1084***
					(0.0061)	(0.0061)	(0.0056)	(0.0098)
High Stock Volatility Firms	0.0108	0.0055	0.1386***	0.0203**	-0.0322***	-0.0403***	0.0211***	-0.0245***
	(0.0094)	(0.0094)	(0.0109)	(0.0086)	(0.0061)	(0.0059)	(0.0047)	(0.0046)
Medium Stock Volatility Firms	0.0395***	0.0384***	0.0985***	0.0239***	0.0137***	0.0110***	0.0164***	0.0061***
	(0.0049)	(0.0049)	(0.0082)	(0.0051)	(0.0029)	(0.0028)	(0.0022)	(0.0020)
Small Firm Size * High Stock Volatility Firms	0.3444***	0.3462***	0.2452***	0.1937***	0.4680***	0.4698***	0.2651***	0.3477***
	(0.0151)	(0.0151)	(0.0191)	(0.0203)	(0.0226)	(0.0226)	(0.0302)	(0.0329)
Financial Crisis of 2008 (December 2007 to June 2009)		0.1706***				0.2185***		
		(0.0350)				(0.0654)		
Accrual Quality (FLOS, 2005)			<-0.0000*				<0.0000***	
			(0.0000)				(0.0000)	
Information Quality (Transparency)				0.0195				0.0464***
				(0.0229)				(0.0052)

(continued on next page)

Appendix 2-S: Regression Results with 90-Day Holding Period Return (Table 2-S) (cont.)

Insider Stock Purchase and Sale: 90-Day Holding Period Return (cont.)

	Inisder Stock Purchase				Insider Stock Sale			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**HPR(+1,+90)**	**HPR(+1,+90)**	**HPR(+1,+90)**	**HPR(+1,+90)**	**HPR(+1,+90)**	**HPR(+1,+90)**	**HPR(+1,+90)**	**HPR(+1,+90)**
Control Variables								
Number of insider shares traded at insider level	<0.0000***	<0.0000***	<0.0000**	<0.0000*	<0.0000***	<0.0000***	<0.0000***	<0.0000*
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Number of insider shares traded at company level (%)	-0.0030**	-0.0030**	-0.0053**	-0.0040***	-0.0114***	-0.0112***	-0.0202***	-0.0018***
	(0.0012)	(0.0012)	(0.0022)	(0.0014)	(0.0043)	(0.0043)	(0.0065)	(0.0004)
Market to book ratio (MTB)	0.0003	0.0003	0.0001*	-0.0008*	-0.0000***	-0.0000***	0.0000	-0.0000***
	(0.0002)	(0.0002)	(0.0000)	(0.0005)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Loss (binary variable for net income < 0)	-0.0006	-0.0002	-0.0830***	-0.0570***	-0.0292	-0.0286	0.0734***	-0.0500***
	(0.0174)	(0.0174)	(0.0168)	(0.0157)	(0.0240)	(0.0239)	(0.0127)	(0.0135)
Return on assets (ROA)	-0.8773***	-0.8778***	-0.8305***	-1.0087***	-1.6657***	-1.6653***	0.1174***	-1.1410***
	(0.2028)	(0.2027)	(0.1843)	(0.2324)	(0.2844)	(0.2842)	(0.0368)	(0.1701)
Leverage ratio (long-term debt/ equity)	-0.0015***	-0.0015***	-0.0005***	0.0016*	0.0000	0.0000	-0.0001	0.0002***
	(0.0005)	(0.0005)	(0.0001)	(0.0009)	(0.0000)	(0.0000)	(0.0001)	(0.0000)
Insurance industry	0.1203**	0.1201**	0.0695**	0.0369***	0.0298	0.0305	-0.0310*	0.0255***
	(0.0530)	(0.0530)	(0.0342)	(0.0110)	(0.0207)	(0.0207)	(0.0174)	(0.0030)
Banking industry	-0.0370***	-0.0360***		-0.0011	-0.0231***	-0.0242***		-0.0068**
	(0.0077)	(0.0077)		(0.0104)	(0.0089)	(0.0090)		(0.0031)
January	-0.1087***	-0.1119***	-0.1127***	-0.0556***	-0.0590***	-0.0615***	-0.0513***	0.0264***
	(0.0157)	(0.0157)	(0.0229)	(0.0093)	(0.0108)	(0.0106)	(0.0074)	(0.0098)
Fourth Quarter	0.0638***	0.0639***	0.1086***	0.0230**	0.0124	0.0121	0.0378***	0.0046
	(0.0139)	(0.0139)	(0.0172)	(0.0107)	(0.0092)	(0.0092)	(0.0076)	(0.0046)
Constant	-0.1964***	-0.1964***	-0.1550***	-0.0543*	0.0554***	0.0572***	0.1136***	0.0841***
	(0.0176)	(0.0176)	(0.0389)	(0.0296)	(0.0168)	(0.0170)	(0.0172)	(0.0117)
Year Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Sector Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Number of Observations	294,925	294,925	117,754	131,915	716,920	716,920	387,289	501,885
R-squared	1.53%	1.53%	3.19%	2.15%	1.87%	1.88%	1.41%	2.08%

1. Heteroscedasticity-consistent standard errors are in parentheses.
2. The symbols ***, **, * show the significance at the 0.01, 0.05, and 0.10 levels of the t-test, respectively.
3. The 90-Day Holding Period Return refers to the holding period return from the insider stock transaction date to ninety days after the insider stock transaction.
4. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares. We employ five binary variables to proxy CEO, CFO, director, officer, and large shareholders who traded the firm's stocks from 1996 to 2013, respectively.
5. We use four binary variables to proxy significant changes in firm's stock prices (i.e., past stock performance): RET is less than -25%, RET lies between -25% and -20%, RET lies between 20% and 25%, and RET is greater than 25%. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., 4 day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., 2 day past stock performance) to proxy RET and
6. We employ two binary variables for firm size based on market capitalization: small firms with market capitalization less than or equal to $206,986,006 (33th percentile of the insider stock purchase and sale sample), medium firms with market capitalization between $206,986,006 and $1,102,269,828 (33.33th percentile to 66.66th percentile), and large firms with market capitalization greater than $1,102,269,828 (66.66th percentile).
7. We employ two binary variables for stock volatility of the firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: low stock volatility firms with stock volatility less than or equal to 0.01983 (33.33th percentile of the insider stock purchase and sale sample), medium stock volatility firms with stock volatility between 0.01983 and 0.03460 (33.33th percentile to 66.66th percentile), and high stock volatility firms with stock volatility greater than 0.03460 (66.66th percentile).
8. We calculate accruals quality based on Francis, LaFond, Olsson, and Schipper (2005) and use it to proxy information risk of a firm (Eckles, Halek, and Zhang, 2013).
9. As for information quality (transparency) variable, we follow Wade, Hoyt, and Liebenberg (2015) and calculate dispersion (DISP) based on Diether, Malloy, and Scherbina (2002).

CHAPTER 3: ESSAY TWO

INSIDER TRADING AND ENTERPRISE RISK MANAGEMENT

3.1 Introduction

We examine how enterprise risk management (ERM) can add value to a firm by investigating the effects of ERM on abnormal returns of insider stock transactions for 500 publicly-traded firms randomly chosen from an insider stock purchase and sale sample over the period 1996-2013. We use an event study approach and an ex-post regression model to test abnormal returns of insider trades based on whether a firm has an ERM program in place. We expect that abnormal returns of insider stock transactions may differ across firms with the enactment of enterprise risk management.

Firms with an ERM program combine all risk management activities into one central risk function that integrates decision making across all risk classes (e.g., financial risks, hazard risks, operational risks, and strategic risks), facilitates the identification of interdependencies between risks and provides better risk identification, and reduces information asymmetry among units (Liebenberg and Hoyt, 2003; Hoyt and Liebenberg, 2011). Several studies suggest that an ERM program can benefit a firm from several ways including reducing external capital costs, decreasing stock volatility, increasing capital efficiency, and enhancing firm value (e.g., Cumming and Hirtle, 2001; Meulbroek, 2002; Kleffner, Lee, and McGannon, 2003; Beasley, Pagach, and Warr, 2008; Pagach, and Warr, 2010; Hoyt and Liebenberg, 2011; Eckles, Hoyt, and Miller, 2014).

The paper is the first study to examine whether ERM can add value to a firm based on insider stock transaction data. Insiders in a firm with an ERM program are assumed to have better knowledge about firm performance and future stock price movements. Insiders in a firm with an ERM program are assumed to earn greater positive (negative) abnormal returns from their stock purchases (sales). However, it is also possible that an ERM program may reduce information asymmetry between insiders and outside investors. In this case, insiders in ERM firms would earn fewer positive (negative) abnormal returns from their stock purchases (sales) than insiders in non-ERM firms.

This study tests the hypothesis that insiders may be even more (or less) likely to earn abnormal returns from their stock transactions when their firms have enterprise risk management programs in place. Our event study and regression model results show evidence that ERM has negative (positive) effects on abnormal returns of insider stock purchases (sales) particularly in firms with higher levels of information uncertainty, which supports that ERM can benefit a firm from reducing information asymmetry between insiders and outside investors. That is, insiders in firms with an ERM program earn smaller abnormal returns from their stock transactions particularly for high stock volatility firms.

Our paper makes an important contribution to the literature. It is the first study to provide empirical evidence that ERM can add value to a firm through reducing information asymmetry between insiders and outside investors. Also, our study does not focus on a single industry but instead includes 500 firms randomly drawn from a wide range of sectors (e.g., finance, healthcare, consumer services, energy, transportation, and public utilities). This method allows us to have our sample being representative of all

firms with insider stock transactions. Finally, prior studies use yearly ERM data to examine the value of ERM to a firm. We improve the model by using both yearly and daily ERM measures to investigate whether ERM has effects on short-term abnormal returns of insider stock purchases and sales.

3.2 Literature Review

A. Insider Trading

According to the Securities Exchange Act of 1934, insiders refer to officers, directors, and large shareholders who own 10 percent or more of their company's shares. This definition of insider is commonly used in prior literature (e.g., Lakonishok and Lee, 2001; Jeng et al., 2003; Jiang and Zaman, 2010). Insider trading activities are regulated at both the federal level (e.g., the Securities Exchange Act of 1934 (SEA)) and with company-level policies (e.g., blackout windows) (Bettis, Coles, and Lemmon, 2000). Section 16(a) of the SEA requires insiders to disclose their transactions by the tenth day of the calendar month after a trading month. Since the enactment of Sarbanes-Oxley Act of 2002, insiders are required to report a change in ownership within two business days following the execution of their transactions. Some firms with blackout window policies only allow insiders to make trades during certain periods after quarterly earnings announcements (e.g., three to twelve days) (Bettis, Coles, and Lemmon, 2000). Also, Section 16(b) of the SEA states that insiders are not allowed to make short-swing profits within six months of their stock transactions. Insiders can trade their securities legally on the basis of their understanding of the long-term outlook for their firms and public information (Seyhun, 1998). Our research incorporates all available insider trading

activities from the Table One File of the Thomson Reuters Insider Filing Data Feed (IFDF) over the time period 1996 to 2013.[33]

Prior literature shows mixed results of the informativeness of insider stock transactions. Some studies support that insider trading is informative (e.g., Lorie and Niederhoffer, 1968; Jaffe, 1974; Finnerty, 1976). Lorie and Niederhoffer (1968) suggest that insider trading can be profitable based on monthly data of insider trading from 105 New York Stock Exchange companies over the period 1950 to 1960. Jaffe (1974) shows that insider trades contain information and insiders can earn profits from their stock transactions. Also, Finnerty (1976) finds that insider purchase portfolios earn above average returns particularly for the first six months, and insider sale portfolios obtain below average returns.

However, some studies show that not every type of insider trading is informative (e.g., Eckbo and Smith, 1998; Jeng, Metrick, and Zeckhauser, 2003; Scott and Xu, 2004; Cohen, Malloy, and Pomorski, 2012). Eckbo and Smith (1998) show that insiders may actually earn zero or negative abnormal returns based on a sample of insider trades on the Oslo Stock Exchange from 1985 to 1992. Jeng, Metrick, and Zeckhauser (2003) find that insider purchase portfolios earn abnormal returns of more than 6% per year, but insider sale portfolios are not informative of future abnormal returns. Also, Scott and Xu (2004) suggest that insider sales of different volumes carry different information: large sales tend to be driven by overvaluation of stocks and small sales tend to be for liquidity and diversification reasons. Cohen, Malloy, and Pomorski (2012) suggest that opportunistic

[33] We are unable to distinguish between legal and illegal insider trading from the Thomson Reuters Insider Filing Data Feed (IFDF) due to data limitation.

traders are more informed about a firm's future than routine traders and have predictive power of firm's stock returns, news, and events.

There is also a large stream of literature that examines whether insiders make trades based on contrarian investment strategies or based on their superior knowledge about firm's future performance. Several studies show that insiders are contrarian investors, and their stock transactions are informative of future movements in stock prices (e.g., Seyhun, 1986; Seyhun, 1990; Chowdhury, Howe, and Lin, 1993; Rozeff and Zaman, 1998; Lakonishok and Lee, 2001; Jenter, 2005). For example, Seyhun (1990) examines insider trading activities around the Crash of 1987 and finds evidence that insiders who purchase their companies' stocks following significant declines in stock prices during the crash earn greater positive post-crash returns. Lakonishok and Lee (2001) show that insiders in aggregate are contrarian investors and may predict returns in small firms.

Other studies suggest insiders possess superior information to predict market-wide stock price movements (e.g., Seyhun, 1988; Ke, Huddart, and Petroni, 2003; Piotroski and Roulstone, 2005; Jiang and Zaman, 2010). Ke, Huddart, and Petroni (2003) show that net insider stock sales increase nine months to two years prior to the earnings declines based on quarterly insider data from 1989 to 1997. Piotroski and Roulstone (2005) suggest that insiders are both contrarians and possessors of superior information based on firm-year insider trading data from 1992 to 1999. They also find that insiders in firms with higher levels of information uncertainty are more likely to have superior information about firm's future performance. Also, Jiang and Zaman (2010) suggest insiders possess superior information to predict market-wide stock price movements using a first-order

vector autoregressive (VAR) model based on quarterly insider trading data from 1978 to 2000.

B. Enterprise Risk Management

According to Kleffner, Lee, and McGannon (2003), "ERM is the management of operational and financial risks simultaneously in order to maximize the cost-effectiveness of risk management within the constraints of the organization's tolerance for risk." Firms with ERM programs combine all risk management activities into one central risk function that integrates decision making across all risk classes (e.g., financial risks, hazard risk, operational risks, and strategic risk), facilitates the identification of interdependencies between risks and provides better risk identification, and reduces information asymmetries among units (e.g., Liebenberg and Hoyt, 2003; Hoyt and Liebenberg, 2011).

Prior literature examines the prevalence and determinants of ERM programs (e.g., Colquitt, Hoyt, and Lee, 1999; Hoyt, Merkley, and Thiessen, 2001; Kleffner, Lee, and McGannon, 2003; Liebenberg and Hoyt, 2003; Beasley, Clune, and Hermanson, 2005; Pagach and Warr, 2011; Altuntas, Berry-Stölzle, and Hoyt, 2011; Altuntas, Berry-Stölzle, and Hoyt, 2013). The earliest evidence of ERM activities among U.S. insurers is in 1995 (Eckles, Hoyt, and Miller, 2014). Firms that are more volatile are more likely to adopt ERM programs (Pagach and Warr, 2011). Also, firms with higher leverage ratios tend to appoint a CRO, which suggests that firms adopt ERM to reduce information asymmetry regarding firm's risks (Liebenberg and Hoyt, 2003). Altuntas, Berry-Stölzle, and Hoyt (2013) suggest that negative firm performance is a leading factor in the ERM-engagement based on data of property-liability insurers in Germany. Further, larger firms

tend to have a greater ability to adopt ERM due to greater resources (Colquitt, Hoyt, and Lee, 1999; Beasley, Clune, and Hermanson, 2005; Pagach and Warr, 2011). Beasley, Clune, and Hermanson (2005) find that firms in the banking, education, and insurance industries are more likely to adopt ERM. Also, the financial and energy industries may lead the development of ERM (Hoyt, Merkley, and Thiessen, 2001).

Several studies suggest that ERM can benefit a firm from several ways including reducing external capital costs, decreasing stock volatility, increasing capital efficiency, and enhancing firm value (e.g., Cumming and Hirtle, 2001; Meulbroek, 2002; Kleffner, Lee, and McGannon, 2003; Beasley, Pagach, and Warr, 2008; Pagach, and Warr, 2010; Hoyt and Liebenberg, 2011; Eckles, Hoyt, and Miller, 2014). Meulbroek (2002) suggests that an ERM program can benefit firms with a wide range of investment opportunities by providing a more accurate risk-adjusted rate, and an ERM program can also help firms reduce the expected costs of regulatory scrutiny and external capital by improving a firm's risk management disclosure.

Further, ERM can help a firm diversify risks and reduce return volatility (Kleffner, Lee, and McGannon, 2003; Beasley, Pagach, and Warr, 2008; Pagach, and Warr, 2010; Eckles, Hoyt, and Miller, 2014). Eckles, Hoyt, and Miller (2014) examine the impact of enterprise risk management on the marginal cost of reducing risks in the insurance industry based on a Heckman two-step model. Their results show that firms adopting ERM tend to experience a reduction in stock return volatility and an increase in operating profits per unit of risk (i.e., ROA/return volatility). Thus, firms that are more volatile are more likely to benefit from ERM programs (Hoyt and Liebenberg, 2011).

Finally, ERM programs are value enhancing (e.g., Hoyt and Liebenberg, 2011; Baxter et al., 2013; Grace et al., 2015). Hoyt and Liebenberg (2011) employ a maximum-likelihood treatment effects model to simultaneously model the determinants of ERM and the effect of ERM on firm value. Their results show that insurers having an ERM program tend to be valued approximately 20% higher than other insurers. Baxter et al. (2013) find that high-quality ERM programs are positively associated with operating performance of a firm in the banking and insurance industries based on S&P ERM rating data from 2006 to 2008. Also, Grace et al. (2015) employ a frontier efficiency analysis to examine the value of ERM investments by identifying the components of an ERM program and investigating the impact of each ERM component on firm value. Their results suggest that ERM improves efficiency (i.e., cost efficiency and revenue efficiency) and return on assets of an insurer based on the Tillinghast Towers Perrin ERM survey data for 2004 and 2006.

3.3 Hypotheses

Our study examines the effects of enterprise risk management on abnormal returns of insider stock transactions with two hypotheses:

H1 (Enterprise Risk Management): *The enactment of enterprise risk management of a firm has effects on abnormal returns of insider stock transactions.*

The effects of enterprise risk management on abnormal returns of insider stock transactions may be undetermined. On the one hand, insiders in a firm with ERM programs are assumed to have better knowledge about firm's operations and risks. Insiders may be even more likely to purchase and sell shares if a firm has a Chief Risk Officer (CRO) or an enterprise risk management program in place. Thus, abnormal returns of insider stock transactions would be greater for firms having ERM programs. On the other hand, ERM may increase information transparency of a firm and outside investors may be more confident in firms with ERM programs. Thus, ERM programs would reduce information asymmetry of a firm and insiders earn smaller abnormal returns from their stock transactions.

H2 (Information Uncertainty): *The effects of enterprise risk management on abnormal returns of insider trading are greater for firms with higher levels of information uncertainty (i.e., smaller firm size and higher stock volatility).*

Firms with smaller firm size and higher stock volatility are expected to have higher levels of information uncertainty. Higher levels of information uncertainty of a firm are associated with higher levels of information asymmetry between insiders and outsiders. Insiders would earn greater abnormal returns from their stock transactions particularly in firms with higher levels of information uncertainty. ERM is expected to decrease a firm's information uncertainty. Insiders in ERM firms with high levels of information uncertainty would earn smaller abnormal returns from their stock transactions compared

to insiders in non-ERM firms with similar levels of information uncertainty. Thus, the effects of ERM on abnormal returns of insider stock transactions are more pronounced in firms with higher levels of information uncertainty.

3.4 Data

The insider trading activities we focus on are open market and private market transactions of stock purchases and sales. Our event study sample is comprised of 17,393 firm-day observations for insider stock purchases and 39,539 firm-day observations for insider stock sales from 500 firms over the period 1996-2013.[34] The sample used in the ex-post regression model is comprised of 22,220 insider-firm-day observations for insider stock purchases and 49,170 insider-firm-day observations for insider stock sales from these 500 firms over the same time period.[35]

These 500 firms are publicly-traded firms randomly chosen from an insider stock purchase and sale sample during the sample period.[36] We only include 500 firms in our sample since ERM data are hand collection and not available to all firms in the insider stock transaction database. Also, these 500 firms are representative of all firms with insider trading since the average market capitalization ($4.6 billion) of these 500 firms is close to the average market capitalization ($4.2 billion) of all firms from the insider

[34] We choose year 1996 as a starting point of our sample due to the potential data problem of insider trading data before year 1996.

[35] We aggregate insider stock transactions at the insider level. For example, if an insider makes more than one stock purchase transaction on that day, we aggregate his/her dollar value and number of shares traded and view it as one observation in our models.

[36] We randomly chose firms from the sample to avoid the self-selection bias issue. We do not include firms with market capitalization less than $1.85 million, which is the smallest market capitalization among the Wilshire 5000 firms on December 31st 2014. We also exclude firms which do not have more than five insider stock transactions and firms which do not have thirty consecutive past stock returns prior to the transaction date of insider trading since the main focus of our research is to examine the market response to insider trading activities after different levels of past stock performance and we calculate stock volatility of a firm based on thirty consecutive past stock returns.

trading database over the period 1996-2013. The earliest evidence of ERM in our sample is 1998 which is consistent with Hoyt and Liebenberg (2011). Among these 500 firms, 125 firms have an ERM announcement during the period 1998-2014.

Figure 2-1 presents the number of firms engaged in ERM by year, which shows that more than one-third of ERM firms in our sample (i.e., 42 firms out of 125 firms) have an ERM announcement in 2010. This increase may be due to emerging regulation and credit evaluations by rating agencies (Beasley, Branson, and Hancock, 2008). For example, the Dodd-Frank Wall Street Reform and Consumer Protection Act (Dodd-Frank Act of 2010) in an attempt to prevent excessive risk-taking of institutions and build a more stable financial system drive increased use of enterprise risk management. Also, the rating agency Standard & Poor's proposes ERM quality as one of their rating factors in credit evaluation since 2007 (Beasley, Branson, and Hancock, 2008).

The ERM announcement data are based on keyword searches from financial statements, governmental filings, and search engines such as Mergent Online, Factiva and LexisNexis (Hoyt and Liebenberg, 2011; Eckles, Hoyt, and Miller, 2014). ERM keywords include "chief risk officer," "enterprise risk management," "enterprise risk officer," "risk committee," "strategic risk management," "consolidated risk management," "holistic risk management," and "integrated risk management." We follow prior studies and employ an indicator variable (i.e., *ERM Year*) to identify whether a firm employs ERM in any given year over the sample period (Liebenberg and Hoyt, 2003; Hoyt and Liebenberg, 2011; Eckles, Hoyt, and Miller, 2014). For example, if a firm adopts ERM in 2004, the *ERM Year* indicator variable will be assigned with a value of one for year 2004 and the following years. In addition, we use two measures to proxy

ERM as robustness checks: *ERM Year +1* and *ERM Date*. The variable *ERM Year +1* refers to an indicator variable with a value of one for the ERM announcement year plus one year. For example, if a firm adopts ERM in 2004, the *ERM Year +1* indicator variable will be assigned with a value of one for year 2005 and the following years. As for *ERM Date* variable, we employ an indicator variable to identify whether a firm employs ERM on a specific date over the sample period. If we do not find the announcement date of ERM, we use the SEC filing date (or report date) as the first evidence of ERM of a firm. For example, if a firm adopts ERM on March 1st 2004, the *ERM Date* indicator variable will be assigned with a value of one for March 1st 2014 and the following dates.

The insider stock transaction data were obtained from the Table One File of the Thomson Reuters Insider Filing Data Feed (IFDF). The Table One File contains all insider stock transaction information filed on Forms 3, 4, and 5.[37] We include data for trades coded as "P" for insider stock purchases and "S" for insider stock sales on Form 4. We only include data with a cleanse indicator "R" which indicates data verified through all cleansing checks for reasonableness. Daily security price, stock return, volume data, analyst earnings forecasts data, and company financial information were obtained from the Center for Research in Security Prices (CRSP), the IBES summary database, and the Compustat database available from the Wharton Research Data Services (WRDS).

[37] Form 3 includes details of initial statement of beneficial ownership. Form 4 includes details of statement of changes of beneficial ownership for non-derivative securities (Table One) and derivative securities (Table Two). Form 5 includes details of annual statement of change in beneficial ownership. Beginning on July 30th 2003, insiders are required to electronically file their Form 4 documents via the EDGAR system according to the Sarbanes-Oxley Act of 2002.

Company financial information obtained from the Compustat database is based on calendar quarter data.[38] [39]

3.5 Methodology

We use an event study approach and an ex-post regression model to investigate the effects of enterprise risk management on abnormal returns of insider stock transactions. We examine short-term abnormal returns for insider stock purchases and sales, respectively. First, we conduct event studies for 125 ERM firms and 375 non-ERM firms. We then conduct event studies based on three ERM measures (i.e., *ERM Year*, *ERM Year +1*, and *ERM Date*) mentioned above, respectively. Take the *ERM Year* measure for example, we divide the insider purchase sample into two groups based on *ERM Year* (i.e., *Before ERM Year group* and *After ERM Year group*). If a firm employs ERM in 2004, insider stock purchases made before 2004 are in the *Before ERM Year group*, and insider stock purchases made in 2004 and the following years are in the *After ERM Year group*. We then classify each group into six subgroups according to different levels of past stock performance: three subgroups for positive past stock returns and three subgroups for negative past stock returns.[40] The classification of stock return levels is based on

[38] Calendar quarters are determined based on the ending months of each fiscal quarter; that is, February, March, and April are in the first calendar quarter; May, June, and July are in the second calendar quarter; August, September, and October are in the third calendar quarter; and November, December, and January are in the fourth calendar quarter (S&P, 2003).

[39] We also include accrual quality and information quality of a firm in our regression model as robustness checks. We calculate accrual quality based on Francis, LaFond, Olsson, and Schipper (2005) and use it to proxy information risk of a firm (Eckles, Halek, and Zhang, 2013). As for information quality, we follow Wade, Hoyt, and Liebenberg (2015) and calculate dispersion (DISP) based on Diether, Malloy, and Scherbina (2002). Company financial information used to calculate accrual quality and the IBES data used to calculate information quality are based on annual data.

[40] We divide each ERM group into six subgroups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine abnormal returns of insider stock transactions traded at different levels of past stock performance: $RET \leq -20\%$, $-20\% < RET \leq -10\%$, $-10\% < RET \leq 0\%$, $0\% < RET \leq 10\%$, $10\% < RET \leq 20\%$, and $20\% < RET$.

cumulative stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance).[41]

We conduct event study analyses of daily abnormal returns for each subgroup. We employ four event windows from 10 to 90 days after the stock transaction: [+1, +10], [+1, +30], [+1, +60], and [+1, +90]. We define the event date as the transaction date of insider stock purchases or sales and the estimation window as the 255-day trading period which ends 46 days before the event date. Our estimation model is based on the Fama-French-Momentum Time Series model since insider trading activities and abnormal returns may differ across firm size, market to book ratio, and past stock returns (Fama and French, 1993; Carhart, 1997). We primarily use the CRSP value-weighted index as a measure of market returns (and the CRSP equal-weighted index for robustness).[42]

We then employ an ordinary least squares regression model with heteroscedasticity-consistent standard errors to investigate the relationship between abnormal returns of insider trades and ERM announcement, insider type, firm's past stock performance, firm size, stock volatility, and 2008 financial crisis.[43] We run regression models for cumulative abnormal returns (CAR) of insider stock purchases and sales based on four event windows: [+1, +10], [+1, +30], [+1, +60], and [+1, +90], respectively. The cumulative abnormal return for each firm is calculated based on the Cross-Sectional Analysis using the Market Model. Our regression model is as follows:

[41] We also classify stock return levels based on cumulative stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) as robustness checks and get similar results.

[42] We also examine 90-day holding period returns of insider stock transactions traded at different levels of past stock performance as robustness checks and get similar results for insider stock purchases.

[43] We do not employ a maximum-likelihood treatment effects model or a propensity score matching treatment effects model since the data type (i.e., insider-firm-day level data) used in our research violates the overlap assumption required for these two models. For example, cumulative abnormal returns of insider stock transactions are daily data; however, factors affecting ERM such as leverage are quarterly data.

$$\mathbf{CAR_{i,j,t} = \beta_0 + \beta_1\ ERM_{j,t} + \beta_2\ Insider\ type_{i,j,t} + \beta_3\ Past\ stock\ performance_{j,t}}$$
$$\mathbf{+ \beta_4\ Firm\ size_{j,t} + \beta_5\ Stock\ volatility_{j,t} + \beta_6\ 2008\ financial\ crisis_t}$$
$$\mathbf{+ \beta_7\ Insider\ trading\ characteristics_{i,j,t}}$$
$$\mathbf{+ \beta_8\ Firm\ characteristics_{j,t} + \beta_9\ Insurance\ industry_{j,t}}$$
$$\mathbf{+ \beta_{10}\ Banking\ industry_{j,t} + \beta_{11}\ January_t + \beta_{12}\ Fourth\ quarter_t}$$
$$\mathbf{+ \beta_{13}\ Year\ fixed\ effects + \beta_{14}\ Sector - Industry\ fixed\ effects}$$
$$\mathbf{+ \varepsilon_{i,j,t}}$$

The dependent variable, $CAR_{i,j,t}$, is the cumulative daily abnormal return for each insider stock purchase and sale (i.e., insider i, firm j, and day t).[44] Key independent variables include ERM (i.e., *ERM Year, ERM Year +1*, and *ERM Date*), insider type, a firm's past stock performance, firm size, stock volatility of a firm, and 2008 financial crisis. We also include interaction terms of ERM and these key independent variables. As for insider type, insiders with greater decision making authority such as CEOs and CFOs may have better knowledge about their firms' operations and earn greater abnormal returns from their stock transactions compared to other insiders. We use five binary variables with a value of one to proxy CEOs, CFOs, directors, officers, and large shareholders, respectively.[45] We also include the interaction term of ERM and CEOs.

We use two binary variables for a firm's past stock performance to proxy significant increases or decreases in a firm's past stock returns: stock returns greater than 20% and stock returns less than -20%. We classify past stock return levels of individual firms

[44] We also use 90-day holding period returns of insider stock transactions as the dependent variable in the regression model as robustness checks.

[45] Based on data availability and insider classification from the Table One File of the Thomson Reuters Insider Filing Data Feed, we define director as chairman of the board, director, and vice chairman, and we define an officer to be either the chief investment officer, chief operating officer, chief technology officer, executive vice president, officer, president, secretary, senior vice president, or vice president.

based on cumulative daily stock returns from three days before the transaction date to the transaction date of insider trades (i.e., four day past stock performance).[46] Our model also includes the interaction term of ERM and stock returns less than -20% and the interaction term of ERM and stock returns greater than 20% to examine whether ERM has greater effects on abnormal returns from these insider stock transactions.

We use two measures to proxy information uncertainty of a firm: firm size and stock volatility of a firm. Insider stock transactions made in firms with smaller firm size and higher stock volatility are expected to have higher levels of information uncertainty. As for firm size, we divide the sample into three groups based on a firm's market capitalization to examine firm size effects of abnormal returns of insider stock transactions. Small firms are firms with market capitalization less than or equal to \$202,158,805 (33.33th percentile of the insider stock purchase and sale sample), medium firms are firms with market capitalization between \$202,158,805 and \$1,068,003,868 (33.33th percentile to 66.66th percentile), and large firms are firms with market capitalization greater than \$1,068,003,868 (66.66th percentile). We use two binary variables to examine firm size effects of abnormal returns of insider stock transactions (i.e., small firms and medium firms for insider stock purchase models; medium firms and large firms for insider stock sale models).

In addition to examining firm size effects of insider stock purchases and sales, we allow for a stock volatility effect. We divide the sample into three groups based on different levels of stock volatility, which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction. Low stock volatility firms

[46] We also classify stock return levels based on cumulative stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) as robustness checks.

are firms with stock volatility less than or equal to 0.019601 (33.33th percentile of the insider stock purchase and sale sample), medium stock volatility firms are firms with stock volatility between 0.019601 and 0.032981 (33.33th percentile to 66.66th percentile), and high stock volatility firms are firms with stock volatility greater than 0.032981 (66.66th percentile). We employ two binary variables for stock volatility of a firm (i.e., high stock volatility firms and medium stock volatility firms).

We also consider insider stock transactions made during 2008 financial crisis. Stock transactions made during the recession are expected to have higher levels of information uncertainty. We include an indicator variable with a value of one for insider stock transactions made during the period of 2008 financial crisis. According to the National Bureau of Economic Research, the recession began in December 2007 and ended in June 2009. We then include the interaction terms of ERM and small firms, ERM and high stock volatility firms, ERM and 2008 financial crisis period to examine the effects of ERM on abnormal returns of insider stock transactions with high levels of information uncertainty.

We include several control variables in our regression models since factors other than ERM, insider type, firm's past stock performance, firm size, stock volatility, and 2008 financial crisis may affect stock returns of insider trades. The control variables we consider are insider trading characteristics, firm characteristics, the fourth-quarter effect, the January effect, sector-industry fixed effects, and year fixed effects. We use two variables to proxy insider trading characteristics: the ratio of number of insider shares

traded to number of shares outstanding of a firm, and number of shares traded by insiders.[47]

Several firm characteristics may affect abnormal returns of stock transactions and insider trading activities as well (Lakonishok and Lee, 2001; Shon and Veliotis, 2013). Our model includes four variables to proxy firm characteristics: market to book ratio, loss, leverage, and return on assets (ROA). Market to book ratio is the ratio of market value of equity to book value of equity, the loss variable equals one if net income is less than zero, leverage is defined as the ratio of long-term debt to equity, and ROA refers to the ratio of net income to total assets.[48]

Finally, we consider the fourth-quarter effect, the January effect, sector-industry fixed effects, and year fixed effects. Seyhun (1998) finds seasonal patterns in insider trading consistent with seasonal variations in stock returns: insider purchases peak in the last quarter of a year, particularly for the month of October and December. Abnormal returns of stock transactions are larger particularly for small firms in January (Keim, 1983; Seyhun, 1988). Thus, we include fourth quarter and January binary variables in our model. We also include seventeen binary variables to consider year fixed effects. To control industry effects, we use two binary variables to proxy highly regulated industries (i.e., insurance and banking) and sixty-seven binary variables for sector-industry effects.[49]

[47] We also use the ratio of the dollar value of insider shares traded to market capitalization of a firm and the dollar value of shares traded by the insider to proxy insider trading characteristics as a robustness check.
[48] We also use the ratio of long-term debt to total assets to proxy leverage as a robustness check.
[49] The sector and industry classification is based on the Thomson Reuters Insider Filing Data Feed (IFDF).

3.6 Empirical Results

Table 3-1 presents the details of sector and industry information for 125 ERM firms and 375 non-ERM firms.[50] Since these 500 firms are randomly chosen from the insider purchase and sale sample, the distribution of sector and industry is widely diversified (e.g., ninety-two firms are from the finance sector, sixty-four firms are from the healthcare sector, eighty-two firms are from the consumer services sector, and ninety-six firms are from the technology sector). Consistent with prior literature, firms in the finance sector are more likely to adopt ERM (Beasley, Clune, and Hermanson, 2005; Hoyt, Merkley, and Thiessen, 2001). Out of ninety-two firms from the finance sector in our sample, forty firms adopt ERM over the period 1998-2014 (e.g., fourteen ERM firms are from the banking industry and five ERM firms are from the insurance industry).

Figure 3-2 illustrates event study results for insider stock purchases and insider stock sales for 125 ERM firms and 375 non-ERM firms, respectively. Table 3-2 accompanies Figure 3-2 and provides the details of event study results. For firms which have ERM programs from 1998 to 2014, many of abnormal returns of insider stock transactions traded at different levels of past stock performance are smaller than abnormal returns of insider stock transactions from firms without ERM programs. That is, insiders in ERM firms tend to earn fewer positive (negative) abnormal returns from their stock purchases (sales) than insiders in non-ERM firms. This result provides evidence that an ERM program is associated with reducing information asymmetry between insiders and outsiders. Thus, insiders in firms with ERM programs earn smaller abnormal returns from their stock transactions.

[50] The 500 firms in the sample are firms randomly chosen from the insider stock purchase and sale sample over the period 1996 to 2013. ERM firms refer to firms with ERM over the period 1998 to 2014.

Figure 3-3 to Figure 3-5 illustrate event study results for insider stock purchases and insider stock sales for the period before the ERM enactment and after the ERM enactment based on three ERM enactment measures (i.e., *Before and After ERM Year*, *Before and After ERM Year +1*, and *Before and After ERM Date*), respectively.[51] Table 3-3 to Table 3-5 accompany Figure 3-3 to Figure 3-5 and provide the details of event study results, respectively. Results based on these three ERM enactment measures are generally consistent and provide some evidence that the absolute value of abnormal returns of insider stock transactions after firms have enacted ERM programs are smaller than that before firms have enacted ERM programs. Again, this result supports that an ERM program is associated with reducing information asymmetry of a firm. Insiders in firms with an ERM program earn fewer abnormal returns from their stock transactions.[52]

Table 3-6 to Table 3-8 show the regression model results for the effects of ERM on abnormal returns of insider stock purchases conditional on insider trading and firm characteristics based on three ERM measures (i.e., *ERM Year*, *ERM Year +1*, and *ERM Date*), respectively. Our results show some evidence that ERM is negatively associated with abnormal returns of insider stock purchases, which is consistent with the event study results that ERM has negative effects on abnormal returns of insider stock purchases and reduces information asymmetry of a firm. Our results also support that insiders tend to

[51] *After ERM Year* refers to insider stock transactions made in and after the year of ERM enactment of a firm. For example, if a firm enacted an ERM program in 2004, insider stock purchases made in 2004 and the following years are in the group of *Insider Stock Purchase (After ERM Year)* (Figure 3-3 and Table 3-3). *After ERM Year +1* refers to insider stock transactions made after the year of ERM enactment of a firm. For example, if a firm enacted an ERM program in 2004, insider stock purchases made in 2005 and the following years are in the group of *Insider Stock Purchase (After ERM Year +1)* (Figure 3-4 and Table 3-4). *After ERM Date* refers to insider stock transactions made after the date of ERM enactment of a firm. For example, if a firm enacted an ERM program on March 1st 2004, insider stock purchases made on March 1st 2004 and the following dates are in the group of *Insider Stock Purchase (After ERM Date)* (Figure 3-5 and Table 3-5).

[52] We also examine 90-day holding period returns of insider stock transactions traded at different levels of past stock performance as robustness checks. Please see Appendix 3-A (Figure 3-A1 to Figure 3-A4 and Table 3-A1 to Table 3-A2).

earn greater abnormal returns from their stock purchases in firms with higher levels of information uncertainty (i.e., small firms, high stock volatility firms, and transactions made during the period of 2008 financial crisis). For firms in which insiders purchase shares, abnormal returns are larger for smaller firms (i.e., an approximately 11% abnormal return over a 90-day event window) than for larger firms. Insiders in high stock volatility firms earn greater positive abnormal returns from their stock purchases (i.e., a 2% to 5% abnormal return over a 90-day event window) than in low stock volatility firms. Further, insider stock purchases made in the period of 2008 financial crisis (i.e., December 2007 to June 2009) earn greater abnormal returns as well (i.e., an 8% to 25% abnormal return over a 90-day event window). Also, our results show some evidence that insiders who make stock purchases following a more-than-20% stock price decrease over the past four days earn positive abnormal returns from their stock transactions.[53]

Table 3-9 to Table 3-11 show the regression model results for the interaction effects of ERM enactment and information uncertainty of a firm on abnormal returns of insider stock purchases conditional on insider trading and firm characteristics based on three ERM measures (i.e., *ERM Year*, *ERM Year +1*, and *ERM Date*), respectively. Our results support the information uncertainty hypothesis by showing that ERM has greater negative effects on insider stock purchases particularly in high stock volatility firms. The regression results also provide some evidence that insiders tend to earn smaller abnormal returns from their stock purchases in firms with ERM programs during the period of 2008 financial crisis. These results support that insiders in firms with higher levels of

[53] We also include a variable *Accrual Quality* based on FLOS (2005) to proxy information uncertainty as robustness checks (Eckles, Halek, and Zhang, 2013). Please see Appendix 3-B (Table 3-B1 to Table 3-B3). Further, we include a variable *Information Quality* based on Diether, Malloy, and Scherbina (2002) to control information transparency as robustness checks (Wade, Hoyt, and Liebenberg, 2015). Please see Appendix 3-C (Table 3-C1 to Table 3-C3).

information uncertainty earn smaller abnormal returns from their stock purchases when the firm has ERM programs in place, which suggests that ERM is associated with reducing information uncertainty of a firm and thus reducing information asymmetry between insiders and outsiders.[54] [55]

Table 3-12 to Table 3-14 show the regression results for the effects of ERM enactment on abnormal returns of insider stock sales conditional on insider trading and firm characteristics based on three ERM measures (i.e., *ERM Year*, *ERM Year +1*, and *ERM Date*), respectively. The results show that an ERM program has positive effects on abnormal returns of insider stock sales, which suggests that insiders in firms with ERM programs earn fewer negative abnormal returns from selling the firm's stocks. Also, insiders in firms with higher levels of information uncertainty tend to have greater negative abnormal returns from their stock sales. That is, insiders in high stock volatility firms tend to earn a -10% to -8% abnormal return over a 90-day event window from their stock sales; insiders tend to earn a -22% abnormal return over a 90-day event window from stock sales during the period of 2008 financial crisis (i.e., December 2007 to June 2009). Interestingly, insiders in larger firms tend to earn greater negative abnormal returns than insiders in small firms. The results also show that CEOs who are expected to have greater decision making authority tend to earn greater negative abnormal returns from their stock sales compared to other insiders. Further, insiders who make stock sales

[54] We also include a variable *Accrual Quality* based on FLOS (2005) to proxy information uncertainty as robustness checks (Eckles, Halek, and Zhang, 2013). Please see Appendix 3-D (Table 3-D1 to Table 3-D3). Further, we include a variable *Information Quality* based on Diether, Malloy, and Scherbina (2002) to control information transparency as robustness checks (Wade, Hoyt, and Liebenberg, 2015). Please see Appendix 3-E (Table 3-E1 to Table 3-E3).

[55] We also use 90-day holding period returns of insider stock purchases as the dependent variable in the regression model. The results support information uncertainty hypothesis and show that ERM has negative effects on abnormal returns of insider stock purchases in firms with higher levels of information uncertainty (i.e., high stock volatility firms and trades made in 2008 financial crisis). Please see Appendix 3-F.

following stock price increases by a more than twenty percent over the past four days tend to earn negative abnormal returns from their stock transactions.[56]

Table 3-15 to Table 3-17 show the regression model results for the interaction effects of ERM and information uncertainty on abnormal returns of insider stock sales conditional on insider trading and firm characteristics based on three ERM measures (i.e., *ERM Year*, *ERM Year +1*, and *ERM Date*), respectively. The results do not show strong evidence that ERM has effects on abnormal returns of insider stock sales in firms with high levels of information uncertainty. However, the results support that CEOs in ERM firms are less likely to earn negative abnormal returns from their stock sales, which suggests that ERM may reduce the information asymmetry between insiders and outside investors.[57] [58]

3.7 Conclusions

The study is the first study to examine the effects of enterprise risk management programs on abnormal returns of insider trading based on 500 publicly-traded firms randomly drawn from the insider stock purchase and sale sample over the period 1996-2013. We employ event study approaches and regressions models to investigate the effects of ERM on abnormal returns of insider stock purchases and sales. We also

[56] We also include a variable *Accrual Quality* based on FLOS (2005) to proxy information uncertainty as robustness checks (Eckles, Halek, and Zhang, 2013). Please see Appendix 3-G (Table 3-G1 to Table 3-G3). Further, we include a variable *Information Quality* based on Diether, Malloy, and Scherbina (2002) to control information transparency as robustness checks (Wade, Hoyt, and Liebenberg, 2015). Please see Appendix 3-H (Table 3-H1 to Table 3-H3).

[57] We also include a variable *Accrual Quality* based on FLOS (2005) to proxy information uncertainty as robustness checks (Eckles, Halek, and Zhang, 2013). Please see Appendix 3-I (Table 3-I1 to Table 3-I3). Further, we include a variable *Information Quality* based on Diether, Malloy, and Scherbina (2002) to control information transparency as robustness checks (Wade, Hoyt, and Liebenberg, 2015). Please see Appendix 3-J (Table 3-J1 to Table 3-J3).

[58] We also use 90-day holding period returns of insider stock sales as the dependent variable in the regression model. The results do not show that ERM has negative effects on abnormal returns of insider stock sales in firms with higher levels of information uncertainty. Please see Appendix 3-K.

examine whether ERM has greater effects on insider stock transactions in firms with higher levels of information uncertainty (i.e., small firm size and high stock volatility).

Our event study results and regression results both suggest that insiders in firms with ERM programs tend to earn fewer positive (negative) abnormal returns from their stock purchases (sales) than insiders in firms without ERM programs, which suggests that an ERM program is associated with reducing information asymmetry between insiders and outsiders. Consistent with prior literature, we also find that insiders in firms with higher levels of information uncertainty (i.e., smaller firm size, higher stock volatility, or transactions made during Financial Crisis of 2008) tend to earn greater abnormal returns from their stock transactions. Our regression results show evidence that ERM has negative effects on abnormal returns of insider stock purchases in high stock volatility firms.

Our research contributes to the literature and suggests that enterprise risk management benefits a firm from increasing outside investors' confidence in a firm and reducing information asymmetry between insiders and outsiders particularly for firms with higher levels of information uncertainty. Enterprise risk management has played an important role in firms' decision making due to emerging regulation and credit rating evaluations in recent years (e.g., Dodd-Frank Act of 2010 and Standard and Poor's credit rating). Our research provides firms with an incentive to enact enterprise risk management by showing that ERM can create value to a firm through increasing information transparency to outside investors, which is particularly important for opaque firms.

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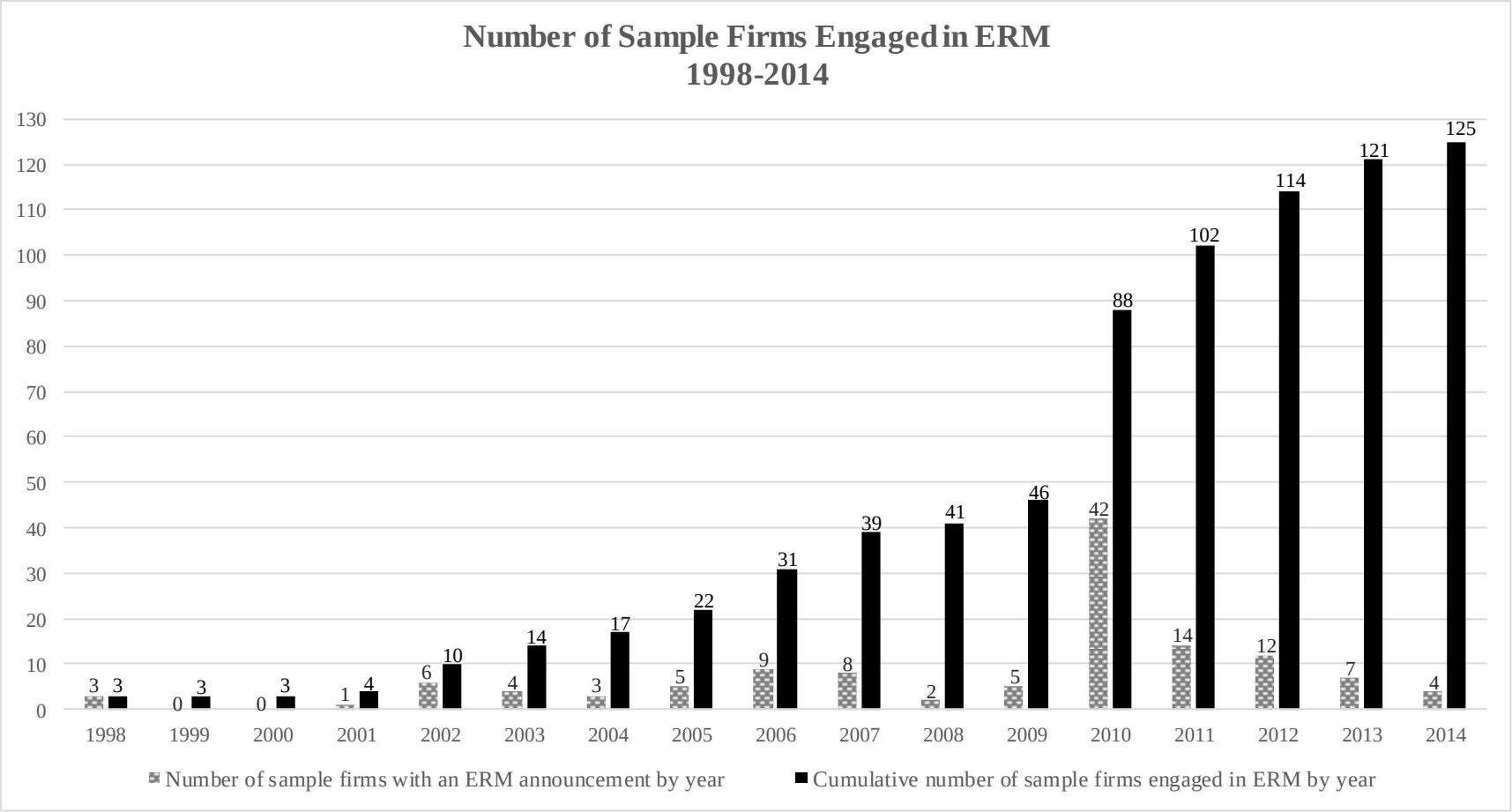

Figure 3-1: Number of Sample Firms Engaged in ERM

1. The 500 firms in the sample are firms randomly chosen from the insider stock purchase and sale sample over the period 1996 to 2013.
2. Out of 500 sample firms, 125 ERM firms have an ERM announcement over the period 1998 to 2014.

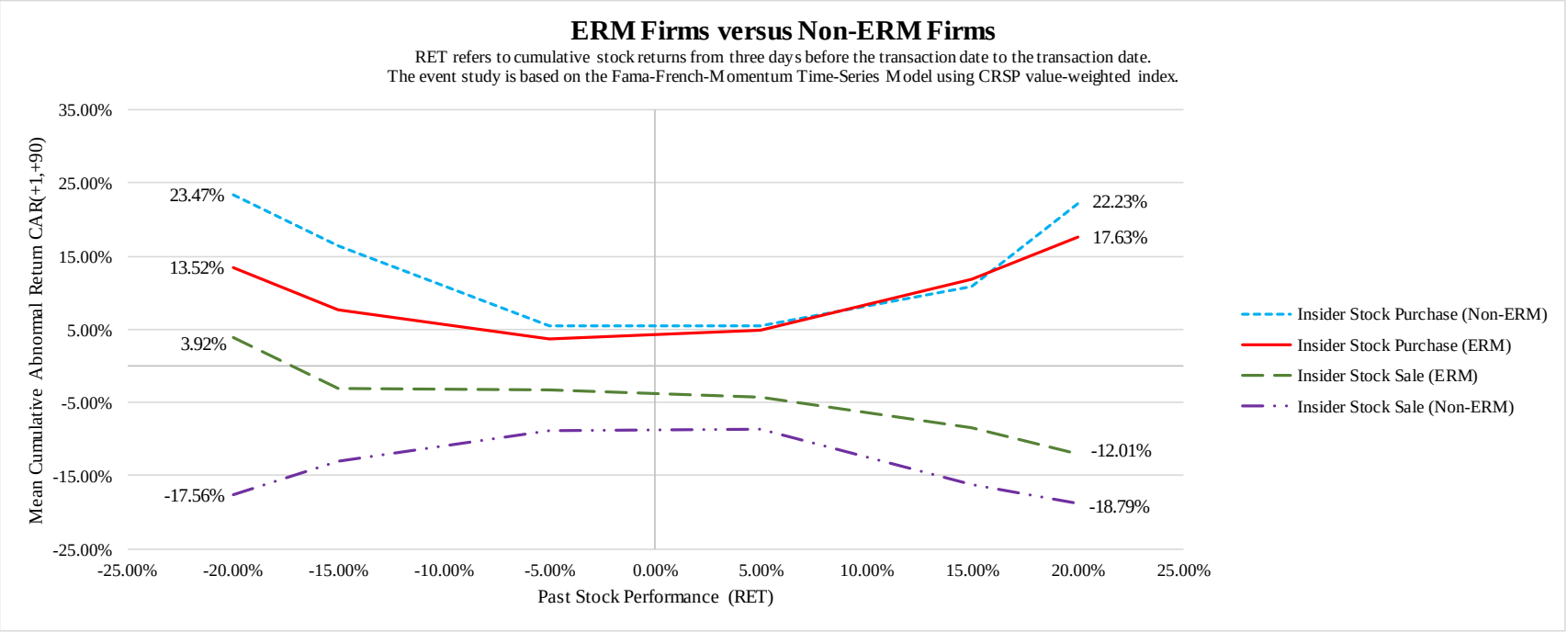

Figure 3-2: Event Study Results (ERM Firms versus Non-ERM Firms)

1. The 500 firms in the sample are firms randomly chosen from the insider stock purchase and sale sample over the period 1996 to 2013.
2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.
3. ERM firms refer to firms with the ERM announcement over the period 1998-2014.
4. We divide the insider stock purchase sample into two groups: ERM firms and non-ERM firms.
5. Likewise, we divide the insider stock sale sample into two groups: ERM firms and non-ERM firms.
6. The insider stock purchase sample is comprised of 4,869 firm-day observations for ERM firms and 12,524 firm-day observations for non-ERM firms from 1996 to 2013.
7. The insider stock sale sample is comprised of 14,929 firm-day observations for ERM firms and 24,610 firm-day observations for non-ERM firms from 1996 to 2013.
8. We divide each group into 6 subgroups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock transactions traded at different levels of past stock performance: RET ≤ -20%, -20% < RET ≤ -10%, -10% < RET ≤ 0%, 0% < RET ≤ 10%, 10% < RET ≤ 20%, and 20% < RET.
9. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results.
10. Mean cumulative abnormal return (+1, +90) refers to a 90-day cumulative abnormal return of insider stock transactions. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using the CRSP equal-weighted index as robustness checks and get similar results.

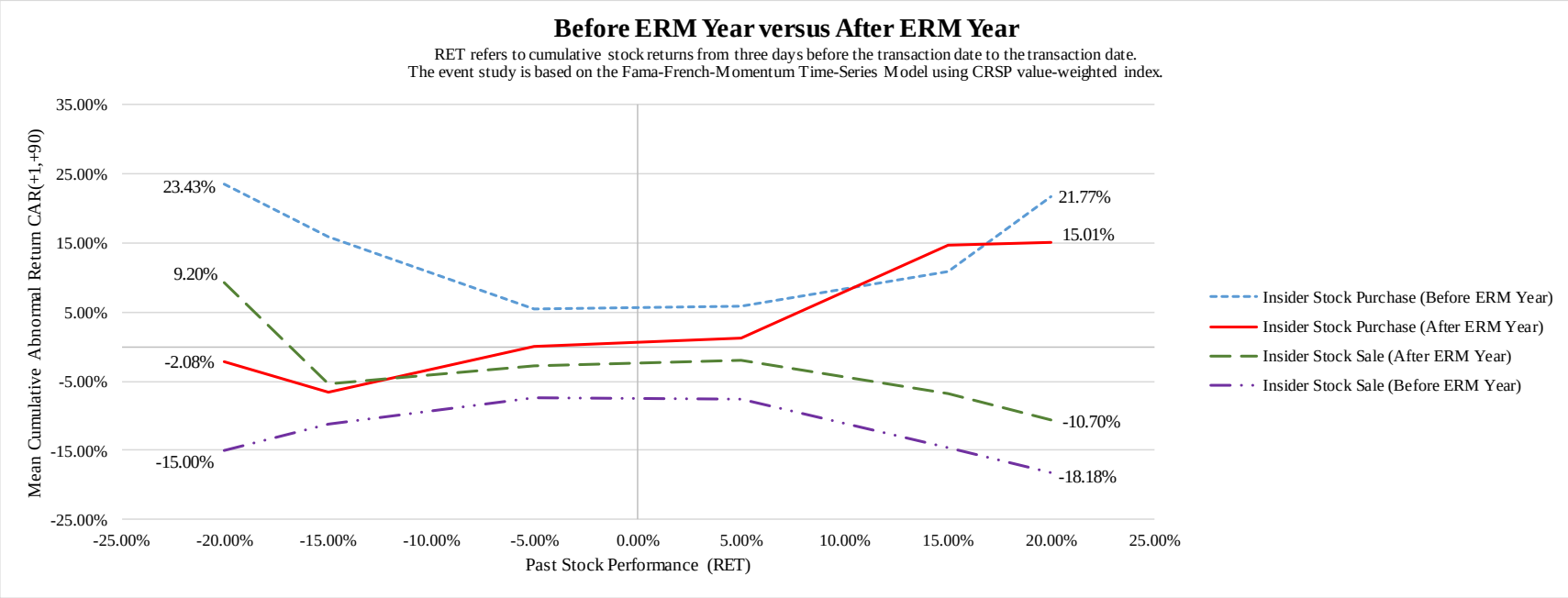

Figure 3-3: Event Study Results (Before ERM Year versus After ERM Year)

1. The 500 firms in the sample are firms randomly chosen from the insider stock purchase and sale sample over the period 1996 to 2013.
2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.
3. After ERM Year refers to insider stock transactions made in and after the year of the ERM enactment of a firm. For example, if a firm enacted an ERM program in 2004, insider stock purchases made in 2004 and the following years are in the group of Insider Stock Purchase (After ERM Year).
4. We divide the insider stock purchase sample into two groups: After ERM Year and Before ERM Year.
5. Likewise, we divide the insider stock sale sample into two groups: After ERM Year and Before ERM Year.
6. The insider stock purchase sample is comprised of 1,563 firm-day observations for After ERM Year and 15,830 firm-day observations for Before ERM Year from 1996 to 2013.
7. The insider stock sale sample is comprised of 4,832 firm-day observations for After ERM Year and 34,707 firm-day observations for Before ERM Year from 1996 to 2013.
8. We divide each group into 6 subgroups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock transactions traded at different levels of past stock performance: $RET \leq -20\%$, $-20\% < RET \leq -10\%$, $-10\% < RET \leq 0\%$, $0\% < RET \leq 10\%$, $10\% < RET \leq 20\%$, and $20\% < RET$.
9. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results.
10. Mean cumulative abnormal return (+1, +90) refers to a 90-day cumulative abnormal return of insider stock transactions. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using the CRSP equal-weighted index as robustness checks and get similar results.

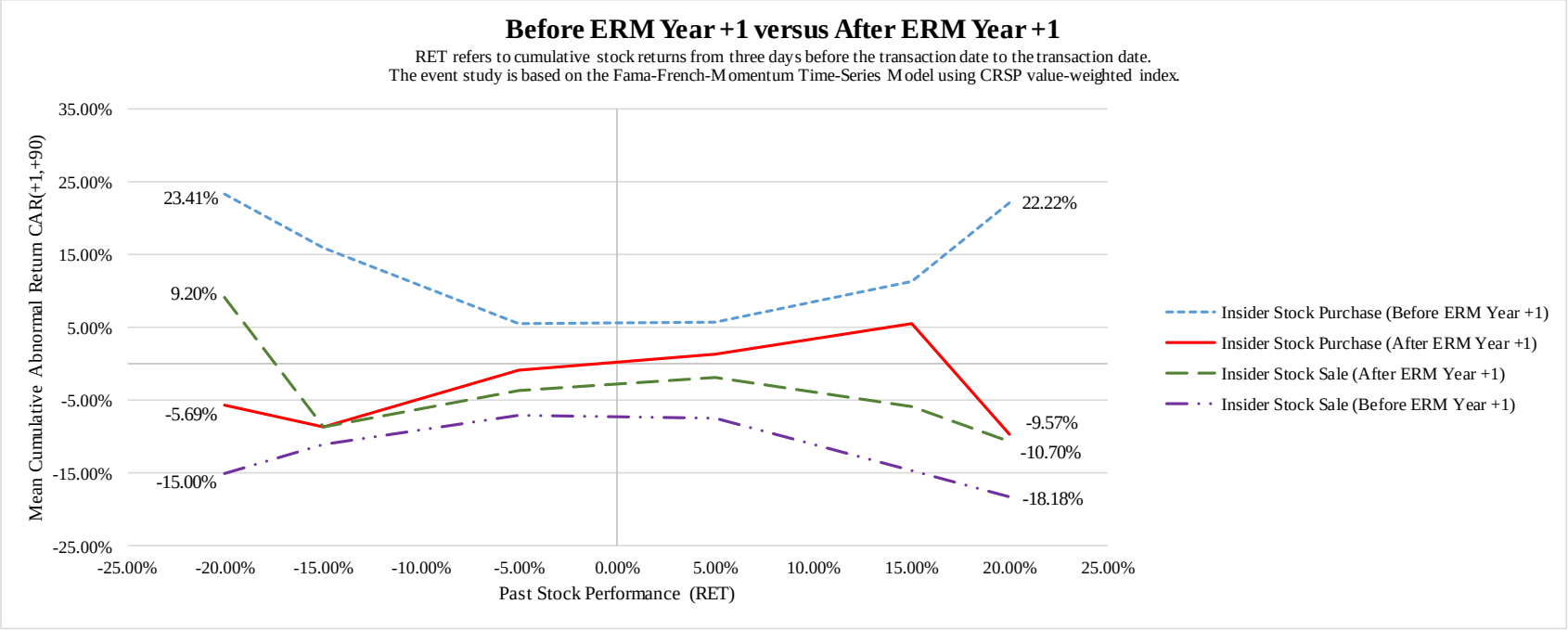

Figure 3-4: Event Study Results (Before ERM Year +1 versus After ERM Year +1)

1. The 500 firms in the sample are firms randomly chosen from the insider stock purchase and sale sample over the period 1996 to 2013.
2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.
3. After ERM Year +1 refers to insider stock transactions made after the year of the ERM enactment of a firm. For example, if a firm enacted an ERM program in 2004, insider stock purchases made in 2005 and the following years are in the group of Insider Stock Purchase (After ERM Year +1).
4. We divide the insider stock purchase sample into two groups: After ERM Year +1 and Before ERM Year +1.
5. Likewise, we divide the insider stock sale sample into two groups: After ERM Year +1 and Before ERM Year +1.
6. The insider stock purchase sample is comprised of 1,335 firm-day observations for After ERM Year +1 and 16,058 firm-day observations for Before ERM Year +1 from 1996 to 2013.
7. The insider stock sale sample is comprised of 3,942 firm-day observations for After ERM Year +1 and 35,597 firm-day observations for Before ERM Year +1 from 1996 to 2013.
8. We divide each group into 6 subgroups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock transactions traded at different levels of past stock performance: RET $\leq$ -20%, -20% < RET $\leq$ -10%, -10% < RET $\leq$ 0%, 0% < RET $\leq$ 10%, 10% < RET $\leq$ 20%, and 20% < RET.
9. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results.
10. Mean cumulative abnormal return (+1, +90) refers to a 90-day cumulative abnormal return of insider stock transactions. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using the CRSP equal-weighted index as robustness checks and get similar results.

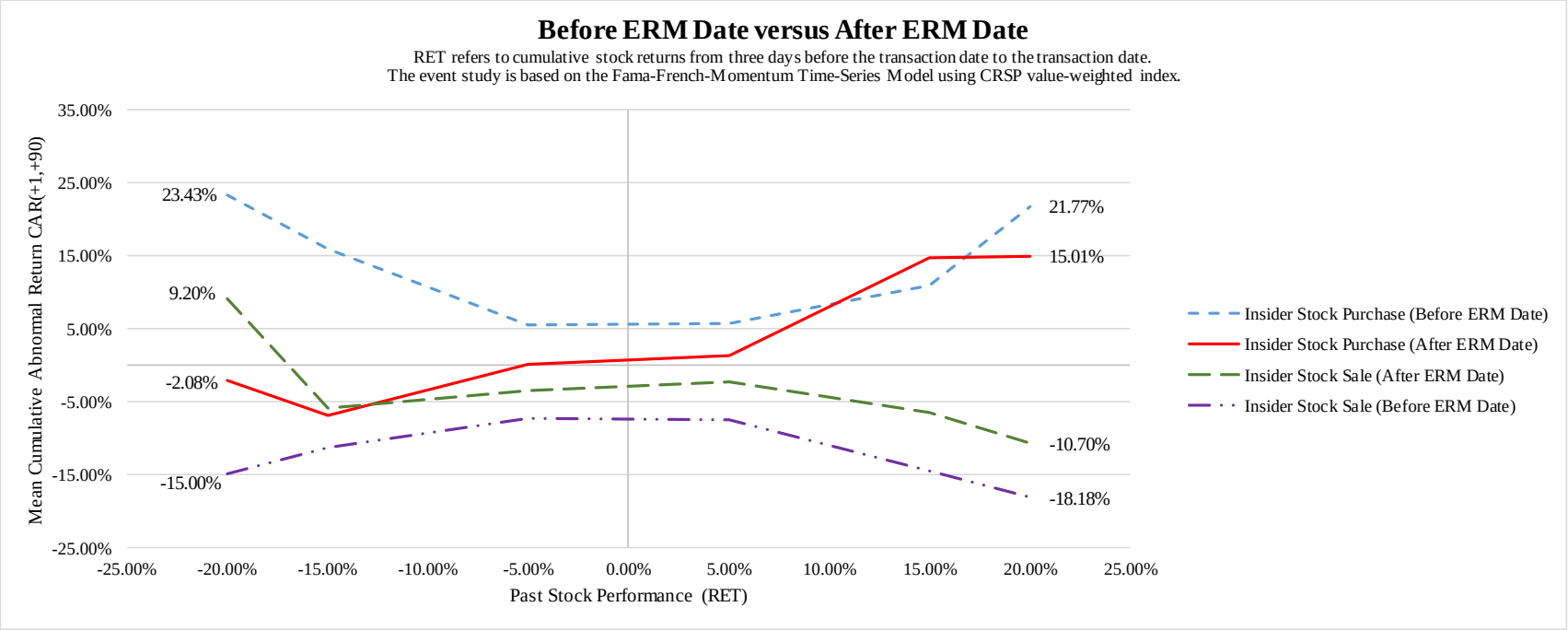

Figure 3-5: Event Study Results (Before ERM Date versus After ERM Date)

1. The 500 firms in the sample are firms randomly chosen from the insider stock purchase and sale sample over the period 1996 to 2013.
2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.
3. After ERM Date refers to insider stock transactions made after the date of the ERM enactment of a firm. For example, if a firm enacted an ERM program on March 1st 2004, insider stock purchases made on March 1st 2004 and the following dates are in the group of Insider Stock Purchase (After ERM Date). If we do not find the enactment date of ERM, we use the SEC filing date/report date as the first evidence of ERM of a firm.
4. We divide the insider stock purchase sample into two groups: After ERM Date and Before ERM Date.
5. Likewise, we divide the insider stock sale sample into two groups: After ERM Date and Before ERM Date.
6. The insider stock purchase sample is comprised of 1,506 firm-day observations for After ERM Date and 15,887 firm-day observations for Before ERM Date from 1996 to 2013.
7. The insider stock sale sample is comprised of 4,403 firm-day observations for After ERM Date and 35,136 firm-day observations for Before ERM Date from 1996 to 2013.
8. We divide each group into 6 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock transactions traded at different levels of past stock performance: RET $\leq$ -20%, -20% < RET $\leq$ -10%, -10% < RET $\leq$ 0%, 0% < RET $\leq$ 10%, 10% < RET $\leq$ 20%, and 20% < RET.
9. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results.
10. Mean cumulative abnormal return (+1, +90) refers to a 90-day cumulative abnormal return of insider stock transactions. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using the CRSP equal-weighted index as robustness checks and get similar results.

Table 3-1: Sector and Industry (ERM Firms versus Non-ERM Firms)

Sector and Industry: ERM Firms versus Non-ERM Firms

Panel A: 125 ERM Firms

Sector	Num. of Firms	Industry (Number of Firms)
01 Finance	40	Finance and Loan (3), Financial Services (5), Savings And Loans (1), Banking (14), Insurance (5), Investments (11), Multi-Industry Finance (1)
02 Healthcare	9	Drugs (1), Biotechnology (2), Medical Supplies (4), Services To Medical Prof (2)
03 Consumer Non-Durables	5	Clothing (2), Food Processors (1), Tobacco (2)
04 Consumer Services	15	Communications (2), Leisure (2), Retailing - Foods (1), Retailing - Goods (5), Industrial Services (1), Undesignated Conr Svc (4)
05 Consumer Durables	2	Automotive Mfg (2)
06 Energy	7	Oil (5), Coal (2)
07 Transportation	5	Airlines (1), Railroads (1), Trucking (1), Maritime (1), Multi-Ind Transport (1)
08 Technology	12	Computer Mfrs (1), Software & Edp Services (3), Other Computers (3), Semiconductors/Component (4), Electronic Syst/Devices (1)
09 Basic Industries	9	Chemicals (2), Metal Fabricators & Dist (1), Forest Products (2), Steel (2), Multi-Ind Basic (2)
10 Capital Goods	10	Defense (2), Electrical (2), Machinery (3), Office Products (1), Multi-Ind Cap Good (2)
11 Public Utilities	5	Electrical Utilities (4), Gas Utilities (1)
99 Miscellaneous	6	

Panel B: 375 Non-ERM Firms

Sector	Num. of Firms	Industry (Number of Firms)
01 Finance	52	Finance & Loan (4), Financial Services (3), Savings And Loans (8), Banking (14), Insurance (3), Investments (16), Multi-Industry Finance (4)
02 Healthcare	55	Drugs (6), Hospital Supplies (1), Hospitals (1), Biotechnology (23), Medical Supplies (18), Services To Medical Prof (4), Home Health Care (2)
03 Consumer Non-Durables	15	Clothing (3), Cosmetics (2), Food Processors (2), Beverages (2), Leisure Time (5), Undesignated Conr Non Du (1)
04 Consumer Services	67	Communications (20), Leisure (10), Retailing - Foods (7), Retailing - Goods (20), Industrial Services (4), Undesignated Control Service (6)
05 Consumer Durables	8	Auto Part Manufacturers (1), Home Building (3), Home Furnishings (1), Leisure Products (2), Recreational Vehicles (1)
06 Energy	20	Oil (16), Coal (1), Gas (2), Alternative Energy (1)
07 Transportation	4	Airlines (1), Trucking (1), Multi-Ind Transport (1), Undesignated Transport (1)
08 Technology	84	Computer Manufacturers (3), Electronics (1), Software & Edp Services (21), Other Computers (17), Semiconductors/Component (11), Photo-Optical Equipment (2), Electronic Syst/Devices (12), Office/Comm Equipment (16), Undesignated Technology (1)
09 Basic Industries	23	Building & Related (1), Chemicals (7), Containers (3), Metal Fabricators & Dist (5), Forest Products (1), Steel (1), Textiles (2), Nonferrous Base Metals (1), Precious Metals (2)
10 Capital Goods	27	Defense (3), Electrical (3), Machinery (11), Shipbuilding (1), Building Materials (4), Office Products (1), Multi-Ind Cap Good (3), Undesignated Capital (1)
11 Public Utilities	8	Telephone Utilities (6), Water Utilities (2)
99 Miscellaneous	12	

1. The 500 firms in the sample are firms randomly chosen from the insider stock purchase and sale sample over the period 1996 to 2013.
2. ERM firms refer to firms with an ERM announcement over the period 1998 to 2014.
3. The sector and industry classification is based on the Thomson Reuters Insider Filing Data Feed (IFDF).

Table 3-2: Event Study Results (ERM Firms versus Non-ERM Firms)

I. Insider Stock Purchase

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Panel A: ERM Firms

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -20%	-20% < RET ≤ -10%	-10% < RET ≤ 0%	0% < RET ≤ 10%	10% < RET ≤ 20%	20% < RET
(+1,+10)	8.78%	3.88%	1.30%	1.46%	1.40%	4.05%
(+1,+30)	14.51%	6.57%	2.03%	2.09%	5.02%	7.59%
(+1,+60)	13.68%	6.37%	3.01%	3.59%	8.77%	11.65%
(+1,+90)	13.52%	7.67%	3.71%	4.96%	11.92%	17.63%

B. N+:N-

Days	RET ≤ -20%	-20% < RET ≤ -10%	-10% < RET ≤ 0%	0% < RET ≤ 10%	10% < RET ≤ 20%	20% < RET
(+1,+10)	81:39>>>	185:96>>>	1275:966>>>	1090:893>>>	96:80)	31:25
(+1,+30)	75:45>>>	180:101>>>	1238:1003>>>	1108:875>>>	103:73>>	37:19>>
(+1,+60)	78:42>>>	176:105>>>	1183:1058>>>	1087:896>>>	110:66>>>	32:24)
(+1,+90)	75:45>>>	166:115>>>	1220:1021>>>	1072:911>>>	112:64>>>	35:21>

C. Number of Firms

RET ≤ -20%	-20% < RET ≤ -10%	-10% < RET ≤ 0%	0% < RET ≤ 10%	10% < RET ≤ 20%	20% < RET
45	88	123	124	72	31

Panel B: Non-ERM Firms

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -20%	-20% < RET ≤ -10%	-10% < RET ≤ 0%	0% < RET ≤ 10%	10% < RET ≤ 20%	20% < RET
(+1,+10)	9.51%	5.65%	1.84%	1.53%	3.61%	3.68%
(+1,+30)	14.62%	8.96%	3.50%	2.99%	4.29%	8.24%
(+1,+60)	20.93%	14.08%	5.48%	5.06%	8.65%	15.41%
(+1,+90)	23.47%	16.38%	5.49%	5.57%	10.86%	22.23%

B. N+:N-

Days	RET ≤ -20%	-20% < RET ≤ -10%	-10% < RET ≤ 0%	0% < RET ≤ 10%	10% < RET ≤ 20%	20% < RET
(+1,+10)	281:122>>>	568:331>>>	2833:2247>>>	2726:2275>>>	410:347>>>	178:161>
(+1,+30)	264:139>>>	569:330>>>	2851:2229>>>	2769:2232>>>	404:353>>>	202:137>>>
(+1,+60)	288:115>>>	587:312>>>	2803:2277>>>	2787:2214>>>	444:313>>>	217:122>>>
(+1,+90)	269:134>>>	562:337>>>	2789:2291>>>	2728:2273>>>	429:328>>>	217:122>>>

C. Number of Firms

RET ≤ -20%	-20% < RET ≤ -10%	-10% < RET ≤ 0%	0% < RET ≤ 10%	10% < RET ≤ 20%	20% < RET
182	272	371	366	235	137

(continued on next page)

Table 3-2: Event Study Results (ERM Firms versus Non-ERM Firms) (cont.)

II. Insider Stock Sale

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Panel A: ERM Firms

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -20%	-20% < RET ≤ -10%	-10% < RET ≤ 0%	0% < RET ≤ 10%	10% < RET ≤ 20%	20% < RET
(+1,+10)	-0.34%	0.42%	-0.45%	-0.66%	-1.57%	-2.16%
(+1,+30)	-3.42%	-1.09%	-1.48%	-1.78%	-3.46%	-3.52%
(+1,+60)	-0.12%	-1.71%	-2.30%	-2.95%	-5.12%	-6.05%
(+1,+90)	3.92%	-3.14%	-3.30%	-4.26%	-8.38%	-12.01%

B. N+:N-

Days	RET ≤ -20%	-20% < RET ≤ -10%	-10% < RET ≤ 0%	0% < RET ≤ 10%	10% < RET ≤ 20%	20% < RET
(+1,+10)	20:14	108:92>	2403:2759<	3959:4768<<<	291:396<<	44:44
(+1,+30)	15:19	101:99	2289:2873<<<	3795:4932<<<	285:402<<<	40:48
(+1,+60)	17:17	94:106	2275:2887<<<	3775:4952<<<	275:412<<<	35:53(
(+1,+90)	19:15	93:107	2258:2904<<<	3727:5000<<<	266:421<<<	36:52

C. Number of Firms

	RET ≤ -20%	-20% < RET ≤ -10%	-10% < RET ≤ 0%	0% < RET ≤ 10%	10% < RET ≤ 20%	20% < RET
	23	66	125	125	91	45

Panel B: Non-ERM Firms

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -20%	-20% < RET ≤ -10%	-10% < RET ≤ 0%	0% < RET ≤ 10%	10% < RET ≤ 20%	20% < RET
(+1,+10)	-1.63%	-0.85%	-1.10%	-1.37%	-2.41%	-2.74%
(+1,+30)	-8.44%	-3.89%	-3.29%	-3.47%	-6.39%	-4.98%
(+1,+60)	-11.89%	-8.67%	-5.90%	-6.24%	-11.18%	-14.86%
(+1,+90)	-17.56%	-12.99%	-8.87%	-8.69%	-16.29%	-18.79%

B. N+:N-

Days	RET ≤ -20%	-20% < RET ≤ -10%	-10% < RET ≤ 0%	0% < RET ≤ 10%	10% < RET ≤ 20%	20% < RET
(+1,+10)	82:103	382:437	3794:4834<<<	5132:7443<<<	684:1088<<<	242:348<<
(+1,+30)	74:111(	360:459(	3649:4979<<<	5033:7542<<<	637:1135<<<	250:340<
(+1,+60)	73:112(	339:480<<	3533:5095<<<	4949:7626<<<	616:1156<<<	206:384<<<
(+1,+90)	71:114<	316:503<<<	3409:5219<<<	4953:7622<<<	600:1172<<<	218:372<<<

C. Number of Firms

	RET ≤ -20%	-20% < RET ≤ -10%	-10% < RET ≤ 0%	0% < RET ≤ 10%	10% < RET ≤ 20%	20% < RET
	89	223	373	373	281	178

1. This table accompanies Figure 3-2.
2. The 500 firms in the sample are firms randomly chosen from the insider stock purchase and sale sample over the period 1996 to 2013.
3. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.
4. ERM firms refer to firms with the ERM announcement over the period 1998-2014.
5. We divide the insider stock purchase sample into two groups: ERM firms and non-ERM firms.
6. The insider stock purchase sample is comprised of 4,869 firm-day observations for ERM firms and 12,524 firm-day observations for non-ERM firms from 1996 to 2013.
7. The insider stock sale sample is comprised of 14,929 firm-day observations for ERM firms and 24,610 firm-day observations for non-ERM firms from 1996 to 2013.
8. We divide each group into 6 subgroups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock transactions traded at different levels of past stock performance: RET ≤ -20%, -20% < RET ≤ -10%, -10% < RET ≤ 0%, 0% < RET ≤ 10%, 10% < RET ≤ 20%, and 20% < RET.
9. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results.
10. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock transactions, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using the CRSP equal-weighted index as robustness checks and get similar results.
11. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.

Table 3-3: Event Study Results (Before ERM Year versus After ERM Year)

I. Insider Stock Purchase

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Panel A: After ERM Year

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -20%	-20% < RET ≤ -10%	-10% < RET ≤ 0%	0% < RET ≤ 10%	10% < RET ≤ 20%	20% < RET
(+1,+10)	6.58%	3.64%	1.24%	0.48%	1.73%	0.44%
(+1,+30)	7.09%	3.37%	0.84%	0.57%	4.56%	0.33%
(+1,+60)	5.22%	-3.50%	0.29%	0.58%	8.45%	11.75%
(+1,+90)	-2.08%	-6.56%	0.08%	1.30%	14.65%	15.01%

B. N+:N-

Days	RET ≤ -20%	-20% < RET ≤ -10%	-10% < RET ≤ 0%	0% < RET ≤ 10%	10% < RET ≤ 20%	20% < RET
(+1,+10)	33:13>>>	51:35>	455:310>>>	297:308	28:19)	7:4
(+1,+30)	26:20	44:42	425:340>>>	302:303	26:21	7:4
(+1,+60)	24:22	44:42	394:371>	285:320	25:22	5:6
(+1,+90)	24:22	41:45	401:364>	288:317	32:15>>	3:8

C. Number of Firms

	RET ≤ -20%	-20% < RET ≤ -10%	-10% < RET ≤ 0%	0% < RET ≤ 10%	10% < RET ≤ 20%	20% < RET
	19	43	90	80	23	7

Panel B: Before ERM Year

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -20%	-20% < RET ≤ -10%	-10% < RET ≤ 0%	0% < RET ≤ 10%	10% < RET ≤ 20%	20% < RET
(+1,+10)	9.61%	5.35%	1.72%	1.60%	3.27%	3.83%
(+1,+30)	15.32%	8.78%	3.30%	2.94%	4.42%	8.37%
(+1,+60)	20.62%	13.48%	5.24%	5.03%	8.68%	14.97%
(+1,+90)	23.43%	15.95%	5.51%	5.78%	10.87%	21.77%

B. N+:N-

Days	RET ≤ -20%	-20% < RET ≤ -10%	-10% < RET ≤ 0%	0% < RET ≤ 10%	10% < RET ≤ 20%	20% < RET
(+1,+10)	329:148>>>	702:392>>>	3663:2893>>>	3519:2860>>>	478:408>>>	202:182>
(+1,+30)	313:164>>>	705:389>>>	3673:2883>>>	3575:2804>>>	481:405>>>	232:152>>>
(+1,+60)	342:135>>>	719:375>>>	3610:2946>>>	3589:2790>>>	529:357>>>	244:140>>>
(+1,+90)	320:157>>>	687:407>>>	3616:2940>>>	3512:2867>>>	509:377>>>	249:135>>>

C. Number of Firms

	RET ≤ -20%	-20% < RET ≤ -10%	-10% < RET ≤ 0%	0% < RET ≤ 10%	10% < RET ≤ 20%	20% < RET
	215	337	482	479	293	162

(continued on next page)

Table 3-3: Event Study Results (Before ERM Year versus After ERM Year) (cont.)

II. Insider Stock Sale

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Panel A: After ERM Year

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -20%	-20% < RET ≤ -10%	-10% < RET ≤ 0%	0% < RET ≤ 10%	10% < RET ≤ 20%	20% < RET
(+1,+10)	5.83%	0.50%	-0.28%	-0.50%	-0.97%	-1.98%
(+1,+30)	1.68%	-1.35%	-0.88%	-0.92%	-3.17%	5.79%
(+1,+60)	12.69%	0.32%	-2.22%	-1.55%	-4.20%	2.78%
(+1,+90)	9.20%	-5.37%	-2.78%	-1.99%	-6.78%	-10.70%

B. N+:N-

Days	RET ≤ -20%	-20% < RET ≤ -10%	-10% < RET ≤ 0%	0% < RET ≤ 10%	10% < RET ≤ 20%	20% < RET
(+1,+10)	5:2)	19:20	779:896(	1310:1587<<<	77:98	13:11
(+1,+30)	4:3	19:20	754:921<<	1312:1585<<<	68:107<<	13:11
(+1,+60)	5:2)	18:21	711:964<<<	1315:1582<<<	72:103<	12:12
(+1,+90)	5:2)	14:25(	715:960<<<	1346:1551<	57:118<<<	11:13

C. Number of Firms

	RET ≤ -20%	-20% < RET ≤ -10%	-10% < RET ≤ 0%	0% < RET ≤ 10%	10% < RET ≤ 20%	20% < RET
	6	25	106	107	57	17

Panel B: Before ERM Year

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -20%	-20% < RET ≤ -10%	-10% < RET ≤ 0%	0% < RET ≤ 10%	10% < RET ≤ 20%	20% < RET
(+1,+10)	-1.67%	-0.65%	-0.94%	-1.17%	-2.26%	-2.69%
(+1,+30)	-7.97%	-3.42%	-2.85%	-3.07%	-5.76%	-5.18%
(+1,+60)	-10.82%	-7.61%	-4.87%	-5.42%	-9.90%	-14.33%
(+1,+90)	-15.00%	-11.28%	-7.34%	-7.64%	-14.64%	-18.18%

B. N+:N-

Days	RET ≤ -20%	-20% < RET ≤ -10%	-10% < RET ≤ 0%	0% < RET ≤ 10%	10% < RET ≤ 20%	20% < RET
(+1,+10)	97:115	471:509	5418:6697<<<	7781:10624<<<	898:1386<<<	273:381<
(+1,+30)	85:127<	442:538	5184:6931<<<	7516:10889<<<	854:1430<<<	277:377<
(+1,+60)	85:127<	415:565<<	5097:7018<<<	7409:10996<<<	819:1465<<<	229:425<<<
(+1,+90)	85:127<	395:585<<<	4952:7163<<<	7334:11071<<<	809:1475<<<	243:411<<<

C. Number of Firms

	RET ≤ -20%	-20% < RET ≤ -10%	-10% < RET ≤ 0%	0% < RET ≤ 10%	10% < RET ≤ 20%	20% < RET
	107	274	481	483	358	208

1. This table accompanies Figure 3-3.
2. The 500 firms in the sample are firms randomly chosen from the insider stock purchase and sale sample over the period 1996 to 2013.
3. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.
4. After ERM Year refers to insider stock transactions made in and after the year of the ERM enactment of a firm. For example, if a firm enacted an ERM program in 2004, insider stock sales made in 2004 and the following years are in the group of Insider Stock Sale (After ERM Year).
5. We divide the insider stock sale sample into two groups: After ERM Year and Before ERM Year.
6. The insider stock purchase sample is comprised of 1,563 firm-day observations for After ERM Year and 15,830 firm-day observations for Before ERM Year from 1996 to 2013.
7. The insider stock sale sample is comprised of 4,832 firm-day observations for After ERM Year and 34,707 firm-day observations for Before ERM Year from 1996 to 2013.
8. We divide each group into 6 subgroups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock transactions traded at different levels of past stock performance: RET ≤ -20%, -20% < RET ≤ -10%, -10% < RET ≤ 0%, 0% < RET ≤ 10%, 10% < RET ≤ 20%, and 20% < RET.
9. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results.
10. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock transactions, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using the CRSP equal-weighted index as robustness checks and get similar results.
11. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.

Table 3-4: Event Study Results (Before ERM Year +1 versus After ERM Year +1)

I. Insider Stock Purchase

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Panel A: After ERM Year + 1

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -20%	-20% < RET ≤ -10%	-10% < RET ≤ 0%	0% < RET ≤ 10%	10% < RET ≤ 20%	20% < RET
(+1,+10)	7.35%	3.48%	1.39%	0.65%	2.27%	3.86%
(+1,+30)	6.29%	2.74%	1.03%	1.21%	4.93%	3.33%
(+1,+60)	3.15%	-3.73%	-0.34%	0.90%	6.53%	-3.19%
(+1,+90)	-5.69%	-8.71%	-0.83%	1.43%	5.50%	-9.57%

B. N+:N-

Days	RET ≤ -20%	-20% < RET ≤ -10%	-10% < RET ≤ 0%	0% < RET ≤ 10%	10% < RET ≤ 20%	20% < RET
(+1,+10)	29:11>>>	44:33)	386:273>>>	257:252	23:16)	6:2)
(+1,+30)	21:19	35:42	365:294>>>	269:240>	23:16)	6:2)
(+1,+60)	21:19	38:39	320:339	243:266	23:16)	3:5
(+1,+90)	21:19	34:43	332:327	243:266	25:14>	1:7<

C. Number of Firms

	RET ≤ -20%	-20% < RET ≤ -10%	-10% < RET ≤ 0%	0% < RET ≤ 10%	10% < RET ≤ 20%	20% < RET
	16	39	78	68	21	5

Panel B: Before ERM Year + 1

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -20%	-20% < RET ≤ -10%	-10% < RET ≤ 0%	0% < RET ≤ 10%	10% < RET ≤ 20%	20% < RET
(+1,+10)	9.51%	5.35%	1.70%	1.57%	3.24%	3.73%
(+1,+30)	15.28%	8.78%	3.25%	2.85%	4.41%	8.24%
(+1,+60)	20.61%	13.36%	5.23%	4.94%	8.76%	15.25%
(+1,+90)	23.41%	15.91%	5.51%	5.71%	11.30%	22.22%

B. N+:N-

Days	RET ≤ -20%	-20% < RET ≤ -10%	-10% < RET ≤ 0%	0% < RET ≤ 10%	10% < RET ≤ 20%	20% < RET
(+1,+10)	333:150>>>	709:394>>>	3722:2940>>>	3559:2916>>>	483:411>>>	203:184>
(+1,+30)	318:165>>>	714:389>>>	3724:2938>>>	3608:2867>>>	484:410>>>	233:154>>>
(+1,+60)	345:138>>>	725:378>>>	3666:2996>>>	3631:2844>>>	531:363>>>	246:141>>>
(+1,+90)	323:160>>>	694:409>>>	3677:2985>>>	3557:2918>>>	516:378>>>	251:136>>>

C. Number of Firms

	RET ≤ -20%	-20% < RET ≤ -10%	-10% < RET ≤ 0%	0% < RET ≤ 10%	10% < RET ≤ 20%	20% < RET
	216	340	482	481	295	163

(continued on next page)

Table 3-4: Event Study Results (Before ERM Year +1 versus After ERM Year +1) (cont.)

II. Insider Stock Sale

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Panel A: After ERM Year + 1

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -20%	-20% < RET ≤ -10%	-10% < RET ≤ 0%	0% < RET ≤ 10%	10% < RET ≤ 20%	20% < RET
(+1,+10)	5.83%	-0.18%	-0.20%	-0.36%	-1.04%	-1.98%
(+1,+30)	1.68%	-2.90%	-1.05%	-0.68%	-3.28%	5.79%
(+1,+60)	12.69%	-4.93%	-2.67%	-1.41%	-4.16%	2.78%
(+1,+90)	9.20%	-8.62%	-3.75%	-1.85%	-5.84%	-10.70%

B. N+:N-

Days	RET ≤ -20%	-20% < RET ≤ -10%	-10% < RET ≤ 0%	0% < RET ≤ 10%	10% < RET ≤ 20%	20% < RET
(+1,+10)	5:2)	15:16	632:722(	1104:1280<	61:79	13:11
(+1,+30)	4:3	14:17	599:755<<<	1108:1276<	52:88<<	13:11
(+1,+60)	5:2)	11:20(	567:787<<<	1087:1297<<	60:80	12:12
(+1,+90)	5:2)	10:21<	549:805<<<	1094:1290<<	50:90<<	11:13

C. Number of Firms

RET ≤ -20%	-20% < RET ≤ -10%	-10% < RET ≤ 0%	0% < RET ≤ 10%	10% < RET ≤ 20%	20% < RET
6	22	98	96	46	17

Panel B: Before ERM Year + 1

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -20%	-20% < RET ≤ -10%	-10% < RET ≤ 0%	0% < RET ≤ 10%	10% < RET ≤ 20%	20% < RET
(+1,+10)	-1.67%	-0.62%	-0.93%	-1.17%	-2.24%	-2.69%
(+1,+30)	-7.97%	-3.36%	-2.78%	-3.04%	-5.71%	-5.18%
(+1,+60)	-10.82%	-7.38%	-4.76%	-5.33%	-9.81%	-14.33%
(+1,+90)	-15.00%	-11.13%	-7.12%	-7.51%	-14.58%	-18.18%

B. N+:N-

Days	RET ≤ -20%	-20% < RET ≤ -10%	-10% < RET ≤ 0%	0% < RET ≤ 10%	10% < RET ≤ 20%	20% < RET
(+1,+10)	97:115	475:513	5565:6871<<<	7987:10931<<<	914:1405<<<	273:381<
(+1,+30)	85:127<	447:541	5339:7097<<<	7720:11198<<<	870:1449<<<	277:377<
(+1,+60)	85:127<	422:566<<	5241:7195<<<	7637:11281<<<	831:1488<<<	229:425<<<
(+1,+90)	85:127<	399:589<<<	5118:7318<<<	7586:11332<<<	816:1503<<<	243:411<<<

C. Number of Firms

RET ≤ -20%	-20% < RET ≤ -10%	-10% < RET ≤ 0%	0% < RET ≤ 10%	10% < RET ≤ 20%	20% < RET
107	274	484	489	359	208

1. This table accompanies Figure 3-4.
2. The 500 firms in the sample are firms randomly chosen from the insider stock purchase and sale sample over the period 1996 to 2013.
3. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.
4. After ERM Year +1 refers to insider stock transactions made after the year of the ERM enactment of a firm. For example, if a firm enacted an ERM program in 2004, insider stock purchases made in 2005 and the following years are in the group of Insider Stock Purchase (After ERM Year +1).
5. We divide the insider stock sale sample into two groups: After ERM Year +1 and Before ERM Year +1.
6. The insider stock purchase sample is comprised of 1,335 firm-day observations for After ERM Year +1 and 16,058 firm-day observations for Before ERM Year +1 from 1996 to 2013.
7. The insider stock sale sample is comprised of 3,942 firm-day observations for After ERM Year +1 and 35,597 firm-day observations for Before ERM Year +1 from 1996 to 2013.
8. We divide each group into 6 subgroups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock transactions traded at different levels of past stock performance: RET ≤ -20%, -20% < RET ≤ -10%, -10% < RET ≤ 0%, 0% < RET ≤ 10%, 10% < RET ≤ 20%, and 20% < RET.
9. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results.
10. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock transactions, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event study using the CRSP equal-weighted index as robustness checks and get similar results.
11. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.

Table 3-5: Event Study Results (Before ERM Date versus After ERM Date)

I. Insider Stock Purchase

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Panel A: After ERM Date

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -20%	-20% < RET ≤ -10%	-10% < RET ≤ 0%	0% < RET ≤ 10%	10% < RET ≤ 20%	20% < RET
(+1,+10)	6.58%	3.57%	1.19%	0.55%	1.73%	0.44%
(+1,+30)	7.09%	3.00%	0.85%	0.70%	4.56%	0.33%
(+1,+60)	5.22%	-3.20%	0.33%	0.73%	8.45%	11.75%
(+1,+90)	-2.08%	-6.93%	0.07%	1.41%	14.65%	15.01%

B. N+:N-

Days	RET ≤ -20%	-20% < RET ≤ -10%	-10% < RET ≤ 0%	0% < RET ≤ 10%	10% < RET ≤ 20%	20% < RET
(+1,+10)	33:13>>>	48:34>	427:309>>>	290:291	28:19)	7:4
(+1,+30)	26:20	40:42	402:334>>>	295:286	26:21	7:4
(+1,+60)	24:22	42:40	364:372	275:306	25:22	5:6
(+1,+90)	24:22	39:43	381:355>	280:301	32:15>>	3:8

C. Number of Firms

	RET ≤ -20%	-20% < RET ≤ -10%	-10% < RET ≤ 0%	0% < RET ≤ 10%	10% < RET ≤ 20%	20% < RET
	19	43	85	80	23	7

Panel B: Before ERM Date

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -20%	-20% < RET ≤ -10%	-10% < RET ≤ 0%	0% < RET ≤ 10%	10% < RET ≤ 20%	20% < RET
(+1,+10)	9.61%	5.35%	1.73%	1.59%	3.27%	3.83%
(+1,+30)	15.32%	8.79%	3.29%	2.92%	4.42%	8.37%
(+1,+60)	20.62%	13.40%	5.22%	5.00%	8.68%	14.97%
(+1,+90)	23.43%	15.89%	5.49%	5.76%	10.87%	21.77%

B. N+:N-

Days	RET ≤ -20%	-20% < RET ≤ -10%	-10% < RET ≤ 0%	0% < RET ≤ 10%	10% < RET ≤ 20%	20% < RET
(+1,+10)	329:148>>>	705:393>>>	3681:2904>>>	3526:2877>>>	478:408>>>	202:182>
(+1,+30)	313:164>>>	709:389>>>	3687:2898>>>	3582:2821>>>	481:405>>>	232:152>>>
(+1,+60)	342:135>>>	721:377>>>	3622:2963>>>	3599:2804>>>	529:357>>>	244:140>>>
(+1,+90)	320:157>>>	689:409>>>	3628:2957>>>	3520:2883>>>	509:377>>>	249:135>>>

C. Number of Firms

	RET ≤ -20%	-20% < RET ≤ -10%	-10% < RET ≤ 0%	0% < RET ≤ 10%	10% < RET ≤ 20%	20% < RET
	215	338	482	479	293	162

(continued on next page)

Table 3-5: Event Study Results (Before ERM Date versus After ERM Date) (cont.)

II. Insider Stock Sale

RET refers to cumulative stock returns from three days before the transaction date to the transaction date

Panel A: After ERM Date

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -20%	-20% < RET ≤ -10%	-10% < RET ≤ 0%	0% < RET ≤ 10%	10% < RET ≤ 20%	20% < RET
(+1,+10)	5.83%	0.58%	-0.24%	-0.44%	-1.08%	-1.98%
(+1,+30)	1.68%	-1.26%	-0.98%	-0.89%	-3.45%	5.79%
(+1,+60)	12.69%	-1.63%	-2.42%	-1.74%	-4.27%	2.78%
(+1,+90)	9.20%	-5.81%	-3.40%	-2.31%	-6.57%	-10.70%

B. N+:N-

Days	RET ≤ -20%	-20% < RET ≤ -10%	-10% < RET ≤ 0%	0% < RET ≤ 10%	10% < RET ≤ 20%	20% < RET
(+1,+10)	5:2)	18:17	699:805(	1212:1448<<<	68:90	13:11
(+1,+30)	4:3	18:17	666:838<<<	1213:1447<<<	59:99<<	13:11
(+1,+60)	5:2)	14:21	639:865<<<	1198:1462<<<	64:94<	12:12
(+1,+90)	5:2)	13:22	626:878<<<	1220:1440<<	53:105<<<	11:13

C. Number of Firms

	RET ≤ -20%	-20% < RET ≤ -10%	-10% < RET ≤ 0%	0% < RET ≤ 10%	10% < RET ≤ 20%	20% < RET
	6	25	103	103	52	17

Panel B: Before ERM Date

A. Mean Cumulative Abnormal Return (CAR)

Days	RET ≤ -20%	-20% < RET ≤ -10%	-10% < RET ≤ 0%	0% < RET ≤ 10%	10% < RET ≤ 20%	20% < RET
(+1,+10)	-1.67%	-0.65%	-0.93%	-1.17%	-2.25%	-2.69%
(+1,+30)	-7.97%	-3.42%	-2.81%	-3.04%	-5.72%	-5.18%
(+1,+60)	-10.82%	-7.50%	-4.81%	-5.34%	-9.85%	-14.33%
(+1,+90)	-15.00%	-11.24%	-7.20%	-7.53%	-14.60%	-18.18%

B. N+:N-

Days	RET ≤ -20%	-20% < RET ≤ -10%	-10% < RET ≤ 0%	0% < RET ≤ 10%	10% < RET ≤ 20%	20% < RET
(+1,+10)	97:115	472:512	5498:6788<<<	7879:10763<<<	907:1394<<<	273:381<
(+1,+30)	85:127<	443:541	5272:7014<<<	7615:11027<<<	863:1438<<<	277:377<
(+1,+60)	85:127<	419:565<<	5169:7117<<<	7526:11116<<<	827:1474<<<	229:425<<<
(+1,+90)	85:127<	396:588<<<	5041:7245<<<	7460:11182<<<	813:1488<<<	243:411<<<

C. Number of Firms

	RET ≤ -20%	-20% < RET ≤ -10%	-10% < RET ≤ 0%	0% < RET ≤ 10%	10% < RET ≤ 20%	20% < RET
	107	274	483	486	358	208

1. This table accompanies Figure 3-5.
2. The 500 firms in the sample are firms randomly chosen from the insider stock purchase and sale sample over the period 1996 to 2013.
3. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.
4. After ERM Date refers to insider stock transactions made after the date of the ERM enactment of a firm. For example, if a firm enacted an ERM program on March 1st 2004, insider stock purchases made on March 1st 2004 and the following dates are in the group of Insider Stock Purchase (After ERM Date). If we do not find the enactment date of ERM, we use the SEC filing date/report date as the first evidence of ERM of a firm.
5. We divide the insider stock sale sample into two groups: After ERM Date and Before ERM Date.
6. The insider stock purchase sample is comprised of 1,506 firm-day observations for After ERM Date and 15,887 firm-day observations for Before ERM Date from 1996 to 2013.
7. The insider stock sale sample is comprised of 4,403 firm-day observations for After ERM Date and 35,136 firm-day observations for Before ERM Date from 1996 to 2013.
8. We divide each group into 6 groups based on cumulative daily stock returns (RET) and run the event study separately for each group to examine the abnormal returns of insider stock transactions traded at different levels of past stock performance: RET ≤ -20%, -20% < RET ≤ -10%, -10% < RET ≤ 0%, 0% < RET ≤ 10%, 10% < RET ≤ 20%, and 20% < RET.
9. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results.
10. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock transactions, respectively. We employ the event study method based on the Fama-French-Momentum Time Series Model using CRSP value-weighted index. We also employ the event the study using CRSP equal-weighted index as robustness checks and get similar results.
11. The symbols (, <, <<, <<< or), >, >>, >>> show the direction and significance at the 0.10, 0.05, 0.01 and 0.001 levels of the generalized sign test, respectively.

Table 3-6: Regression Results with Insider Stock Purchase (ERM Year)

Insider Stock Purchase: ERM Year
Cumulative Abnormal Return (CAR) Ordinary Least Squares Regression Model with Heteroscedasticity-Consistent Standard Errors
Number of Transactions = 22,220 (Insider-Firm-Day Level Data); Sample Period = 1996 to 2013

Event Study is based on the Market Model using:	**A. CRSP Value-Weighted Index**				**B. CRSP Equal-Weighted Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Independent Variables								
ERM Year	-0.0061**	-0.0152***	-0.0133*	-0.0151	-0.0045*	-0.0117***	-0.0117*	-0.0121
	(0.0025)	(0.0046)	(0.0071)	(0.0093)	(0.0025)	(0.0045)	(0.0071)	(0.0094)
Insider Type								
CEO	0.0175***	0.0426***	0.0508***	0.0629***	0.0201***	0.0450***	0.0549***	0.0719***
	(0.0033)	(0.0056)	(0.0084)	(0.0110)	(0.0033)	(0.0054)	(0.0082)	(0.0108)
CFO	0.0221***	0.0576***	0.0720***	0.0701***	0.0257***	0.0593***	0.0752***	0.0789***
	(0.0051)	(0.0088)	(0.0123)	(0.0155)	(0.0050)	(0.0086)	(0.0121)	(0.0153)
Director	0.0124***	0.0275***	0.0222***	0.0189**	0.0132***	0.0278***	0.0251***	0.0298***
	(0.0023)	(0.0041)	(0.0062)	(0.0080)	(0.0023)	(0.0039)	(0.0059)	(0.0077)
Officer	0.0150***	0.0294***	0.0324***	0.0230**	0.0143***	0.0278***	0.0315***	0.0296***
	(0.0031)	(0.0054)	(0.0079)	(0.0102)	(0.0029)	(0.0051)	(0.0076)	(0.0100)
Large Shareholders	0.0216	0.0314**	0.0973***	0.2212***	0.0287	0.0400***	0.1419***	0.3026***
	(0.0293)	(0.0153)	(0.0316)	(0.0464)	(0.0261)	(0.0150)	(0.0307)	(0.0428)
Past Stock Performance								
RET <= -20%	0.0575***	0.0760***	0.0950***	0.0693***	0.0618***	0.0665***	0.0612***	0.0206
	(0.0081)	(0.0133)	(0.0169)	(0.0223)	(0.0079)	(0.0126)	(0.0168)	(0.0218)
RET > 20%	0.0063	0.0080	0.0201	0.0630**	-0.0009	-0.0117	0.0005	0.0409*
	(0.0089)	(0.0131)	(0.0185)	(0.0254)	(0.0086)	(0.0125)	(0.0181)	(0.0246)
Information Uncertainty								
Small Firms	0.0162***	0.0478***	0.0808***	0.1076***	0.0154***	0.0432***	0.0843***	0.1089***
	(0.0023)	(0.0041)	(0.0063)	(0.0084)	(0.0023)	(0.0041)	(0.0063)	(0.0084)
Medium Firms	0.0089***	0.0293***	0.0404***	0.0534***	0.0085***	0.0269***	0.0474***	0.0607***
	(0.0022)	(0.0038)	(0.0059)	(0.0076)	(0.0022)	(0.0038)	(0.0059)	(0.0076)
High Stock Volatility Firms	0.0179***	0.0153***	0.0371***	0.0534***	0.0146***	0.0087**	0.0158***	0.0232***
	(0.0022)	(0.0038)	(0.0057)	(0.0075)	(0.0021)	(0.0037)	(0.0057)	(0.0074)
Medium Stock Volatility Firms	0.0068***	-0.0028	0.0058	0.0077	0.0067***	-0.0028	0.0035	0.0067
	(0.0015)	(0.0027)	(0.0040)	(0.0052)	(0.0014)	(0.0026)	(0.0040)	(0.0051)
Financial Crisis Period (December 2007 to June 2009)	0.0094	0.1036***	0.2349***	0.2502***	-0.0041	0.0404***	0.1021***	0.0777***
	(0.0065)	(0.0129)	(0.0188)	(0.0244)	(0.0062)	(0.0116)	(0.0169)	(0.0224)

(continued on next page)

Table 3-6: Regression Results with Insider Stock Purchase (ERM Year) (cont.)

Insider Stock Purchase: ERM Year (cont.)

Event Study is based on the Market Model using:	**A. CRSP Value-Weighted Index**				**B. CRSP Equal-Weighted Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Control Variables								
Number of insider shares traded at insider level	<0.0000	<0.0000**	<0.0000**	<0.0000**	<0.0000	<0.0000**	<0.0000*	<0.0000**
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Number of insider shares traded at company level (%)	0.0097**	-0.0047	-0.0176***	-0.0459***	0.0119***	0.0018	-0.0141***	-0.0397***
	(0.0038)	(0.0030)	(0.0055)	(0.0110)	(0.0039)	(0.0029)	(0.0051)	(0.0102)
Market to book ratio (MTB)	0.0001	-0.0001	-0.0004	-0.0005	0.0001	-0.0000	-0.0003	-0.0006
	(0.0001)	(0.0002)	(0.0003)	(0.0004)	(0.0001)	(0.0002)	(0.0003)	(0.0004)
Loss (binary variable for net income < 0)	-0.0015	-0.0080**	-0.0243***	-0.0218***	-0.0000	-0.0071*	-0.0210***	-0.0211***
	(0.0024)	(0.0040)	(0.0057)	(0.0075)	(0.0023)	(0.0038)	(0.0055)	(0.0074)
Return on assets (ROA)	-0.0010	-0.1003***	-0.1182***	-0.0425	-0.0035	-0.0764***	-0.0962***	-0.0373
	(0.0182)	(0.0292)	(0.0309)	(0.0442)	(0.0156)	(0.0237)	(0.0288)	(0.0430)
Leverage ratio (long-term debt/ equity)	-0.0001	0.0001	0.0002	0.0003	-0.0002*	-0.0000	0.0001	0.0002
	(0.0001)	(0.0003)	(0.0005)	(0.0006)	(0.0001)	(0.0002)	(0.0004)	(0.0006)
Insurance industry	0.0292***	0.0901***	0.1460***	0.2292***	0.0298***	0.0886***	0.1291***	0.1879***
	(0.0055)	(0.0092)	(0.0132)	(0.0181)	(0.0054)	(0.0093)	(0.0131)	(0.0178)
Banking industry	-0.0070	0.0050	0.0323***	0.0342***	-0.0071	0.0055	0.0215**	0.0175
	(0.0044)	(0.0074)	(0.0097)	(0.0131)	(0.0043)	(0.0075)	(0.0100)	(0.0137)
January	-0.0128***	-0.0549***	-0.0538***	-0.0666***	-0.0121***	-0.0164***	0.0027	-0.0216*
	(0.0038)	(0.0062)	(0.0088)	(0.0113)	(0.0036)	(0.0061)	(0.0087)	(0.0112)
Fourth Quarter	0.0091***	0.0386***	0.0463***	0.0646***	-0.0018	-0.0040	-0.0064	0.0089
	(0.0024)	(0.0040)	(0.0055)	(0.0072)	(0.0023)	(0.0038)	(0.0055)	(0.0070)
Constant	-0.0297***	-0.0725***	-0.1384***	-0.1847***	-0.0238***	-0.0575***	-0.1141***	-0.1443***
	(0.0062)	(0.0106)	(0.0152)	(0.0205)	(0.0062)	(0.0106)	(0.0153)	(0.0207)
Year Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Sector Industry Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
R-squared	6.21%	9.70%	11.48%	11.02%	5.78%	6.54%	7.94%	7.85%

1. Heteroscedasticity-consistent standard errors are in parentheses.
2. The symbols ***, **, * show the significance at the 0.01, 0.05, and 0.10 levels of the t-test, respectively.
3. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock transactions, respectively. We employ the event study method based on the Market Model using CRSP value-weighted index and CRSP equal-weighted index, respectively.
4. We employ an indicator variable (ERM Year) to identify whether a firm employs ERM in any given year over the sample period. For example, if a firm adopts ERM in 2004, the ERM indicator variable will be assigned with a value of one for year 2004 and the following years.
5. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares. We employ five binary variables to proxy CEO, CFO, director, officer, and large shareholders who made stock transactions of a firm from 1996 to 2013, respectively.
6. We use two binary variables to proxy significant changes in firm's stock prices (i.e., past stock performance): RET is less than -20% and RET is greater than 20%. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., 4 day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., 2 day past stock performance) to proxy RET and get similar results.
7. We employ two binary variables for firm size based on market capitalization: small firms with market capitalization less than or equal to $202,158,805 (33.33th percentile of the insider stock purchase and sale sample), medium firms with market capitalization between $202,158,805 and $1,068,003,868 (33.33th percentile to 66.66th percentile), and large firms with market capitalization greater than $1,068,003,868 (66.66th percentile).
8. We employ two binary variables for stock volatility of a firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: low stock volatility firms with stock volatility less than or equal to 0.019601 (33.33th percentile of the insider stock purchase and sale sample), medium stock volatility firms with stock volatility between 0.019601 and 0.032981 (33.33th percentile to 66.66th percentile), and high stock volatility firms with stock volatility greater than 0.032981 (66.66th percentile).
9. We employ a binary variable for the period of 2008 financial crisis (December 2007 to June 2009).
10. We also employ several robustness checks and get similar results: models including dollar value of insider stock purchase traded at insider level and at company level, models using the ratio of long-term debt to total assets to proxy the leverage variable, and models with autocorrelation corrections (i.e., Yule-Walker Estimates).
11. Variance inflation factors for all independent variables are less than 10, and thus collinearity does not appear to be problematic for any of the models.

Table 3-7: Regression Results with Insider Stock Purchase (ERM Year +1)

Insider Stock Purchase: ERM Year +1
Cumulative Abnormal Return (CAR) Ordinary Least Squares Regression Model with Heteroscedasticity-Consistent Standard Errors
Number of Transactions = 22,220 (Insider-Firm-Day Level Data); Sample Period = 1996 to 2013

Event Study is based on the Market Model using:	**A. CRSP Value-Weighted Index**				**B. CRSP Equal-Weighted Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Independent Variables								
ERM Year +1	-0.0024	-0.0035	-0.0069	-0.0222**	-0.0009	0.0003	-0.0067	-0.0210**
	(0.0027)	(0.0048)	(0.0076)	(0.0101)	(0.0026)	(0.0047)	(0.0076)	(0.0102)
Insider Type								
CEO	0.0174***	0.0423***	0.0506***	0.0630***	0.0200***	0.0447***	0.0548***	0.0720***
	(0.0033)	(0.0056)	(0.0084)	(0.0110)	(0.0033)	(0.0054)	(0.0082)	(0.0108)
CFO	0.0220***	0.0571***	0.0717***	0.0703***	0.0256***	0.0589***	0.0750***	0.0791***
	(0.0051)	(0.0088)	(0.0122)	(0.0155)	(0.0050)	(0.0086)	(0.0121)	(0.0153)
Director	0.0122***	0.0270***	0.0219***	0.0190**	0.0131***	0.0273***	0.0249***	0.0300***
	(0.0023)	(0.0041)	(0.0061)	(0.0080)	(0.0023)	(0.0039)	(0.0059)	(0.0077)
Officer	0.0150***	0.0291***	0.0323***	0.0230**	0.0142***	0.0276***	0.0314***	0.0297***
	(0.0031)	(0.0054)	(0.0079)	(0.0102)	(0.0029)	(0.0051)	(0.0076)	(0.0099)
Large Shareholders	0.0214	0.0307**	0.0968***	0.2215***	0.0285	0.0392***	0.1415***	0.3030***
	(0.0293)	(0.0151)	(0.0316)	(0.0463)	(0.0261)	(0.0149)	(0.0306)	(0.0428)
Past Stock Performance								
RET <= -20%	0.0574***	0.0756***	0.0948***	0.0695***	0.0617***	0.0662***	0.0611***	0.0209
	(0.0081)	(0.0133)	(0.0169)	(0.0223)	(0.0079)	(0.0126)	(0.0168)	(0.0218)
RET > 20%	0.0064	0.0083	0.0202	0.0627**	-0.0008	-0.0114	0.0006	0.0406*
	(0.0089)	(0.0131)	(0.0185)	(0.0254)	(0.0086)	(0.0125)	(0.0181)	(0.0246)
Information Uncertainty								
Small Firms	0.0167***	0.0492***	0.0816***	0.1072***	0.0159***	0.0445***	0.0849***	0.1082***
	(0.0023)	(0.0040)	(0.0063)	(0.0084)	(0.0023)	(0.0041)	(0.0063)	(0.0083)
Medium Firms	0.0092***	0.0303***	0.0410***	0.0532***	0.0088***	0.0278***	0.0479***	0.0603***
	(0.0022)	(0.0038)	(0.0059)	(0.0076)	(0.0022)	(0.0038)	(0.0059)	(0.0076)
High Stock Volatility Firms	0.0179***	0.0154***	0.0372***	0.0536***	0.0146***	0.0087**	0.0159***	0.0234***
	(0.0022)	(0.0038)	(0.0057)	(0.0075)	(0.0021)	(0.0037)	(0.0057)	(0.0074)
Medium Stock Volatility Firms	0.0069***	-0.0025	0.0061	0.0078	0.0068***	-0.0025	0.0037	0.0068
	(0.0015)	(0.0027)	(0.0040)	(0.0052)	(0.0014)	(0.0026)	(0.0040)	(0.0051)
Financial Crisis Period (December 2007 to June 2009)	0.0095	0.1039***	0.2350***	0.2502***	-0.0040	0.0407***	0.1022***	0.0776***
	(0.0065)	(0.0129)	(0.0188)	(0.0244)	(0.0062)	(0.0116)	(0.0169)	(0.0224)

(continued on next page)

Table 3-7: Regression Results with Insider Stock Purchase (ERM Year +1) (cont.)

Insider Stock Purchase: ERM Year +1 (cont.)

Event Study is based on the Market Model using:	**A. CRSP Value-Weighted Index**				**B. CRSP Equal-Weighted Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Control Variables								
Number of insider shares traded at insider level	<0.0000	<0.0000**	<0.0000**	<0.0000**	<0.0000	<0.0000**	<0.0000*	<0.0000**
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Number of insider shares traded at company level (%)	0.0097***	-0.0046	-0.0176***	-0.0459***	0.0120***	0.0019	-0.0140***	-0.0397***
	(0.0038)	(0.0030)	(0.0055)	(0.0110)	(0.0038)	(0.0029)	(0.0051)	(0.0102)
Market to book ratio (MTB)	0.0001	-0.0000	-0.0003	-0.0006	0.0001	-0.0000	-0.0003	-0.0006
	(0.0001)	(0.0002)	(0.0003)	(0.0004)	(0.0001)	(0.0002)	(0.0003)	(0.0004)
Loss (binary variable for net income < 0)	-0.0015	-0.0081**	-0.0243***	-0.0218***	-0.0000	-0.0071*	-0.0210***	-0.0211***
	(0.0024)	(0.0040)	(0.0057)	(0.0075)	(0.0023)	(0.0038)	(0.0055)	(0.0074)
Return on assets (ROA)	-0.0011	-0.1004***	-0.1183***	-0.0426	-0.0035	-0.0765***	-0.0963***	-0.0373
	(0.0182)	(0.0292)	(0.0310)	(0.0442)	(0.0156)	(0.0237)	(0.0288)	(0.0430)
Leverage ratio (long-term debt/ equity)	-0.0001	0.0000	0.0002	0.0004	-0.0002*	-0.0000	0.0001	0.0002
	(0.0001)	(0.0003)	(0.0005)	(0.0006)	(0.0001)	(0.0002)	(0.0004)	(0.0006)
Insurance industry	0.0292***	0.0900***	0.1459***	0.2290***	0.0298***	0.0886***	0.1290***	0.1878***
	(0.0055)	(0.0092)	(0.0132)	(0.0181)	(0.0054)	(0.0093)	(0.0131)	(0.0178)
Banking industry	-0.0077*	0.0028	0.0309***	0.0350***	-0.0078*	0.0032	0.0205**	0.0187
	(0.0044)	(0.0073)	(0.0097)	(0.0131)	(0.0043)	(0.0075)	(0.0100)	(0.0137)
January	-0.0129***	-0.0555***	-0.0542***	-0.0663***	-0.0123***	-0.0170***	0.0024	-0.0213*
	(0.0038)	(0.0062)	(0.0088)	(0.0113)	(0.0036)	(0.0061)	(0.0087)	(0.0112)
Fourth Quarter	0.0092***	0.0388***	0.0464***	0.0645***	-0.0017	-0.0038	-0.0063	0.0088
	(0.0024)	(0.0040)	(0.0055)	(0.0072)	(0.0023)	(0.0038)	(0.0055)	(0.0070)
Constant	-0.0300***	-0.0734***	-0.1389***	-0.1846***	-0.0240***	-0.0583***	-0.1146***	-0.1441***
	(0.0062)	(0.0106)	(0.0152)	(0.0205)	(0.0062)	(0.0106)	(0.0153)	(0.0207)
Year Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Sector Industry Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
R-squared	6.20%	9.67%	11.48%	11.03%	5.77%	6.52%	7.94%	7.86%

1. Heteroscedasticity-consistent standard errors are in parentheses.
2. The symbols ***, **, * show the significance at the 0.01, 0.05, and 0.10 levels of the t-test, respectively.
3. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock transactions, respectively. We employ the event study method based on the Market Model using CRSP value-weighted index and CRSP equal-weighted index, respectively.
4. We employ an indicator variable (ERM Year +1) to identify whether a firm employs ERM in any given year plus one year over the sample period. For example, if a firm adopts ERM in 2004, the ERM indicator variable will be assigned with a value of one for year 2005 and the following years.
5. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares. We employ five binary variables to proxy CEO, CFO, director, officer, and large shareholders who made stock transactions of a firm from 1996 to 2013, respectively.
6. We use two binary variables to proxy significant changes in firm's stock prices (i.e., past stock performance): RET is less than -20% and RET is greater than 20%. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., 4 day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., 2 day past stock performance) to proxy RET and get similar results.
7. We employ two binary variables for firm size based on market capitalization: small firms with market capitalization less than or equal to $202,158,805 (33.33th percentile of the insider stock purchase and sale sample), medium firms with market capitalization between $202,158,805 and $1,068,003,868 (33.33th percentile to 66.66th percentile), and large firms with market capitalization greater than $1,068,003,868 (66.66th percentile).
8. We employ two binary variables for stock volatility of a firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: low stock volatility firms with stock volatility less than or equal to 0.019601 (33.33th percentile of the insider stock purchase and sale sample), medium stock volatility firms with stock volatility between 0.019601 and 0.032981 (33.33th percentile to 66.66th percentile), and high stock volatility firms with stock volatility greater than 0.032981 (66.66th percentile).
9. We employ a binary variable for the period of 2008 financial crisis (December 2007 to June 2009).
10. We also employ several robustness checks and get similar results: models including dollar value of insider stock purchase traded at insider level and at company level, models using the ratio of long-term debt to total assets to proxy the leverage variable, and models with autocorrelation corrections (i.e., Yule-Walker Estimates).
11. Variance inflation factors for all independent variables are less than 10, and thus collinearity does not appear to be problematic for any of the models.

Table 3-8: Regression Results with Insider Stock Purchase (ERM Date)

Insider Stock Purchase: ERM Date
Cumulative Abnormal Return (CAR) Ordinary Least Squares Regression Model with Heteroscedasticity-Consistent Standard Errors
Number of Transactions = 22,220 (Insider-Firm-Day Level Data); Sample Period = 1996 to 2013

Event Study is based on the Market Model using:	**A. CRSP Value-Weighted Index**				**B. CRSP Equal-Weighted Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Independent Variables								
ERM Date	-0.0069***	-0.0149***	-0.0103	-0.0161*	-0.0056**	-0.0120***	-0.0099	-0.0154
	(0.0026)	(0.0047)	(0.0073)	(0.0096)	(0.0025)	(0.0046)	(0.0072)	(0.0096)
Insider Type								
CEO	0.0175***	0.0426***	0.0507***	0.0629***	0.0202***	0.0450***	0.0549***	0.0720***
	(0.0033)	(0.0056)	(0.0084)	(0.0110)	(0.0033)	(0.0054)	(0.0082)	(0.0108)
CFO	0.0222***	0.0576***	0.0719***	0.0702***	0.0258***	0.0594***	0.0751***	0.0790***
	(0.0051)	(0.0088)	(0.0123)	(0.0155)	(0.0050)	(0.0086)	(0.0121)	(0.0153)
Director	0.0124***	0.0274***	0.0221***	0.0189**	0.0133***	0.0278***	0.0250***	0.0299***
	(0.0023)	(0.0041)	(0.0062)	(0.0080)	(0.0023)	(0.0039)	(0.0059)	(0.0077)
Officer	0.0151***	0.0294***	0.0324***	0.0230**	0.0143***	0.0278***	0.0315***	0.0296***
	(0.0031)	(0.0054)	(0.0079)	(0.0102)	(0.0029)	(0.0051)	(0.0076)	(0.0100)
Large Shareholders	0.0217	0.0313**	0.0970***	0.2211***	0.0287	0.0399***	0.1417***	0.3027***
	(0.0293)	(0.0153)	(0.0316)	(0.0464)	(0.0261)	(0.0150)	(0.0307)	(0.0428)
Past Stock Performance								
RET <= -20%	0.0575***	0.0759***	0.0949***	0.0694***	0.0618***	0.0665***	0.0612***	0.0207
	(0.0081)	(0.0133)	(0.0169)	(0.0223)	(0.0079)	(0.0126)	(0.0168)	(0.0218)
RET > 20%	0.0063	0.0080	0.0201	0.0629**	-0.0009	-0.0117	0.0005	0.0408*
	(0.0089)	(0.0131)	(0.0185)	(0.0254)	(0.0086)	(0.0125)	(0.0181)	(0.0246)
Information Uncertainty								
Small Firms	0.0162***	0.0479***	0.0812***	0.1076***	0.0153***	0.0432***	0.0845***	0.1086***
	(0.0023)	(0.0041)	(0.0063)	(0.0084)	(0.0023)	(0.0041)	(0.0063)	(0.0084)
Medium Firms	0.0089***	0.0294***	0.0407***	0.0534***	0.0084***	0.0269***	0.0476***	0.0604***
	(0.0022)	(0.0038)	(0.0059)	(0.0076)	(0.0022)	(0.0038)	(0.0059)	(0.0076)
High Stock Volatility Firms	0.0179***	0.0154***	0.0372***	0.0534***	0.0146***	0.0088**	0.0158***	0.0233***
	(0.0022)	(0.0038)	(0.0057)	(0.0075)	(0.0021)	(0.0037)	(0.0057)	(0.0074)
Medium Stock Volatility Firms	0.0068***	-0.0027	0.0060	0.0078	0.0067***	-0.0027	0.0036	0.0067
	(0.0015)	(0.0027)	(0.0040)	(0.0052)	(0.0014)	(0.0026)	(0.0040)	(0.0051)
Financial Crisis Period (December 2007 to June 2009)	0.0094	0.1037***	0.2350***	0.2502***	-0.0041	0.0405***	0.1021***	0.0777***
	(0.0065)	(0.0129)	(0.0188)	(0.0244)	(0.0062)	(0.0116)	(0.0169)	(0.0224)

(continued on next page)

Table 3-8: Regression Results with Insider Stock Purchase (ERM Date) (cont.)

Insider Stock Purchase: ERM Date (cont.)

Event Study is based on the Market Model using:	**A. CRSP Value-Weighted Index**				**B. CRSP Equal-Weighted Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Control Variables								
Number of insider shares traded at insider level	<0.0000	<0.0000**	<0.0000**	<0.0000**	<0.0000	<0.0000**	<0.0000*	<0.0000**
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Number of insider shares traded at company level (%)	0.0097**	-0.0047	-0.0176***	-0.0459***	0.0119***	0.0018	-0.0141***	-0.0397***
	(0.0038)	(0.0030)	(0.0055)	(0.0110)	(0.0039)	(0.0029)	(0.0051)	(0.0102)
Market to book ratio (MTB)	0.0001	-0.0001	-0.0004	-0.0006	0.0001	-0.0000	-0.0003	-0.0006
	(0.0001)	(0.0002)	(0.0003)	(0.0004)	(0.0001)	(0.0002)	(0.0003)	(0.0004)
Loss (binary variable for net income < 0)	-0.0015	-0.0081**	-0.0243***	-0.0218***	-0.0000	-0.0071*	-0.0210***	-0.0211***
	(0.0024)	(0.0040)	(0.0057)	(0.0075)	(0.0023)	(0.0038)	(0.0055)	(0.0074)
Return on assets (ROA)	-0.0010	-0.1002***	-0.1182***	-0.0425	-0.0035	-0.0763***	-0.0962***	-0.0372
	(0.0182)	(0.0292)	(0.0309)	(0.0442)	(0.0156)	(0.0237)	(0.0288)	(0.0430)
Leverage ratio (long-term debt/ equity)	-0.0001	0.0001	0.0002	0.0003	-0.0002*	-0.0000	0.0001	0.0002
	(0.0001)	(0.0003)	(0.0005)	(0.0006)	(0.0001)	(0.0002)	(0.0004)	(0.0006)
Insurance industry	0.0293***	0.0902***	0.1460***	0.2293***	0.0299***	0.0887***	0.1292***	0.1881***
	(0.0055)	(0.0092)	(0.0132)	(0.0181)	(0.0054)	(0.0093)	(0.0131)	(0.0178)
Banking industry	-0.0069	0.0048	0.0316***	0.0342***	-0.0069	0.0054	0.0211**	0.0180
	(0.0044)	(0.0074)	(0.0097)	(0.0131)	(0.0043)	(0.0075)	(0.0100)	(0.0137)
January	-0.0128***	-0.0552***	-0.0541***	-0.0668***	-0.0121***	-0.0165***	0.0025	-0.0217*
	(0.0038)	(0.0062)	(0.0088)	(0.0113)	(0.0036)	(0.0061)	(0.0087)	(0.0112)
Fourth Quarter	0.0091***	0.0387***	0.0464***	0.0647***	-0.0018	-0.0040	-0.0064	0.0089
	(0.0024)	(0.0040)	(0.0055)	(0.0072)	(0.0023)	(0.0038)	(0.0055)	(0.0070)
Constant	-0.0297***	-0.0727***	-0.1387***	-0.1847***	-0.0238***	-0.0576***	-0.1143***	-0.1442***
	(0.0062)	(0.0106)	(0.0152)	(0.0205)	(0.0062)	(0.0106)	(0.0153)	(0.0207)
Year Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Sector Industry Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
R-squared	6.21%	9.69%	11.48%	11.02%	5.79%	6.54%	7.94%	7.86%

1. Heteroscedasticity-consistent standard errors are in parentheses.
2. The symbols ***, **, * show the significance at the 0.01, 0.05, and 0.10 levels of the t-test, respectively.
3. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock transactions, respectively. We employ the event study method based on the Market Model using CRSP value-weighted index and CRSP equal-weighted index, respectively.
4. We employ an indicator variable (ERM Date) to identify whether a firm employs ERM on the specific date over the sample period. For example, if a firm adopts ERM on March 1st 2004, the ERM indicator variable will be assigned with a value of one for March 1st 2014 and the following dates. If we do not find the enactment date of ERM, we use the SEC filing date/report date as the first evidence of ERM of a firm.
5. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares. We employ five binary variables to proxy CEO, CFO, director, officer, and large shareholders who made stock transactions of a firm from 1996 to 2013, respectively.
6. We use two binary variables to proxy significant changes in firm's stock prices (i.e., past stock performance): RET is less than -20% and RET is greater than 20%. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., 4 day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., 2 day past stock performance) to proxy RET and get similar results.
7. We employ two binary variables for firm size based on market capitalization: small firms with market capitalization less than or equal to $202,158,805 (33.33th percentile of the insider stock purchase and sale sample), medium firms with market capitalization between $202,158,805 and $1,068,003,868 (33.33th percentile to 66.66th percentile), and large firms with market capitalization greater than $1,068,003,868 (66.66th percentile).
8. We employ two binary variables for stock volatility of a firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: low stock volatility firms with stock volatility less than or equal to 0.019601 (33.33th percentile of the insider stock purchase and sale sample), medium stock volatility firms with stock volatility between 0.019601 and 0.032981 (33.33th percentile to 66.66th percentile), and high stock volatility firms with stock volatility greater than 0.032981 (66.66th percentile).
9. We employ a binary variable for the period of 2008 financial crisis (December 2007 to June 2009).
10. We also employ several robustness checks and get similar results: models including dollar value of insider stock purchase traded at insider level and at company level, models using the ratio of long-term debt to total assets to proxy the leverage variable, and models with autocorrelation corrections (i.e., Yule-Walker Estimates).
11. Variance inflation factors for all independent variables are less than 10, and thus collinearity does not appear to be problematic for any of the models.

Table 3-9: Regression Results with Insider Stock Purchase (Interactions with ERM Year)

Insider Stock Purchase: ERM Year
Cumulative Abnormal Return (CAR) Ordinary Least Squares Regression Model with Heteroscedasticity-Consistent Standard Errors
Number of Transactions = 22,220 (Insider-Firm-Day Level Data); Sample Period = 1996 to 2013

Event Study is based on the Market Model using:	**A. CRSP Value-Weighted Index**				**B. CRSP Equal-Weighted Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Independent Variables								
ERM								
ERM Year	0.0038	0.0094**	0.0281***	0.0521***	0.0045*	0.0095**	0.0248***	0.0497***
	(0.0026)	(0.0043)	(0.0065)	(0.0085)	(0.0027)	(0.0044)	(0.0066)	(0.0087)
ERM Year * Small Firms	-0.0099*	-0.0111	-0.0234	-0.0265	-0.0110**	-0.0101	-0.0054	-0.0018
	(0.0051)	(0.0094)	(0.0148)	(0.0199)	(0.0049)	(0.0091)	(0.0143)	(0.0197)
ERM Year * High Stock Volatility Firms	-0.0162***	-0.0810***	-0.1087***	-0.1255***	-0.0093*	-0.0686***	-0.0937***	-0.1153***
	(0.0058)	(0.0119)	(0.0193)	(0.0265)	(0.0056)	(0.0117)	(0.0189)	(0.0264)
ERM Year * Financial Crisis Period	-0.0118	0.0046	-0.0425*	-0.1607***	-0.0114	0.0065	-0.0546**	-0.1676***
	(0.0073)	(0.0138)	(0.0225)	(0.0297)	(0.0070)	(0.0134)	(0.0218)	(0.0301)
ERM Year * RET <= -20%	-0.0321	-0.0178	0.0940*	0.1188	-0.0412*	-0.0126	0.0491	0.0343
	(0.0230)	(0.0367)	(0.0560)	(0.0753)	(0.0222)	(0.0327)	(0.0531)	(0.0686)
ERM Year * RET > 20%	-0.0088	-0.0361	0.1028	0.1646	-0.0242	-0.0636	0.0656	0.1263
	(0.0297)	(0.0524)	(0.1128)	(0.2413)	(0.0214)	(0.0426)	(0.1095)	(0.2408)
ERM Year * CEO	0.0089	0.0013	-0.0243	-0.0307	0.0052	-0.0066	-0.0359	-0.0420
	(0.0084)	(0.0155)	(0.0266)	(0.0326)	(0.0084)	(0.0154)	(0.0268)	(0.0327)
Insider Type								
CEO	0.0166***	0.0411***	0.0501***	0.0617***	0.0196***	0.0442***	0.0552***	0.0715***
	(0.0034)	(0.0058)	(0.0085)	(0.0113)	(0.0034)	(0.0056)	(0.0084)	(0.0110)
CFO	0.0218***	0.0562***	0.0703***	0.0676***	0.0255***	0.0582***	0.0734***	0.0760***
	(0.0051)	(0.0088)	(0.0123)	(0.0155)	(0.0050)	(0.0086)	(0.0121)	(0.0153)
Director	0.0121***	0.0264***	0.0209***	0.0171**	0.0131***	0.0269***	0.0237***	0.0277***
	(0.0023)	(0.0041)	(0.0062)	(0.0080)	(0.0023)	(0.0039)	(0.0060)	(0.0077)
Officer	0.0147***	0.0278***	0.0304***	0.0203**	0.0140***	0.0265***	0.0296***	0.0268***
	(0.0031)	(0.0053)	(0.0079)	(0.0103)	(0.0029)	(0.0051)	(0.0076)	(0.0100)
Large Shareholders	0.0210	0.0297**	0.0943***	0.2158***	0.0282	0.0386***	0.1391***	0.2974***
	(0.0293)	(0.0148)	(0.0316)	(0.0473)	(0.0261)	(0.0148)	(0.0308)	(0.0434)
Past Stock Performance								
RET <= -20%	0.0608***	0.0792***	0.0889***	0.0628***	0.0658***	0.0691***	0.0596***	0.0225
	(0.0087)	(0.0142)	(0.0179)	(0.0235)	(0.0084)	(0.0135)	(0.0178)	(0.0231)
RET > 20%	0.0060	0.0068	0.0140	0.0542**	-0.0007	-0.0120	-0.0040	0.0339
	(0.0091)	(0.0134)	(0.0188)	(0.0253)	(0.0088)	(0.0127)	(0.0183)	(0.0245)
Information Uncertainty								
Small Firms	0.0169***	0.0483***	0.0827***	0.1087***	0.0163***	0.0437***	0.0838***	0.1067***
	(0.0024)	(0.0042)	(0.0065)	(0.0087)	(0.0024)	(0.0042)	(0.0066)	(0.0086)
Medium Firms	0.0088***	0.0290***	0.0403***	0.0520***	0.0085***	0.0267***	0.0464***	0.0580***
	(0.0022)	(0.0038)	(0.0059)	(0.0076)	(0.0022)	(0.0038)	(0.0059)	(0.0076)
High Stock Volatility Firms	0.0199***	0.0234***	0.0485***	0.0691***	0.0159***	0.0154***	0.0261***	0.0384***
	(0.0023)	(0.0039)	(0.0058)	(0.0076)	(0.0023)	(0.0038)	(0.0058)	(0.0076)
Medium Stock Volatility Firms	0.0075***	-0.0008	0.0088**	0.0128**	0.0073***	-0.0011	0.0063	0.0116**
	(0.0015)	(0.0026)	(0.0040)	(0.0052)	(0.0015)	(0.0026)	(0.0039)	(0.0051)
Financial Crisis Period (December 2007 to June 2009)	0.0116*	0.1036***	0.2405***	0.2732***	-0.0018	0.0401***	0.1101***	0.1029***
	(0.0067)	(0.0131)	(0.0191)	(0.0249)	(0.0063)	(0.0118)	(0.0172)	(0.0227)

(continued on next page)

Table 3-9: Regression Results with Insider Stock Purchase (Interactions with ERM Year) (cont.)

Insider Stock Purchase: ERM Year (cont.)

Event Study is based on the Market Model using:	**A. CRSP Value-Weighted Index**				**B. CRSP Equal-Weighted Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Control Variables								
Number of insider shares traded at insider level	<0.0000	<0.0000***	<0.0000**	<0.0000**	<0.0000	<0.0000**	<0.0000*	<0.0000**
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Number of insider shares traded at company level (%)	0.0095**	-0.0050*	-0.0181***	-0.0465***	0.0118***	0.0015	-0.0144***	-0.0402***
	(0.0037)	(0.0030)	(0.0055)	(0.0112)	(0.0038)	(0.0029)	(0.0051)	(0.0104)
Market to book ratio (MTB)	0.0001	-0.0001	-0.0004	-0.0006	0.0001	-0.0001	-0.0003	-0.0006
	(0.0001)	(0.0002)	(0.0003)	(0.0004)	(0.0001)	(0.0002)	(0.0003)	(0.0004)
Loss (binary variable for net income < 0)	-0.0012	-0.0075*	-0.0241***	-0.0218***	0.0003	-0.0065*	-0.0208***	-0.0209***
	(0.0024)	(0.0040)	(0.0057)	(0.0075)	(0.0023)	(0.0038)	(0.0055)	(0.0074)
Return on assets (ROA)	0.0008	-0.0954***	-0.1118***	-0.0322	-0.0018	-0.0722***	-0.0900***	-0.0267
	(0.0182)	(0.0290)	(0.0306)	(0.0438)	(0.0156)	(0.0234)	(0.0284)	(0.0425)
Leverage ratio (long-term debt/ equity)	-0.0001	0.0001	0.0003	0.0004	-0.0001	0.0000	0.0001	0.0003
	(0.0001)	(0.0003)	(0.0005)	(0.0006)	(0.0001)	(0.0002)	(0.0004)	(0.0006)
Insurance industry	0.0301***	0.0933***	0.1490***	0.2336***	0.0305***	0.0914***	0.1323***	0.1929***
	(0.0055)	(0.0093)	(0.0133)	(0.0183)	(0.0054)	(0.0093)	(0.0132)	(0.0180)
Banking industry	-0.0069	0.0049	0.0325***	0.0383***	-0.0073*	0.0051	0.0234**	0.0238*
	(0.0044)	(0.0073)	(0.0097)	(0.0131)	(0.0044)	(0.0075)	(0.0100)	(0.0137)
January	-0.0128***	-0.0549***	-0.0543***	-0.0668***	-0.0121***	-0.0164***	0.0028	-0.0210*
	(0.0038)	(0.0062)	(0.0088)	(0.0112)	(0.0036)	(0.0061)	(0.0087)	(0.0111)
Fourth Quarter	0.0089***	0.0379***	0.0453***	0.0632***	-0.0019	-0.0046	-0.0074	0.0074
	(0.0024)	(0.0040)	(0.0056)	(0.0072)	(0.0023)	(0.0038)	(0.0055)	(0.0070)
Constant	-0.0303***	-0.0734***	-0.1401***	-0.1881***	-0.0243***	-0.0581***	-0.1153***	-0.1470***
	(0.0062)	(0.0106)	(0.0153)	(0.0206)	(0.0062)	(0.0106)	(0.0154)	(0.0208)
Year Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Sector Industry Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
R-squared	6.32%	9.97%	11.76%	11.46%	5.88%	6.75%	8.19%	8.31%

1. Heteroscedasticity-consistent standard errors are in parentheses.
2. The symbols ***, **, * show the significance at the 0.01, 0.05, and 0.10 levels of the t-test, respectively.
3. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock transactions, respectively. We employ the event study method based on the Market Model using CRSP value-weighted index and CRSP equal-weighted index, respectively.
4. We employ an indicator variable (ERM Year) to identify whether a firm employs ERM in any given year over the sample period. For example, if a firm adopts ERM in 2004, the ERM indicator variable will be assigned with a value of one for year 2004 and the following years.
5. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares. We employ five binary variables to proxy CEO, CFO, director, officer, and large shareholders who made stock transactions of a firm from 1996 to 2013, respectively.
6. We use two binary variables to proxy significant changes in firm's stock prices (i.e., past stock performance): RET is less than -20% and RET is greater than 20%. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., 4 day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., 2 day past stock performance) to proxy RET and get similar results.
7. We employ two binary variables for firm size based on market capitalization: small firms with market capitalization less than or equal to $202,158,805 (33.33th percentile of the insider stock purchase and sale sample), medium firms with market capitalization between $202,158,805 and $1,068,003,868 (33.33th percentile to 66.66th percentile), and large firms with market capitalization greater than $1,068,003,868 (66.66th percentile).
8. We employ two binary variables for stock volatility of a firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: low stock volatility firms with stock volatility less than or equal to 0.019601 (33.33th percentile of the insider stock purchase and sale sample), medium stock volatility firms with stock volatility between 0.019601 and 0.032981 (33.33th percentile to 66.66th percentile), and high stock volatility firms with stock volatility greater than 0.032981 (66.66th percentile).
9. We employ a binary variable for the period of 2008 financial crisis (December 2007 to June 2009).
10. We also employ several robustness checks and get similar results: models including dollar value of insider stock purchase traded at insider level and at company level, models using the ratio of long-term debt to total assets to proxy the leverage variable, and models with autocorrelation corrections (i.e., Yule-Walker Estimates).
11. Variance inflation factors for all independent variables are less than 10, and thus collinearity does not appear to be problematic for any of the models.

Table 3-10: Regression Results with Insider Stock Purchase (Interactions with ERM Year +1)

Insider Stock Purchase: ERM Year +1
Cumulative Abnormal Return (CAR) Ordinary Least Squares Regression Model with Heteroscedasticity-Consistent Standard Errors
Number of Transactions = 22,220 (Insider-Firm-Day Level Data); Sample Period = 1996 to 2013

Event Study is based on the Market Model using:	**A. CRSP Value-Weighted Index**				**B. CRSP Equal-Weighted Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Independent Variables								
ERM								
ERM Year +1	0.0045	0.0131***	0.0311***	0.0497***	0.0053*	0.0150***	0.0297***	0.0490***
	(0.0028)	(0.0045)	(0.0068)	(0.0091)	(0.0028)	(0.0046)	(0.0069)	(0.0093)
ERM Year +1 * Small Firms	-0.0006	0.0108	-0.0083	-0.0228	-0.0027	0.0079	0.0059	-0.0016
	(0.0056)	(0.0103)	(0.0165)	(0.0225)	(0.0054)	(0.0098)	(0.0159)	(0.0222)
ERM Year +1 * High Stock Volatility Firms	-0.0074	-0.0582***	-0.0908***	-0.1393***	-0.0001	-0.0468***	-0.0819***	-0.1352***
	(0.0061)	(0.0121)	(0.0200)	(0.0283)	(0.0059)	(0.0120)	(0.0197)	(0.0286)
ERM Year +1 * Financial Crisis Period	-0.0211***	-0.0144	-0.0562**	-0.1427***	-0.0207***	-0.0128	-0.0663***	-0.1483***
	(0.0074)	(0.0138)	(0.0225)	(0.0305)	(0.0070)	(0.0134)	(0.0219)	(0.0309)
ERM Year +1 * RET <= -20%	-0.0337	-0.0399	0.0644	0.0997	-0.0426*	-0.0340	0.0200	0.0134
	(0.0237)	(0.0375)	(0.0565)	(0.0767)	(0.0229)	(0.0334)	(0.0530)	(0.0691)
ERM Year +1 * RET > 20%	0.0003	-0.0184	-0.1038	-0.1884	-0.0070	-0.0453	-0.1577**	-0.2357
	(0.0402)	(0.0697)	(0.0796)	(0.2454)	(0.0231)	(0.0532)	(0.0670)	(0.2528)
ERM Year +1 * CEO	0.0078	-0.0115	-0.0515**	-0.0692**	0.0048	-0.0196	-0.0664***	-0.0830**
	(0.0086)	(0.0148)	(0.0254)	(0.0332)	(0.0086)	(0.0147)	(0.0256)	(0.0333)
Insider Type								
CEO	0.0168***	0.0419***	0.0517***	0.0639***	0.0196***	0.0449***	0.0567***	0.0736***
	(0.0034)	(0.0058)	(0.0085)	(0.0113)	(0.0034)	(0.0056)	(0.0084)	(0.0110)
CFO	0.0216***	0.0560***	0.0705***	0.0683***	0.0253***	0.0580***	0.0735***	0.0765***
	(0.0051)	(0.0088)	(0.0123)	(0.0155)	(0.0050)	(0.0087)	(0.0121)	(0.0153)
Director	0.0120***	0.0262***	0.0210***	0.0175**	0.0130***	0.0266***	0.0238***	0.0281***
	(0.0023)	(0.0041)	(0.0062)	(0.0080)	(0.0023)	(0.0039)	(0.0060)	(0.0077)
Officer	0.0148***	0.0282***	0.0310***	0.0210**	0.0141***	0.0268***	0.0301***	0.0274***
	(0.0031)	(0.0053)	(0.0079)	(0.0103)	(0.0029)	(0.0051)	(0.0076)	(0.0100)
Large Shareholders	0.0209	0.0296**	0.0946***	0.2169***	0.0280	0.0383***	0.1392***	0.2983***
	(0.0293)	(0.0150)	(0.0317)	(0.0472)	(0.0261)	(0.0148)	(0.0308)	(0.0435)
Past Stock Performance								
RET <= -20%	0.0608***	0.0810***	0.0920***	0.0657***	0.0657***	0.0707***	0.0625***	0.0252
	(0.0087)	(0.0141)	(0.0179)	(0.0234)	(0.0084)	(0.0134)	(0.0178)	(0.0230)
RET > 20%	0.0062	0.0073	0.0189	0.0606**	-0.0007	-0.0117	0.0006	0.0399
	(0.0091)	(0.0133)	(0.0188)	(0.0255)	(0.0087)	(0.0127)	(0.0183)	(0.0246)
Information Uncertainty								
Small Firms	0.0163***	0.0471***	0.0811***	0.1068***	0.0157***	0.0429***	0.0828***	0.1053***
	(0.0024)	(0.0042)	(0.0065)	(0.0086)	(0.0024)	(0.0042)	(0.0065)	(0.0085)
Medium Firms	0.0087***	0.0290***	0.0398***	0.0508***	0.0084***	0.0268***	0.0459***	0.0568***
	(0.0022)	(0.0038)	(0.0059)	(0.0076)	(0.0022)	(0.0038)	(0.0059)	(0.0076)
High Stock Volatility Firms	0.0192***	0.0211***	0.0461***	0.0684***	0.0152***	0.0133***	0.0243***	0.0383***
	(0.0023)	(0.0039)	(0.0058)	(0.0076)	(0.0022)	(0.0038)	(0.0057)	(0.0075)
Medium Stock Volatility Firms	0.0074***	-0.0012	0.0086**	0.0126**	0.0072***	-0.0015	0.0061	0.0114**
	(0.0015)	(0.0026)	(0.0040)	(0.0052)	(0.0015)	(0.0026)	(0.0039)	(0.0051)
Financial Crisis Period (December 2007 to June 2009)	0.0130*	0.1068***	0.2429***	0.2704***	-0.0004	0.0433***	0.1122***	0.0999***
	(0.0067)	(0.0131)	(0.0191)	(0.0249)	(0.0063)	(0.0118)	(0.0172)	(0.0227)

(continued on next page)

Table 3-10: Regression Results with Insider Stock Purchase (Interactions with ERM Year +1) (cont.)

Insider Stock Purchase: ERM Year +1 (cont.)

Event Study is based on the Market Model using:	**A. CRSP Value-Weighted Index**				**B. CRSP Equal-Weighted Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Control Variables								
Number of insider shares traded at insider level	<0.0000	<0.0000***	<0.0000**	<0.0000**	<0.0000	<0.0000**	<0.0000*	<0.0000**
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Number of insider shares traded at company level (%)	0.0096**	-0.0047	-0.0179***	-0.0466***	0.0119***	0.0018	-0.0144***	-0.0404***
	(0.0038)	(0.0030)	(0.0055)	(0.0112)	(0.0038)	(0.0029)	(0.0051)	(0.0104)
Market to book ratio (MTB)	0.0001	-0.0001	-0.0004	-0.0006	0.0001	-0.0000	-0.0003	-0.0006
	(0.0001)	(0.0002)	(0.0003)	(0.0004)	(0.0001)	(0.0002)	(0.0003)	(0.0004)
Loss (binary variable for net income < 0)	-0.0013	-0.0078*	-0.0243***	-0.0217***	0.0002	-0.0068*	-0.0207***	-0.0206***
	(0.0024)	(0.0040)	(0.0057)	(0.0075)	(0.0023)	(0.0038)	(0.0055)	(0.0074)
Return on assets (ROA)	0.0002	-0.0969***	-0.1125***	-0.0319	-0.0023	-0.0735***	-0.0902***	-0.0258
	(0.0182)	(0.0291)	(0.0307)	(0.0438)	(0.0156)	(0.0236)	(0.0285)	(0.0425)
Leverage ratio (long-term debt/ equity)	-0.0001	0.0000	0.0003	0.0004	-0.0002*	-0.0000	0.0001	0.0003
	(0.0001)	(0.0003)	(0.0005)	(0.0006)	(0.0001)	(0.0002)	(0.0004)	(0.0006)
Insurance industry	0.0299***	0.0927***	0.1496***	0.2355***	0.0303***	0.0909***	0.1333***	0.1952***
	(0.0056)	(0.0093)	(0.0132)	(0.0183)	(0.0055)	(0.0093)	(0.0131)	(0.0180)
Banking industry	-0.0066	0.0056	0.0337***	0.0407***	-0.0070	0.0053	0.0244**	0.0261*
	(0.0044)	(0.0073)	(0.0097)	(0.0132)	(0.0044)	(0.0075)	(0.0100)	(0.0138)
January	-0.0127***	-0.0549***	-0.0542***	-0.0663***	-0.0121***	-0.0165***	0.0028	-0.0206*
	(0.0038)	(0.0062)	(0.0088)	(0.0112)	(0.0036)	(0.0061)	(0.0087)	(0.0111)
Fourth Quarter	0.0090***	0.0384***	0.0457***	0.0633***	-0.0018	-0.0042	-0.0070	0.0075
	(0.0024)	(0.0040)	(0.0055)	(0.0072)	(0.0023)	(0.0038)	(0.0055)	(0.0070)
Constant	-0.0304***	-0.0739***	-0.1405***	-0.1878***	-0.0243***	-0.0586***	-0.1156***	-0.1467***
	(0.0062)	(0.0106)	(0.0153)	(0.0206)	(0.0062)	(0.0106)	(0.0154)	(0.0208)
Year Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Sector Industry Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
R-squared	6.28%	9.82%	11.69%	11.45%	5.85%	6.64%	8.18%	8.34%

1. Heteroscedasticity-consistent standard errors are in parentheses.
2. The symbols ***, **, * show the significance at the 0.01, 0.05, and 0.10 levels of the t-test, respectively.
3. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock transactions, respectively. We employ the event study method based on the Market Model using CRSP value-weighted index and CRSP equal-weighted index, respectively.
4. We employ an indicator variable (ERM Year +1) to identify whether a firm employs ERM in any given year plus one year over the sample period. For example, if a firm adopts ERM in 2004, the ERM indicator variable will be assigned with a value of one for year 2005 and the following years.
5. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares. We employ five binary variables to proxy CEO, CFO, director, officer, and large shareholders who made stock transactions of a firm from 1996 to 2013, respectively.
6. We use two binary variables to proxy significant changes in firm's stock prices (i.e., past stock performance): RET is less than -20% and RET is greater than 20%. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., 4 day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., 2 day past stock performance) to proxy RET and get similar results.
7. We employ two binary variables for firm size based on market capitalization: small firms with market capitalization less than or equal to $202,158,805 (33.33th percentile of the insider stock purchase and sale sample), medium firms with market capitalization between $202,158,805 and $1,068,003,868 (33.33th percentile to 66.66th percentile), and large firms with market capitalization greater than $1,068,003,868 (66.66th percentile).
8. We employ two binary variables for stock volatility of a firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: low stock volatility firms with stock volatility less than or equal to 0.019601 (33.33th percentile of the insider stock purchase and sale sample), medium stock volatility firms with stock volatility between 0.019601 and 0.032981 (33.33th percentile to 66.66th percentile), and high stock volatility firms with stock volatility greater than 0.032981 (66.66th percentile).
9. We employ a binary variable for the period of 2008 financial crisis (December 2007 to June 2009).
10. We also employ several robustness checks and get similar results: models including dollar value of insider stock purchase traded at insider level and at company level, models using the ratio of long-term debt to total assets to proxy the leverage variable, and models with autocorrelation corrections (i.e., Yule-Walker Estimates).
11. Variance inflation factors for all independent variables are less than 10, and thus collinearity does not appear to be problematic for any of the models.

Table 3-11: Regression Results with Insider Stock Purchase (Interactions with ERM Date)

Insider Stock Purchase: ERM Date
Cumulative Abnormal Return (CAR) Ordinary Least Squares Regression Model with Heteroscedasticity-Consistent Standard Errors
Number of Transactions = 22,220 (Insider-Firm-Day Level Data); Sample Period = 1996 to 2013

Event Study is based on the Market Model using:	**A. CRSP Value-Weighted Index**				**B. CRSP Equal-Weighted Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Independent Variables								
ERM								
ERM Date	0.0035	0.0100**	0.0282***	0.0477***	0.0040	0.0098**	0.0243***	0.0434***
	(0.0027)	(0.0044)	(0.0066)	(0.0087)	(0.0027)	(0.0044)	(0.0067)	(0.0089)
ERM Date * Small Firms	-0.0107**	-0.0108	-0.0159	-0.0172	-0.0121**	-0.0105	0.0011	0.0072
	(0.0052)	(0.0097)	(0.0150)	(0.0204)	(0.0051)	(0.0093)	(0.0146)	(0.0201)
ERM Date * High Stock Volatility Firms	-0.0174***	-0.0808***	-0.0966***	-0.1134***	-0.0112*	-0.0701***	-0.0849***	-0.1066***
	(0.0059)	(0.0122)	(0.0195)	(0.0271)	(0.0057)	(0.0120)	(0.0192)	(0.0270)
ERM Date * Financial Crisis Period	-0.0107	0.0038	-0.0515**	-0.1670***	-0.0098	0.0070	-0.0609***	-0.1705***
	(0.0073)	(0.0138)	(0.0225)	(0.0298)	(0.0070)	(0.0134)	(0.0218)	(0.0302)
ERM Date * RET <= -20%	-0.0314	-0.0179	0.0879	0.1137	-0.0402*	-0.0119	0.0449	0.0313
	(0.0230)	(0.0367)	(0.0561)	(0.0753)	(0.0222)	(0.0328)	(0.0531)	(0.0686)
ERM Date * RET > 20%	-0.0079	-0.0365	0.0959	0.1589	-0.0230	-0.0629	0.0605	0.1226
	(0.0297)	(0.0524)	(0.1119)	(0.2406)	(0.0214)	(0.0426)	(0.1090)	(0.2405)
ERM Date * CEO	0.0095	0.0011	-0.0273	-0.0319	0.0060	-0.0064	-0.0381	-0.0419
	(0.0085)	(0.0156)	(0.0265)	(0.0326)	(0.0084)	(0.0154)	(0.0267)	(0.0327)
Insider Type								
CEO	0.0166***	0.0411***	0.0504***	0.0620***	0.0195***	0.0442***	0.0554***	0.0717***
	(0.0034)	(0.0058)	(0.0085)	(0.0113)	(0.0034)	(0.0056)	(0.0084)	(0.0110)
CFO	0.0218***	0.0563***	0.0704***	0.0678***	0.0255***	0.0582***	0.0734***	0.0762***
	(0.0051)	(0.0088)	(0.0123)	(0.0155)	(0.0050)	(0.0086)	(0.0121)	(0.0154)
Director	0.0122***	0.0264***	0.0209***	0.0173**	0.0131***	0.0269***	0.0238***	0.0279***
	(0.0023)	(0.0041)	(0.0062)	(0.0080)	(0.0023)	(0.0039)	(0.0060)	(0.0077)
Officer	0.0147***	0.0278***	0.0305***	0.0205**	0.0140***	0.0265***	0.0297***	0.0270***
	(0.0031)	(0.0053)	(0.0079)	(0.0103)	(0.0029)	(0.0051)	(0.0076)	(0.0100)
Large Shareholders	0.0211	0.0299**	0.0945***	0.2164***	0.0283	0.0388***	0.1393***	0.2981***
	(0.0293)	(0.0148)	(0.0316)	(0.0471)	(0.0261)	(0.0148)	(0.0308)	(0.0433)
Past Stock Performance								
RET <= -20%	0.0608***	0.0793***	0.0894***	0.0633***	0.0658***	0.0691***	0.0600***	0.0229
	(0.0087)	(0.0142)	(0.0179)	(0.0235)	(0.0084)	(0.0135)	(0.0178)	(0.0231)
RET > 20%	0.0059	0.0069	0.0148	0.0549**	-0.0008	-0.0120	-0.0034	0.0344
	(0.0091)	(0.0134)	(0.0188)	(0.0253)	(0.0088)	(0.0127)	(0.0183)	(0.0245)
Information Uncertainty								
Small Firms	0.0169***	0.0483***	0.0820***	0.1075***	0.0162***	0.0437***	0.0832***	0.1054***
	(0.0024)	(0.0042)	(0.0065)	(0.0086)	(0.0024)	(0.0042)	(0.0065)	(0.0086)
Medium Firms	0.0088***	0.0290***	0.0402***	0.0516***	0.0084***	0.0266***	0.0463***	0.0575***
	(0.0022)	(0.0038)	(0.0059)	(0.0076)	(0.0022)	(0.0038)	(0.0059)	(0.0076)
High Stock Volatility Firms	0.0200***	0.0233***	0.0473***	0.0677***	0.0160***	0.0155***	0.0252***	0.0372***
	(0.0023)	(0.0039)	(0.0058)	(0.0076)	(0.0023)	(0.0038)	(0.0058)	(0.0075)
Medium Stock Volatility Firms	0.0075***	-0.0008	0.0086**	0.0123**	0.0073***	-0.0011	0.0060	0.0110**
	(0.0015)	(0.0026)	(0.0040)	(0.0052)	(0.0015)	(0.0026)	(0.0039)	(0.0051)
Financial Crisis Period (December 2007 to June 2009)	0.0114*	0.1037***	0.2419***	0.2741***	-0.0020	0.0399***	0.1111***	0.1032***
	(0.0067)	(0.0132)	(0.0191)	(0.0249)	(0.0063)	(0.0118)	(0.0172)	(0.0227)

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Table 3-11: Regression Results with Insider Stock Purchase (Interactions with ERM Date) (cont.)

Insider Stock Purchase: ERM Date (cont.)

Event Study is based on the Market Model using:	**A. CRSP Value-Weighted Index**				**B. CRSP Equal-Weighted Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Control Variables								
Number of insider shares traded at insider level	<0.0000	<0.0000***	<0.0000**	<0.0000**	<0.0000	<0.0000**	<0.0000*	<0.0000**
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Number of insider shares traded at company level (%)	0.0095**	-0.0051*	-0.0180***	-0.0464***	0.0117***	0.0014	-0.0144***	-0.0402***
	(0.0037)	(0.0030)	(0.0055)	(0.0112)	(0.0038)	(0.0029)	(0.0051)	(0.0103)
Market to book ratio (MTB)	0.0001	-0.0001	-0.0004	-0.0006	0.0001	-0.0001	-0.0003	-0.0006
	(0.0001)	(0.0002)	(0.0003)	(0.0004)	(0.0001)	(0.0002)	(0.0003)	(0.0004)
Loss (binary variable for net income < 0)	-0.0013	-0.0076*	-0.0244***	-0.0220***	0.0002	-0.0066*	-0.0210***	-0.0211***
	(0.0024)	(0.0040)	(0.0057)	(0.0075)	(0.0023)	(0.0038)	(0.0055)	(0.0074)
Return on assets (ROA)	0.0008	-0.0955***	-0.1125***	-0.0331	-0.0017	-0.0722***	-0.0906***	-0.0275
	(0.0182)	(0.0290)	(0.0307)	(0.0439)	(0.0156)	(0.0235)	(0.0285)	(0.0426)
Leverage ratio (long-term debt/ equity)	-0.0001	0.0001	0.0003	0.0004	-0.0001	0.0000	0.0001	0.0002
	(0.0001)	(0.0003)	(0.0005)	(0.0006)	(0.0001)	(0.0002)	(0.0004)	(0.0006)
Insurance industry	0.0301***	0.0933***	0.1486***	0.2331***	0.0305***	0.0915***	0.1320***	0.1926***
	(0.0055)	(0.0092)	(0.0133)	(0.0183)	(0.0054)	(0.0093)	(0.0132)	(0.0180)
Banking industry	-0.0069	0.0049	0.0328***	0.0395***	-0.0072*	0.0051	0.0238**	0.0252*
	(0.0044)	(0.0073)	(0.0097)	(0.0131)	(0.0044)	(0.0075)	(0.0100)	(0.0137)
January	-0.0127***	-0.0548***	-0.0540***	-0.0661***	-0.0121***	-0.0163***	0.0031	-0.0201*
	(0.0038)	(0.0062)	(0.0088)	(0.0112)	(0.0036)	(0.0061)	(0.0087)	(0.0111)
Fourth Quarter	0.0089***	0.0380***	0.0455***	0.0633***	-0.0019	-0.0046	-0.0073	0.0074
	(0.0024)	(0.0040)	(0.0056)	(0.0072)	(0.0023)	(0.0038)	(0.0055)	(0.0070)
Constant	-0.0303***	-0.0733***	-0.1399***	-0.1875***	-0.0243***	-0.0581***	-0.1152***	-0.1463***
	(0.0062)	(0.0106)	(0.0153)	(0.0206)	(0.0062)	(0.0106)	(0.0154)	(0.0208)
Year Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Sector Industry Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
R-squared	6.33%	9.96%	11.71%	11.42%	5.89%	6.75%	8.16%	8.28%

1. Heteroscedasticity-consistent standard errors are in parentheses.
2. The symbols ***, **, * show the significance at the 0.01, 0.05, and 0.10 levels of the t-test, respectively.
3. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock transactions, respectively. We employ the event study method based on the Market Model using CRSP value-weighted index and CRSP equal-weighted index, respectively.
4. We employ an indicator variable (ERM Date) to identify whether a firm employs ERM on the specific date over the sample period. For example, if a firm adopts ERM on March 1st 2004, the ERM indicator variable will be assigned with a value of one for March 1st 2014 and the following dates. If we do not find the enactment date of ERM, we use the SEC filing date/report date as the first evidence of ERM of a firm.
5. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares. We employ five binary variables to proxy CEO, CFO, director, officer, and large shareholders who made stock transactions of a firm from 1996 to 2013, respectively.
6. We use two binary variables to proxy significant changes in firm's stock prices (i.e., past stock performance): RET is less than -20% and RET is greater than 20%. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., 4 day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., 2 day past stock performance) to proxy RET and get similar results.
7. We employ two binary variables for firm size based on market capitalization: small firms with market capitalization less than or equal to $202,158,805 (33.33th percentile of the insider stock purchase and sale sample), medium firms with market capitalization between $202,158,805 and $1,068,003,868 (33.33th percentile to 66.66th percentile), and large firms with market capitalization greater than $1,068,003,868 (66.66th percentile).
8. We employ two binary variables for stock volatility of a firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: low stock volatility firms with stock volatility less than or equal to 0.019601 (33.33th percentile of the insider stock purchase and sale sample), medium stock volatility firms with stock volatility between 0.019601 and 0.032981 (33.33th percentile to 66.66th percentile), and high stock volatility firms with stock volatility greater than 0.032981 (66.66th percentile).
9. We employ a binary variable for the period of 2008 financial crisis (December 2007 to June 2009).
10. We also employ several robustness checks and get similar results: models including dollar value of insider stock purchase traded at insider level and at company level, models using the ratio of long-term debt to total assets to proxy the leverage variable, and models with autocorrelation corrections (i.e., Yule-Walker Estimates).
11. Variance inflation factors for all independent variables are less than 10, and thus collinearity does not appear to be problematic for any of the models.

Table 3-12: Regression Results with Insider Stock Sale (ERM Year)

Insider Stock Sale: ERM Year
Cumulative Abnormal Return (CAR) Ordinary Least Squares Regression Model with Heteroscedasticity-Consistent Standard Errors
Number of Transactions = 49,170 (Insider-Firm-Day Level Data); Sample Period = 1996 to 2013

Event Study is based on the Market Model using:	**A. CRSP Value-Weighted Index**				**B. CRSP Equal-Weighted Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Independent Variables								
ERM Year	0.0040***	0.0091***	0.0127***	0.0132***	0.0033***	0.0072***	0.0086***	0.0094**
	(0.0011)	(0.0020)	(0.0030)	(0.0039)	(0.0011)	(0.0020)	(0.0031)	(0.0040)
Insider Type								
CEO	-0.0116***	-0.0274***	-0.0511***	-0.0783***	-0.0099***	-0.0263***	-0.0457***	-0.0678***
	(0.0020)	(0.0035)	(0.0052)	(0.0067)	(0.0020)	(0.0034)	(0.0052)	(0.0066)
CFO	-0.0081***	-0.0161***	-0.0353***	-0.0668***	-0.0072***	-0.0176***	-0.0329***	-0.0588***
	(0.0022)	(0.0040)	(0.0062)	(0.0080)	(0.0022)	(0.0040)	(0.0064)	(0.0079)
Director	-0.0066***	-0.0168***	-0.0333***	-0.0580***	-0.0046***	-0.0158***	-0.0297***	-0.0499***
	(0.0017)	(0.0031)	(0.0045)	(0.0058)	(0.0017)	(0.0030)	(0.0044)	(0.0057)
Officer	-0.0039**	-0.0129***	-0.0286***	-0.0529***	-0.0027*	-0.0139***	-0.0293***	-0.0499***
	(0.0016)	(0.0029)	(0.0043)	(0.0057)	(0.0016)	(0.0029)	(0.0042)	(0.0055)
Large Shareholders	0.0154	0.0212	0.0025	-0.0390	0.0134	0.0290	0.0263	0.0083
	(0.0148)	(0.0283)	(0.0360)	(0.0520)	(0.0139)	(0.0305)	(0.0408)	(0.0555)
Past Stock Performance								
RET <= -20%	0.0089	-0.0221	0.0184	0.0208	0.0117	-0.0215	-0.0127	0.0034
	(0.0141)	(0.0252)	(0.0374)	(0.0469)	(0.0134)	(0.0264)	(0.0376)	(0.0448)
RET > 20%	-0.0177***	-0.0044	-0.0595***	-0.0638***	-0.0191***	-0.0056	-0.0587***	-0.0610***
	(0.0067)	(0.0125)	(0.0153)	(0.0194)	(0.0065)	(0.0118)	(0.0146)	(0.0183)
Information Uncertainty								
Large Firms	-0.0129***	-0.0332***	-0.0628***	-0.0837***	-0.0154***	-0.0377***	-0.0665***	-0.0848***
	(0.0016)	(0.0029)	(0.0044)	(0.0058)	(0.0016)	(0.0028)	(0.0044)	(0.0057)
Medium Firms	-0.0086***	-0.0234***	-0.0534***	-0.0708***	-0.0100***	-0.0269***	-0.0571***	-0.0706***
	(0.0016)	(0.0029)	(0.0045)	(0.0058)	(0.0016)	(0.0028)	(0.0044)	(0.0057)
High Stock Volatility Firms	-0.0128***	-0.0323***	-0.0558***	-0.0826***	-0.0161***	-0.0417***	-0.0755***	-0.1060***
	(0.0013)	(0.0025)	(0.0037)	(0.0048)	(0.0014)	(0.0024)	(0.0037)	(0.0048)
Medium Stock Volatility Firms	-0.0049***	-0.0123***	-0.0241***	-0.0331***	-0.0055***	-0.0129***	-0.0254***	-0.0369***
	(0.0008)	(0.0015)	(0.0022)	(0.0029)	(0.0008)	(0.0015)	(0.0022)	(0.0029)
Financial Crisis Period (December 2007 to June 2009)	-0.0066	-0.0210***	-0.0267**	0.0018	-0.0250***	-0.0911***	-0.1890***	-0.2238***
	(0.0042)	(0.0073)	(0.0110)	(0.0148)	(0.0044)	(0.0076)	(0.0116)	(0.0153)

(continued on next page)

Table 3-12: Regression Results with Insider Stock Sale (ERM Year) (cont.)

Insider Stock Sale: ERM Year (cont.)

Event Study is based on the Market Model using:	**A. CRSP Value-Weighted Index**				**B. CRSP Equal-Weighted Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Control Variables								
Number of insider shares traded at insider level	<0.0000	<0.0000	<0.0000	<0.0000***	<0.0000	<0.0000	<0.0000	<0.0000***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Number of insider shares traded at company level (%)	-0.0000	-0.0010	-0.0028**	-0.0050***	0.0000	-0.0010	-0.0024**	-0.0046***
	(0.0005)	(0.0008)	(0.0013)	(0.0018)	(0.0005)	(0.0008)	(0.0012)	(0.0016)
Market to book ratio (MTB)	0.0000	0.0000*	0.0000	0.0000	0.0000**	0.0000***	0.0000***	0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Loss (binary variable for net income < 0)	0.0032**	-0.0089***	-0.0183***	-0.0130**	0.0020	-0.0072***	-0.0193***	-0.0164***
	(0.0016)	(0.0029)	(0.0042)	(0.0056)	(0.0016)	(0.0028)	(0.0042)	(0.0055)
Return on assets (ROA)	-0.0148	-0.0473***	-0.0749***	-0.1110***	-0.0127	-0.0452***	-0.0708***	-0.1086***
	(0.0107)	(0.0153)	(0.0204)	(0.0267)	(0.0096)	(0.0145)	(0.0207)	(0.0294)
Leverage ratio (long-term debt/ equity)	-0.0001	-0.0000	-0.0000	0.0001	-0.0001*	-0.0001	-0.0001	-0.0001
	(0.0001)	(0.0001)	(0.0001)	(0.0002)	(0.0001)	(0.0001)	(0.0001)	(0.0002)
Insurance industry	-0.0035	0.0021	0.0172	0.0268	0.0009	0.0029	0.0113	0.0254
	(0.0044)	(0.0088)	(0.0130)	(0.0178)	(0.0047)	(0.0090)	(0.0136)	(0.0184)
Banking industry	0.0007	0.0194***	0.0408***	0.0700***	0.0023	0.0177**	0.0377***	0.0704***
	(0.0037)	(0.0075)	(0.0105)	(0.0142)	(0.0039)	(0.0077)	(0.0108)	(0.0148)
January	0.0026	-0.0108***	-0.0089	-0.0178**	-0.0014	0.0106***	0.0306***	0.0083
	(0.0020)	(0.0041)	(0.0057)	(0.0071)	(0.0020)	(0.0040)	(0.0056)	(0.0071)
Fourth Quarter	0.0069***	0.0220***	0.0319***	0.0344***	0.0021*	-0.0067***	-0.0193***	-0.0086*
	(0.0012)	(0.0022)	(0.0033)	(0.0044)	(0.0012)	(0.0022)	(0.0035)	(0.0044)
Constant	0.0092**	0.0068	0.0029	-0.0034	0.0106**	0.0206**	0.0363***	0.0411**
	(0.0046)	(0.0088)	(0.0125)	(0.0166)	(0.0048)	(0.0089)	(0.0127)	(0.0170)
Year Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Sector Industry Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
R-squared	2.21%	4.53%	6.83%	7.29%	2.66%	5.14%	7.57%	7.99%

1. Heteroscedasticity-consistent standard errors are in parentheses.
2. The symbols ***, **, * show the significance at the 0.01, 0.05, and 0.10 levels of the t-test, respectively.
3. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock transactions, respectively. We employ the event study method based on the Market Model using CRSP value-weighted index and CRSP equal-weighted index, respectively.
4. We employ an indicator variable (ERM Year) to identify whether a firm employs ERM in any given year over the sample period. For example, if a firm adopts ERM in 2004, the ERM indicator variable will be assigned with a value of one for year 2004 and the following years.
5. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares. We employ five binary variables to proxy CEO, CFO, director, officer, and large shareholders who made stock transactions of a firm from 1996 to 2013, respectively.
6. We use two binary variables to proxy significant changes in firm's stock prices (i.e., past stock performance): RET is less than -20% and RET is greater than 20%. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., 4 day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., 2 day past stock performance) to proxy RET and get similar results.
7. We employ two binary variables for firm size based on market capitalization: small firms with market capitalization less than or equal to $202,158,805 (33.33th percentile of the insider stock purchase and sale sample), medium firms with market capitalization between $202,158,805 and $1,068,003,868 (33.33th percentile to 66.66th percentile), and large firms with market capitalization greater than $1,068,003,868 (66.66th percentile).
8. We employ two binary variables for stock volatility of a firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: low stock volatility firms with stock volatility less than or equal to 0.019601 (33.33th percentile of the insider stock purchase and sale sample), medium stock volatility firms with stock volatility between 0.019601 and 0.032981 (33.33th percentile to 66.66th percentile), and high stock volatility firms with stock volatility greater than 0.032981 (66.66th percentile).
9. We employ a binary variable for the period of 2008 financial crisis (December 2007 to June 2009).
10. We also employ several robustness checks and get similar results: models including dollar value of insider stock purchase traded at insider level and at company level, models using the ratio of long-term debt to total assets to proxy the leverage variable, and models with autocorrelation corrections (i.e., Yule-Walker Estimates).
11. Variance inflation factors for all independent variables are less than 10, and thus collinearity does not appear to be problematic for any of the models.

Table 3-13: Regression Results with Insider Stock Sale (ERM Year +1)

Insider Stock Sale: ERM Year +1
Cumulative Abnormal Return (CAR) Ordinary Least Squares Regression Model with Heteroscedasticity-Consistent Standard Errors
Number of Transactions = 49,170 (Insider-Firm-Day Level Data); Sample Period = 1996 to 2013

Event Study is based on the Market Model using:	**A. CRSP Value-Weighted Index**				**B. CRSP Equal-Weighted Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Independent Variables								
ERM Year +1	0.0061***	0.0120***	0.0117***	0.0103**	0.0053***	0.0107***	0.0096***	0.0081*
	(0.0011)	(0.0021)	(0.0032)	(0.0042)	(0.0012)	(0.0022)	(0.0034)	(0.0043)
Insider Type								
CEO	-0.0117***	-0.0275***	-0.0513***	-0.0785***	-0.0100***	-0.0265***	-0.0459***	-0.0680***
	(0.0020)	(0.0035)	(0.0052)	(0.0067)	(0.0020)	(0.0034)	(0.0052)	(0.0066)
CFO	-0.0081***	-0.0162***	-0.0354***	-0.0670***	-0.0072***	-0.0176***	-0.0330***	-0.0589***
	(0.0022)	(0.0040)	(0.0062)	(0.0080)	(0.0022)	(0.0040)	(0.0064)	(0.0079)
Director	-0.0066***	-0.0168***	-0.0333***	-0.0580***	-0.0046***	-0.0158***	-0.0297***	-0.0499***
	(0.0017)	(0.0031)	(0.0045)	(0.0058)	(0.0017)	(0.0030)	(0.0044)	(0.0057)
Officer	-0.0040**	-0.0131***	-0.0287***	-0.0530***	-0.0027*	-0.0140***	-0.0294***	-0.0500***
	(0.0016)	(0.0029)	(0.0043)	(0.0057)	(0.0016)	(0.0029)	(0.0042)	(0.0055)
Large Shareholders	0.0153	0.0211	0.0022	-0.0394	0.0134	0.0290	0.0261	0.0080
	(0.0148)	(0.0283)	(0.0360)	(0.0520)	(0.0139)	(0.0305)	(0.0408)	(0.0555)
Past Stock Performance								
RET <= -20%	0.0089	-0.0222	0.0182	0.0207	0.0117	-0.0216	-0.0128	0.0033
	(0.0141)	(0.0252)	(0.0374)	(0.0469)	(0.0134)	(0.0264)	(0.0376)	(0.0448)
RET > 20%	-0.0178***	-0.0046	-0.0596***	-0.0638***	-0.0192***	-0.0057	-0.0588***	-0.0610***
	(0.0067)	(0.0125)	(0.0153)	(0.0194)	(0.0065)	(0.0118)	(0.0146)	(0.0183)
Information Uncertainty								
Large Firms	-0.0131***	-0.0333***	-0.0626***	-0.0833***	-0.0155***	-0.0379***	-0.0665***	-0.0846***
	(0.0016)	(0.0029)	(0.0044)	(0.0058)	(0.0016)	(0.0028)	(0.0044)	(0.0057)
Medium Firms	-0.0085***	-0.0232***	-0.0533***	-0.0707***	-0.0099***	-0.0267***	-0.0569***	-0.0705***
	(0.0016)	(0.0029)	(0.0045)	(0.0058)	(0.0016)	(0.0028)	(0.0044)	(0.0057)
High Stock Volatility Firms	-0.0128***	-0.0325***	-0.0560***	-0.0827***	-0.0162***	-0.0418***	-0.0756***	-0.1061***
	(0.0013)	(0.0025)	(0.0037)	(0.0048)	(0.0014)	(0.0024)	(0.0037)	(0.0048)
Medium Stock Volatility Firms	-0.0049***	-0.0124***	-0.0242***	-0.0333***	-0.0055***	-0.0129***	-0.0255***	-0.0370***
	(0.0008)	(0.0015)	(0.0022)	(0.0029)	(0.0008)	(0.0015)	(0.0022)	(0.0029)
Financial Crisis Period (December 2007 to June 2009)	-0.0067	-0.0212***	-0.0269**	0.0017	-0.0251***	-0.0912***	-0.1891***	-0.2239***
	(0.0042)	(0.0073)	(0.0110)	(0.0148)	(0.0044)	(0.0076)	(0.0116)	(0.0153)

(continued on next page)

Table 3-13: Regression Results with Insider Stock Sale (ERM Year +1) (cont.)

Insider Stock Sale: ERM Year +1 (cont.)

Event Study is based on the Market Model using:	**A. CRSP Value-Weighted Index**				**B. CRSP Equal-Weighted Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Control Variables								
Number of insider shares traded at insider level	<0.0000	<0.0000	<0.0000	<0.0000***	<0.0000	<0.0000	<0.0000	<0.0000***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Number of insider shares traded at company level (%)	-0.0001	-0.0010	-0.0028**	-0.0050***	0.0000	-0.0010	-0.0024**	-0.0046***
	(0.0005)	(0.0008)	(0.0013)	(0.0018)	(0.0005)	(0.0008)	(0.0012)	(0.0016)
Market to book ratio (MTB)	0.0000	0.0000*	0.0000	0.0000	0.0000**	0.0000***	0.0000***	0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Loss (binary variable for net income < 0)	0.0032**	-0.0089***	-0.0183***	-0.0131**	0.0020	-0.0072***	-0.0193***	-0.0164***
	(0.0016)	(0.0029)	(0.0042)	(0.0056)	(0.0016)	(0.0028)	(0.0042)	(0.0055)
Return on assets (ROA)	-0.0147	-0.0472***	-0.0749***	-0.1111***	-0.0126	-0.0450***	-0.0707***	-0.1086***
	(0.0107)	(0.0153)	(0.0204)	(0.0267)	(0.0096)	(0.0145)	(0.0207)	(0.0294)
Leverage ratio (long-term debt/ equity)	-0.0001	-0.0000	-0.0000	0.0001	-0.0001*	-0.0001	-0.0001	-0.0001
	(0.0001)	(0.0001)	(0.0001)	(0.0002)	(0.0001)	(0.0001)	(0.0001)	(0.0002)
Insurance industry	-0.0033	0.0022	0.0172	0.0266	0.0010	0.0032	0.0114	0.0253
	(0.0044)	(0.0088)	(0.0130)	(0.0178)	(0.0047)	(0.0090)	(0.0136)	(0.0184)
Banking industry	0.0006	0.0194***	0.0413***	0.0708***	0.0022	0.0175**	0.0379***	0.0709***
	(0.0037)	(0.0075)	(0.0105)	(0.0142)	(0.0039)	(0.0077)	(0.0108)	(0.0148)
January	0.0027	-0.0107***	-0.0087	-0.0177**	-0.0013	0.0107***	0.0307***	0.0084
	(0.0020)	(0.0041)	(0.0057)	(0.0071)	(0.0020)	(0.0040)	(0.0056)	(0.0071)
Fourth Quarter	0.0069***	0.0220***	0.0319***	0.0344***	0.0021*	-0.0068***	-0.0193***	-0.0086*
	(0.0012)	(0.0022)	(0.0033)	(0.0044)	(0.0012)	(0.0022)	(0.0035)	(0.0044)
Constant	0.0091**	0.0068	0.0029	-0.0034	0.0105**	0.0206**	0.0363***	0.0411**
	(0.0046)	(0.0088)	(0.0125)	(0.0166)	(0.0048)	(0.0089)	(0.0128)	(0.0170)
Year Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Sector Industry Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
R-squared	2.22%	4.54%	6.83%	7.29%	2.67%	5.15%	7.57%	7.99%

1. Heteroscedasticity-consistent standard errors are in parentheses.
2. The symbols ***, **, * show the significance at the 0.01, 0.05, and 0.10 levels of the t-test, respectively.
3. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock transactions, respectively. We employ the event study method based on the Market Model using CRSP value-weighted index and CRSP equal-weighted index, respectively.
4. We employ an indicator variable (ERM Year +1) to identify whether a firm employs ERM in any given year plus one year over the sample period. For example, if a firm adopts ERM in 2004, the ERM indicator variable will be assigned with a value of one for year 2005 and the following years.
5. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares. We employ five binary variables to proxy CEO, CFO, director, officer, and large shareholders who made stock transactions of a firm from 1996 to 2013, respectively.
6. We use two binary variables to proxy significant changes in firm's stock prices (i.e., past stock performance): RET is less than -20% and RET is greater than 20%. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., 4 day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., 2 day past stock performance) to proxy RET and get similar results.
7. We employ two binary variables for firm size based on market capitalization: small firms with market capitalization less than or equal to $202,158,805 (33.33th percentile of the insider stock purchase and sale sample), medium firms with market capitalization between $202,158,805 and $1,068,003,868 (33.33th percentile to 66.66th percentile), and large firms with market capitalization greater than $1,068,003,868 (66.66th percentile).
8. We employ two binary variables for stock volatility of a firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: low stock volatility firms with stock volatility less than or equal to 0.019601 (33.33th percentile of the insider stock purchase and sale sample), medium stock volatility firms with stock volatility between 0.019601 and 0.032981 (33.33th percentile to 66.66th percentile), and high stock volatility firms with stock volatility greater than 0.032981 (66.66th percentile).
9. We employ a binary variable for the period of 2008 financial crisis (December 2007 to June 2009).
10. We also employ several robustness checks and get similar results: models including dollar value of insider stock purchase traded at insider level and at company level, models using the ratio of long-term debt to total assets to proxy the leverage variable, and models with autocorrelation corrections (i.e., Yule-Walker Estimates).
11. Variance inflation factors for all independent variables are less than 10, and thus collinearity does not appear to be problematic for any of the models.

Table 3-14: Regression Results with Insider Stock Sale (ERM Date)

Insider Stock Sale: ERM Date
Cumulative Abnormal Return (CAR) Ordinary Least Squares Regression Model with Heteroscedasticity-Consistent Standard Errors
Number of Transactions = 49,170 (Insider-Firm-Day Level Data); Sample Period = 1996 to 2013

Event Study is based on the Market Model using:	**A. CRSP Value-Weighted Index**				**B. CRSP Equal-Weighted Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Independent Variables								
ERM Date	0.0050***	0.0103***	0.0118***	0.0087**	0.0041***	0.0088***	0.0093***	0.0054
	(0.0011)	(0.0020)	(0.0031)	(0.0040)	(0.0011)	(0.0021)	(0.0032)	(0.0041)
Insider Type								
CEO	-0.0116***	-0.0275***	-0.0512***	-0.0784***	-0.0100***	-0.0264***	-0.0458***	-0.0679***
	(0.0020)	(0.0035)	(0.0052)	(0.0067)	(0.0020)	(0.0034)	(0.0052)	(0.0066)
CFO	-0.0082***	-0.0162***	-0.0355***	-0.0670***	-0.0072***	-0.0176***	-0.0330***	-0.0590***
	(0.0022)	(0.0040)	(0.0062)	(0.0080)	(0.0022)	(0.0040)	(0.0064)	(0.0079)
Director	-0.0066***	-0.0168***	-0.0333***	-0.0580***	-0.0046***	-0.0158***	-0.0297***	-0.0499***
	(0.0017)	(0.0031)	(0.0045)	(0.0058)	(0.0017)	(0.0030)	(0.0044)	(0.0057)
Officer	-0.0040**	-0.0131***	-0.0287***	-0.0530***	-0.0027*	-0.0139***	-0.0293***	-0.0500***
	(0.0016)	(0.0029)	(0.0043)	(0.0057)	(0.0016)	(0.0029)	(0.0042)	(0.0055)
Large Shareholders	0.0153	0.0211	0.0023	-0.0394	0.0134	0.0290	0.0262	0.0080
	(0.0148)	(0.0283)	(0.0360)	(0.0520)	(0.0139)	(0.0305)	(0.0408)	(0.0555)
Past Stock Performance								
RET <= -20%	0.0089	-0.0222	0.0182	0.0207	0.0117	-0.0216	-0.0128	0.0033
	(0.0141)	(0.0252)	(0.0374)	(0.0469)	(0.0134)	(0.0264)	(0.0376)	(0.0448)
RET > 20%	-0.0178***	-0.0045	-0.0596***	-0.0638***	-0.0191***	-0.0056	-0.0588***	-0.0609***
	(0.0067)	(0.0125)	(0.0153)	(0.0194)	(0.0065)	(0.0118)	(0.0146)	(0.0183)
Information Uncertainty								
Large Firms	-0.0130***	-0.0333***	-0.0627***	-0.0832***	-0.0155***	-0.0378***	-0.0665***	-0.0844***
	(0.0016)	(0.0029)	(0.0044)	(0.0058)	(0.0016)	(0.0028)	(0.0044)	(0.0057)
Medium Firms	-0.0085***	-0.0232***	-0.0533***	-0.0707***	-0.0099***	-0.0268***	-0.0570***	-0.0706***
	(0.0016)	(0.0029)	(0.0045)	(0.0058)	(0.0016)	(0.0028)	(0.0044)	(0.0057)
High Stock Volatility Firms	-0.0128***	-0.0324***	-0.0559***	-0.0827***	-0.0161***	-0.0417***	-0.0756***	-0.1061***
	(0.0013)	(0.0025)	(0.0037)	(0.0048)	(0.0014)	(0.0024)	(0.0037)	(0.0048)
Medium Stock Volatility Firms	-0.0049***	-0.0123***	-0.0241***	-0.0332***	-0.0055***	-0.0129***	-0.0254***	-0.0370***
	(0.0008)	(0.0015)	(0.0022)	(0.0029)	(0.0008)	(0.0015)	(0.0022)	(0.0029)
Financial Crisis Period (December 2007 to June 2009)	-0.0067	-0.0211***	-0.0268**	0.0018	-0.0250***	-0.0911***	-0.1891***	-0.2238***
	(0.0042)	(0.0073)	(0.0110)	(0.0148)	(0.0044)	(0.0076)	(0.0116)	(0.0153)

(continued on next page)

Table 3-14: Regression Results with Insider Stock Sale (ERM Date) (cont.)

Insider Stock Sale: ERM Date (cont.)

Event Study is based on the Market Model using:	**A. CRSP Value-Weighted Index**				**B. CRSP Equal-Weighted Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Control Variables								
Number of insider shares traded at insider level	<0.0000	<0.0000	<0.0000	<0.0000***	<0.0000	<0.0000	<0.0000	<0.0000***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Number of insider shares traded at company level (%)	-0.0000	-0.0010	-0.0028**	-0.0050***	0.0000	-0.0010	-0.0024**	-0.0046***
	(0.0005)	(0.0008)	(0.0013)	(0.0018)	(0.0005)	(0.0008)	(0.0012)	(0.0016)
Market to book ratio (MTB)	0.0000	0.0000*	0.0000	0.0000	0.0000**	0.0000***	0.0000***	0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Loss (binary variable for net income < 0)	0.0032**	-0.0088***	-0.0183***	-0.0130**	0.0020	-0.0072**	-0.0193***	-0.0164***
	(0.0016)	(0.0029)	(0.0042)	(0.0056)	(0.0016)	(0.0028)	(0.0042)	(0.0055)
Return on assets (ROA)	-0.0147	-0.0472***	-0.0749***	-0.1111***	-0.0126	-0.0450***	-0.0707***	-0.1087***
	(0.0107)	(0.0153)	(0.0204)	(0.0267)	(0.0096)	(0.0145)	(0.0207)	(0.0294)
Leverage ratio (long-term debt/ equity)	-0.0001	-0.0000	-0.0000	0.0001	-0.0001*	-0.0001	-0.0001	-0.0001
	(0.0001)	(0.0001)	(0.0001)	(0.0002)	(0.0001)	(0.0001)	(0.0001)	(0.0002)
Insurance industry	-0.0034	0.0021	0.0171	0.0264	0.0009	0.0030	0.0113	0.0251
	(0.0044)	(0.0088)	(0.0130)	(0.0178)	(0.0047)	(0.0090)	(0.0136)	(0.0184)
Banking industry	0.0006	0.0193***	0.0411***	0.0708***	0.0022	0.0176**	0.0377***	0.0710***
	(0.0037)	(0.0075)	(0.0105)	(0.0142)	(0.0039)	(0.0077)	(0.0108)	(0.0148)
January	0.0027	-0.0105**	-0.0085	-0.0175**	-0.0013	0.0109***	0.0309***	0.0085
	(0.0020)	(0.0041)	(0.0057)	(0.0071)	(0.0020)	(0.0040)	(0.0056)	(0.0071)
Fourth Quarter	0.0068***	0.0219***	0.0318***	0.0343***	0.0020*	-0.0068***	-0.0194***	-0.0086*
	(0.0012)	(0.0022)	(0.0033)	(0.0044)	(0.0012)	(0.0022)	(0.0035)	(0.0044)
Constant	0.0091**	0.0068	0.0030	-0.0033	0.0106**	0.0206**	0.0363***	0.0412**
	(0.0046)	(0.0088)	(0.0125)	(0.0166)	(0.0048)	(0.0089)	(0.0128)	(0.0170)
Year Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Sector Industry Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
R-squared	2.22%	4.53%	6.83%	7.28%	2.66%	5.14%	7.57%	7.99%

1. Heteroscedasticity-consistent standard errors are in parentheses.
2. The symbols ***, **, * show the significance at the 0.01, 0.05, and 0.10 levels of the t-test, respectively.
3. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock transactions, respectively. We employ the event study method based on the Market Model using CRSP value-weighted index and CRSP equal-weighted index, respectively.
4. We employ an indicator variable (ERM Date) to identify whether a firm employs ERM on the specific date over the sample period. For example, if a firm adopts ERM on March 1st 2004, the ERM indicator variable will be assigned with a value of one for March 1st 2014 and the following dates. If we do not find the enactment date of ERM, we use the SEC filing date/report date as the first evidence of ERM of a firm.
5. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares. We employ five binary variables to proxy CEO, CFO, director, officer, and large shareholders who made stock transactions of a firm from 1996 to 2013, respectively.
6. We use two binary variables to proxy significant changes in firm's stock prices (i.e., past stock performance): RET is less than -20% and RET is greater than 20%. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., 4 day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., 2 day past stock performance) to proxy RET and get similar results.
7. We employ two binary variables for firm size based on market capitalization: small firms with market capitalization less than or equal to $202,158,805 (33.33th percentile of the insider stock purchase and sale sample), medium firms with market capitalization between $202,158,805 and $1,068,003,868 (33.33th percentile to 66.66th percentile), and large firms with market capitalization greater than $1,068,003,868 (66.66th percentile).
8. We employ two binary variables for stock volatility of a firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: low stock volatility firms with stock volatility less than or equal to 0.019601 (33.33th percentile of the insider stock purchase and sale sample), medium stock volatility firms with stock volatility between 0.019601 and 0.032981 (33.33th percentile to 66.66th percentile), and high stock volatility firms with stock volatility greater than 0.032981 (66.66th percentile).
9. We employ a binary variable for the period of 2008 financial crisis (December 2007 to June 2009).
10. We also employ several robustness checks and get similar results: models including dollar value of insider stock purchase traded at insider level and at company level, models using the ratio of long-term debt to total assets to proxy the leverage variable, and models with autocorrelation corrections (i.e., Yule-Walker Estimates).
11. Variance inflation factors for all independent variables are less than 10, and thus collinearity does not appear to be problematic for any of the models.

Table 3-15: Regression Results with Insider Stock Sale (Interactions with ERM Year)

Insider Stock Sale: ERM Year
Cumulative Abnormal Return (CAR) Ordinary Least Squares Regression Model with Heteroscedasticity-Consistent Standard Errors
Number of Transactions = 49,170 (Insider-Firm-Day Level Data); Sample Period = 1996 to 2013

Event Study is based on the Market Model using:	**A. CRSP Value-Weighted Index**				**B. CRSP Equal-Weighted Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Independent Variables								
ERM								
ERM Year	0.0028**	0.0101***	0.0150***	0.0121***	0.0026**	0.0087***	0.0134***	0.0133***
	(0.0011)	(0.0021)	(0.0032)	(0.0041)	(0.0011)	(0.0021)	(0.0033)	(0.0041)
ERM Year * Small Firms	-0.0203***	-0.0510***	-0.0728***	-0.0793***	-0.0227***	-0.0534***	-0.0792***	-0.0866***
	(0.0039)	(0.0072)	(0.0113)	(0.0166)	(0.0040)	(0.0071)	(0.0112)	(0.0165)
ERM Year * High Stock Volatility Firms	0.0098**	0.0071	-0.0216*	0.0221	0.0117***	0.0164**	-0.0132	0.0121
	(0.0041)	(0.0077)	(0.0115)	(0.0151)	(0.0045)	(0.0082)	(0.0122)	(0.0161)
ERM Year * Financial Crisis Period	0.0024	-0.0084	0.0120	0.0050	-0.0008	-0.0168**	-0.0074	-0.0136
	(0.0041)	(0.0075)	(0.0117)	(0.0154)	(0.0044)	(0.0082)	(0.0122)	(0.0159)
ERM Year * RET <= -20%	0.0857***	0.1289**	0.1732	0.1213	0.0545	0.1037	0.1506	0.1207
	(0.0328)	(0.0570)	(0.1102)	(0.1800)	(0.0390)	(0.0744)	(0.1207)	(0.1896)
ERM Year * RET > 20%	0.0211	0.0840	0.1397**	0.0264	0.0219	0.0806	0.1251*	-0.0146
	(0.0247)	(0.0569)	(0.0692)	(0.0734)	(0.0250)	(0.0621)	(0.0710)	(0.0821)
ERM Year * CEO	0.0082***	0.0163***	0.0179**	0.0252***	0.0073***	0.0140***	0.0145**	0.0171*
	(0.0024)	(0.0043)	(0.0070)	(0.0094)	(0.0025)	(0.0043)	(0.0071)	(0.0093)
Insider Type								
CEO	-0.0123***	-0.0290***	-0.0527***	-0.0806***	-0.0106***	-0.0277***	-0.0471***	-0.0694***
	(0.0021)	(0.0037)	(0.0056)	(0.0071)	(0.0021)	(0.0036)	(0.0056)	(0.0070)
CFO	-0.0080***	-0.0161***	-0.0349***	-0.0665***	-0.0071***	-0.0176***	-0.0328***	-0.0587***
	(0.0022)	(0.0040)	(0.0062)	(0.0080)	(0.0022)	(0.0040)	(0.0064)	(0.0079)
Director	-0.0063***	-0.0161***	-0.0324***	-0.0569***	-0.0043**	-0.0151***	-0.0288***	-0.0488***
	(0.0017)	(0.0031)	(0.0045)	(0.0058)	(0.0017)	(0.0030)	(0.0044)	(0.0057)
Officer	-0.0037**	-0.0127***	-0.0282***	-0.0523***	-0.0025	-0.0137***	-0.0289***	-0.0495***
	(0.0016)	(0.0029)	(0.0043)	(0.0057)	(0.0016)	(0.0029)	(0.0042)	(0.0055)
Large Shareholders	0.0157	0.0217	0.0033	-0.0380	0.0137	0.0296	0.0271	0.0093
	(0.0149)	(0.0283)	(0.0362)	(0.0522)	(0.0140)	(0.0306)	(0.0410)	(0.0556)
Past Stock Performance								
RET <= -20%	0.0060	-0.0265	0.0126	0.0168	0.0099	-0.0252	-0.0178	-0.0006
	(0.0145)	(0.0260)	(0.0385)	(0.0481)	(0.0139)	(0.0272)	(0.0386)	(0.0459)
RET > 20%	-0.0186***	-0.0078	-0.0649***	-0.0651***	-0.0200***	-0.0089	-0.0636***	-0.0607***
	(0.0069)	(0.0128)	(0.0157)	(0.0200)	(0.0067)	(0.0120)	(0.0149)	(0.0187)
Information Uncertainty								
Large Firms	-0.0142***	-0.0363***	-0.0671***	-0.0885***	-0.0168***	-0.0409***	-0.0711***	-0.0898***
	(0.0017)	(0.0030)	(0.0046)	(0.0060)	(0.0016)	(0.0029)	(0.0046)	(0.0059)
Medium Firms	-0.0095***	-0.0254***	-0.0563***	-0.0741***	-0.0110***	-0.0291***	-0.0601***	-0.0740***
	(0.0016)	(0.0030)	(0.0046)	(0.0060)	(0.0016)	(0.0029)	(0.0046)	(0.0058)
High Stock Volatility Firms	-0.0136***	-0.0332***	-0.0553***	-0.0845***	-0.0170***	-0.0430***	-0.0753***	-0.1071***
	(0.0014)	(0.0025)	(0.0038)	(0.0050)	(0.0014)	(0.0025)	(0.0038)	(0.0050)
Medium Stock Volatility Firms	-0.0051***	-0.0124***	-0.0241***	-0.0334***	-0.0057***	-0.0130***	-0.0253***	-0.0368***
	(0.0008)	(0.0015)	(0.0022)	(0.0029)	(0.0008)	(0.0015)	(0.0022)	(0.0029)
Financial Crisis Period (December 2007 to June 2009)	-0.0071*	-0.0195***	-0.0268**	0.0012	-0.0251***	-0.0888***	-0.1868***	-0.2217***
	(0.0043)	(0.0075)	(0.0112)	(0.0150)	(0.0045)	(0.0077)	(0.0117)	(0.0154)

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Table 3-15: Regression Results with Insider Stock Sale (Interactions with ERM Year) (cont.)

Insider Stock Sale: ERM Year (cont.)

Event Study is based on the Market Model using:	**A. CRSP Value-Weighted Index**				**B. CRSP Equal-Weighted Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Control Variables								
Number of insider shares traded at insider level	<0.0000	<0.0000	<0.0000	<0.0000***	<0.0000	<0.0000	<0.0000	<0.0000***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Number of insider shares traded at company level (%)	-0.0000	-0.0010	-0.0027**	-0.0050***	0.0000	-0.0010	-0.0024**	-0.0046***
	(0.0005)	(0.0008)	(0.0013)	(0.0018)	(0.0005)	(0.0008)	(0.0012)	(0.0016)
Market to book ratio (MTB)	0.0000	0.0000*	0.0000	-0.0000	0.0000**	0.0000***	0.0000**	0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Loss (binary variable for net income < 0)	0.0032*	-0.0091***	-0.0185***	-0.0132**	0.0019	-0.0075***	-0.0197***	-0.0169***
	(0.0016)	(0.0029)	(0.0042)	(0.0056)	(0.0016)	(0.0028)	(0.0042)	(0.0055)
Return on assets (ROA)	-0.0149	-0.0470***	-0.0743***	-0.1108***	-0.0128	-0.0449***	-0.0700***	-0.1078***
	(0.0108)	(0.0153)	(0.0203)	(0.0267)	(0.0096)	(0.0145)	(0.0207)	(0.0294)
Leverage ratio (long-term debt/ equity)	-0.0001	-0.0000	0.0000	0.0001	-0.0001*	-0.0001	-0.0001	-0.0000
	(0.0001)	(0.0001)	(0.0001)	(0.0002)	(0.0001)	(0.0001)	(0.0001)	(0.0002)
Insurance industry	-0.0033	0.0023	0.0172	0.0274	0.0012	0.0033	0.0113	0.0258
	(0.0044)	(0.0088)	(0.0131)	(0.0178)	(0.0047)	(0.0090)	(0.0136)	(0.0184)
Banking industry	0.0006	0.0192**	0.0401***	0.0700***	0.0023	0.0177**	0.0372***	0.0704***
	(0.0037)	(0.0075)	(0.0105)	(0.0142)	(0.0040)	(0.0078)	(0.0108)	(0.0148)
January	0.0025	-0.0110***	-0.0093*	-0.0182**	-0.0015	0.0104***	0.0302***	0.0080
	(0.0020)	(0.0041)	(0.0057)	(0.0071)	(0.0020)	(0.0040)	(0.0056)	(0.0071)
Fourth Quarter	0.0070***	0.0222***	0.0322***	0.0347***	0.0022*	-0.0065***	-0.0190***	-0.0083*
	(0.0012)	(0.0022)	(0.0033)	(0.0044)	(0.0012)	(0.0022)	(0.0035)	(0.0044)
Constant	0.0097**	0.0078	0.0044	-0.0017	0.0111**	0.0216**	0.0377***	0.0425**
	(0.0046)	(0.0088)	(0.0125)	(0.0167)	(0.0048)	(0.0090)	(0.0128)	(0.0170)
Year Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Sector Industry Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
R-squared	2.28%	4.61%	6.91%	7.33%	2.72%	5.23%	7.65%	8.03%

1. Heteroscedasticity-consistent standard errors are in parentheses.
2. The symbols ***, **, * show the significance at the 0.01, 0.05, and 0.10 levels of the t-test, respectively.
3. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock transactions, respectively. We employ the event study method based on the Market Model using CRSP value-weighted index and CRSP equal-weighted index, respectively.
4. We employ an indicator variable (ERM Year) to identify whether a firm employs ERM in any given year over the sample period. For example, if a firm adopts ERM in 2004, the ERM indicator variable will be assigned with a value of one for year 2004 and the following years.
5. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares. We employ five binary variables to proxy CEO, CFO, director, officer, and large shareholders who made stock transactions of a firm from 1996 to 2013, respectively.
6. We use two binary variables to proxy significant changes in firm's stock prices (i.e., past stock performance): RET is less than -20% and RET is greater than 20%. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., 4 day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., 2 day past stock performance) to proxy RET and get similar results.
7. We employ two binary variables for firm size based on market capitalization: small firms with market capitalization less than or equal to $202,158,805 (33.33th percentile of the insider stock purchase and sale sample), medium firms with market capitalization between $202,158,805 and $1,068,003,868 (33.33th percentile to 66.66th percentile), and large firms with market capitalization greater than $1,068,003,868 (66.66th percentile).
8. We employ two binary variables for stock volatility of a firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: low stock volatility firms with stock volatility less than or equal to 0.019601 (33.33th percentile of the insider stock purchase and sale sample), medium stock volatility firms with stock volatility between 0.019601 and 0.032981 (33.33th percentile to 66.66th percentile), and high stock volatility firms with stock volatility greater than 0.032981 (66.66th percentile).
9. We employ a binary variable for the period of 2008 financial crisis (December 2007 to June 2009).
10. We also employ several robustness checks and get similar results: models including dollar value of insider stock purchase traded at insider level and at company level, models using the ratio of long-term debt to total assets to proxy the leverage variable, and models with autocorrelation corrections (i.e., Yule-Walker Estimates).
11. Variance inflation factors for all independent variables are less than 10, and thus collinearity does not appear to be problematic for any of the models.

Table 3-16: Regression Results with Insider Stock Sale (Interactions with ERM Year +1)

Insider Stock Sale: ERM Year +1
Cumulative Abnormal Return (CAR) Ordinary Least Squares Regression Model with Heteroscedasticity-Consistent Standard Errors
Number of Transactions = 49,170 (Insider-Firm-Day Level Data); Sample Period = 1996 to 2013

Event Study is based on the Market Model using:	**A. CRSP Value-Weighted Index**				**B. CRSP Equal-Weighted Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Independent Variables								
ERM								
ERM Year +1	0.0053***	0.0130***	0.0155***	0.0132***	0.0051***	0.0117***	0.0145***	0.0151***
	(0.0012)	(0.0022)	(0.0034)	(0.0043)	(0.0012)	(0.0023)	(0.0035)	(0.0044)
ERM Year +1 * Small Firms	-0.0255***	-0.0633***	-0.0827***	-0.0958***	-0.0265***	-0.0629***	-0.0843***	-0.0969***
	(0.0043)	(0.0078)	(0.0124)	(0.0180)	(0.0044)	(0.0077)	(0.0122)	(0.0181)
ERM Year +1 * High Stock Volatility Firms	0.0084*	0.0220**	0.0050	0.0634***	0.0071	0.0251**	0.0023	0.0378*
	(0.0049)	(0.0092)	(0.0136)	(0.0179)	(0.0054)	(0.0100)	(0.0146)	(0.0197)
ERM Year +1 * Financial Crisis Period	0.0049	-0.0178*	-0.0267*	-0.0745***	0.0019	-0.0185*	-0.0293**	-0.0778***
	(0.0048)	(0.0092)	(0.0137)	(0.0186)	(0.0052)	(0.0103)	(0.0149)	(0.0200)
ERM Year +1 * RET <= -20%	0.0867***	0.1217**	0.1667	0.1186	0.0577	0.0981	0.1457	0.1238
	(0.0334)	(0.0573)	(0.1106)	(0.1811)	(0.0396)	(0.0749)	(0.1204)	(0.1893)
ERM Year +1 * RET > 20%	0.0202	0.0717	0.1244*	0.0058	0.0236	0.0720	0.1157	-0.0254
	(0.0247)	(0.0571)	(0.0694)	(0.0735)	(0.0251)	(0.0623)	(0.0710)	(0.0812)
ERM Year +1 * CEO	0.0068***	0.0152***	0.0193***	0.0314***	0.0061**	0.0135***	0.0170**	0.0241**
	(0.0025)	(0.0045)	(0.0074)	(0.0099)	(0.0026)	(0.0045)	(0.0075)	(0.0099)
Insider Type								
CEO	-0.0122***	-0.0286***	-0.0527***	-0.0807***	-0.0105***	-0.0273***	-0.0470***	-0.0695***
	(0.0021)	(0.0037)	(0.0055)	(0.0071)	(0.0021)	(0.0036)	(0.0055)	(0.0070)
CFO	-0.0081***	-0.0160***	-0.0351***	-0.0664***	-0.0071***	-0.0174***	-0.0326***	-0.0583***
	(0.0022)	(0.0040)	(0.0062)	(0.0080)	(0.0022)	(0.0040)	(0.0064)	(0.0079)
Director	-0.0063***	-0.0158***	-0.0320***	-0.0561***	-0.0043**	-0.0148***	-0.0284***	-0.0480***
	(0.0017)	(0.0031)	(0.0045)	(0.0058)	(0.0017)	(0.0030)	(0.0044)	(0.0057)
Officer	-0.0039**	-0.0127***	-0.0282***	-0.0520***	-0.0026	-0.0136***	-0.0288***	-0.0490***
	(0.0016)	(0.0029)	(0.0043)	(0.0057)	(0.0016)	(0.0029)	(0.0042)	(0.0055)
Large Shareholders	0.0156	0.0220	0.0034	-0.0376	0.0137	0.0299	0.0273	0.0099
	(0.0149)	(0.0283)	(0.0361)	(0.0521)	(0.0140)	(0.0306)	(0.0410)	(0.0556)
Past Stock Performance								
RET <= -20%	0.0059	-0.0263	0.0128	0.0167	0.0097	-0.0250	-0.0175	-0.0005
	(0.0145)	(0.0260)	(0.0385)	(0.0480)	(0.0139)	(0.0272)	(0.0386)	(0.0459)
RET > 20%	-0.0187***	-0.0076	-0.0645***	-0.0648***	-0.0202***	-0.0088	-0.0634***	-0.0606***
	(0.0069)	(0.0128)	(0.0157)	(0.0200)	(0.0067)	(0.0120)	(0.0149)	(0.0187)
Information Uncertainty								
Large Firms	-0.0144***	-0.0364***	-0.0665***	-0.0877***	-0.0169***	-0.0410***	-0.0704***	-0.0888***
	(0.0016)	(0.0030)	(0.0046)	(0.0060)	(0.0016)	(0.0029)	(0.0046)	(0.0059)
Medium Firms	-0.0093***	-0.0253***	-0.0560***	-0.0740***	-0.0107***	-0.0289***	-0.0597***	-0.0738***
	(0.0016)	(0.0030)	(0.0045)	(0.0059)	(0.0016)	(0.0028)	(0.0045)	(0.0058)
High Stock Volatility Firms	-0.0135***	-0.0337***	-0.0564***	-0.0852***	-0.0167***	-0.0431***	-0.0758***	-0.1072***
	(0.0014)	(0.0025)	(0.0038)	(0.0050)	(0.0014)	(0.0025)	(0.0038)	(0.0049)
Medium Stock Volatility Firms	-0.0051***	-0.0125***	-0.0240***	-0.0331***	-0.0056***	-0.0130***	-0.0253***	-0.0365***
	(0.0008)	(0.0015)	(0.0022)	(0.0029)	(0.0008)	(0.0015)	(0.0022)	(0.0029)
Financial Crisis Period (December 2007 to June 2009)	-0.0075*	-0.0190**	-0.0225**	0.0105	-0.0254***	-0.0890***	-0.1843***	-0.2138***
	(0.0043)	(0.0075)	(0.0113)	(0.0151)	(0.0045)	(0.0077)	(0.0118)	(0.0155)

(continued on next page)

Table 3-16: Regression Results with Insider Stock Sale (Interactions with ERM Year +1) (cont.)

Insider Stock Sale: ERM Year +1 (cont.)

Event Study is based on the Market Model using:	**A. CRSP Value-Weighted Index**				**B. CRSP Equal-Weighted Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Control Variables								
Number of insider shares traded at insider level	<0.0000	<0.0000	<0.0000	<0.0000***	<0.0000	<0.0000	<0.0000	<0.0000***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Number of insider shares traded at company level (%)	-0.0000	-0.0010	-0.0027**	-0.0050***	0.0000	-0.0010	-0.0024**	-0.0046***
	(0.0005)	(0.0008)	(0.0013)	(0.0018)	(0.0005)	(0.0008)	(0.0012)	(0.0016)
Market to book ratio (MTB)	0.0000	0.0000*	0.0000	0.0000	0.0000**	0.0000***	0.0000**	0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Loss (binary variable for net income < 0)	0.0032*	-0.0090***	-0.0186***	-0.0132**	0.0019	-0.0073***	-0.0196***	-0.0168***
	(0.0016)	(0.0029)	(0.0042)	(0.0056)	(0.0016)	(0.0028)	(0.0042)	(0.0055)
Return on assets (ROA)	-0.0147	-0.0469***	-0.0743***	-0.1104***	-0.0125	-0.0447***	-0.0699***	-0.1075***
	(0.0108)	(0.0153)	(0.0203)	(0.0267)	(0.0096)	(0.0145)	(0.0207)	(0.0294)
Leverage ratio (long-term debt/ equity)	-0.0001	-0.0000	-0.0000	0.0001	-0.0001*	-0.0001	-0.0001	-0.0000
	(0.0001)	(0.0001)	(0.0001)	(0.0002)	(0.0001)	(0.0001)	(0.0001)	(0.0002)
Insurance industry	-0.0031	0.0027	0.0175	0.0275	0.0012	0.0036	0.0117	0.0259
	(0.0044)	(0.0088)	(0.0131)	(0.0178)	(0.0047)	(0.0090)	(0.0136)	(0.0184)
Banking industry	0.0004	0.0194***	0.0414***	0.0719***	0.0021	0.0176**	0.0380***	0.0720***
	(0.0037)	(0.0075)	(0.0105)	(0.0142)	(0.0040)	(0.0078)	(0.0108)	(0.0148)
January	0.0026	-0.0110***	-0.0092	-0.0184***	-0.0014	0.0104***	0.0303***	0.0077
	(0.0020)	(0.0041)	(0.0057)	(0.0071)	(0.0020)	(0.0040)	(0.0056)	(0.0071)
Fourth Quarter	0.0069***	0.0222***	0.0322***	0.0347***	0.0022*	-0.0065***	-0.0190***	-0.0083*
	(0.0012)	(0.0022)	(0.0033)	(0.0044)	(0.0012)	(0.0022)	(0.0035)	(0.0044)
Constant	0.0096**	0.0075	0.0036	-0.0030	0.0110**	0.0213**	0.0369***	0.0411**
	(0.0046)	(0.0088)	(0.0125)	(0.0167)	(0.0048)	(0.0090)	(0.0128)	(0.0170)
Year Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Sector Industry Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
R-squared	2.29%	4.64%	6.91%	7.36%	2.73%	5.25%	7.64%	8.06%

1. Heteroscedasticity-consistent standard errors are in parentheses.
2. The symbols ***, **, * show the significance at the 0.01, 0.05, and 0.10 levels of the t-test, respectively.
3. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock transactions, respectively. We employ the event study method based on the Market Model using CRSP value-weighted index and CRSP equal-weighted index, respectively.
4. We employ an indicator variable (ERM Year +1) to identify whether a firm employs ERM in any given year plus one year over the sample period. For example, if a firm adopts ERM in 2004, the ERM indicator variable will be assigned with a value of one for year 2005 and the following years.
5. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares. We employ five binary variables to proxy CEO, CFO, director, officer, and large shareholders who made stock transactions of a firm from 1996 to 2013, respectively.
6. We use two binary variables to proxy significant changes in firm's stock prices (i.e., past stock performance): RET is less than -20% and RET is greater than 20%. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., 4 day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., 2 day past stock performance) to proxy RET and get similar results.
7. We employ two binary variables for firm size based on market capitalization: small firms with market capitalization less than or equal to $202,158,805 (33.33th percentile of the insider stock purchase and sale sample), medium firms with market capitalization between $202,158,805 and $1,068,003,868 (33.33th percentile to 66.66th percentile), and large firms with market capitalization greater than $1,068,003,868 (66.66th percentile).
8. We employ two binary variables for stock volatility of a firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: low stock volatility firms with stock volatility less than or equal to 0.019601 (33.33th percentile of the insider stock purchase and sale sample), medium stock volatility firms with stock volatility between 0.019601 and 0.032981 (33.33th percentile to 66.66th percentile), and high stock volatility firms with stock volatility greater than 0.032981 (66.66th percentile).
9. We employ a binary variable for the period of 2008 financial crisis (December 2007 to June 2009).
10. We also employ several robustness checks and get similar results: models including dollar value of insider stock purchase traded at insider level and at company level, models using the ratio of long-term debt to total assets to proxy the leverage variable, and models with autocorrelation corrections (i.e., Yule-Walker Estimates).
11. Variance inflation factors for all independent variables are less than 10, and thus collinearity does not appear to be problematic for any of the models.

Table 3-17: Regression Results with Insider Stock Sale (Interactions with ERM Date)

Insider Stock Sale: ERM Date
Cumulative Abnormal Return (CAR) Ordinary Least Squares Regression Model with Heteroscedasticity-Consistent Standard Errors
Number of Transactions = 49,170 (Insider-Firm-Day Level Data); Sample Period = 1996 to 2013

Event Study is based on the Market Model using:	**A. CRSP Value-Weighted Index**				**B. CRSP Equal-Weighted Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Independent Variables								
ERM								
ERM Date	0.0037***	0.0107***	0.0137***	0.0105**	0.0033***	0.0091***	0.0122***	0.0108***
	(0.0011)	(0.0021)	(0.0033)	(0.0041)	(0.0012)	(0.0022)	(0.0033)	(0.0042)
ERM Date * Small Firms	-0.0212***	-0.0547***	-0.0738***	-0.0749***	-0.0231***	-0.0556***	-0.0780***	-0.0792***
	(0.0042)	(0.0076)	(0.0122)	(0.0180)	(0.0043)	(0.0075)	(0.0120)	(0.0179)
ERM Date * High Stock Volatility Firms	0.0068	0.0132	-0.0104	0.0336**	0.0069	0.0213**	-0.0051	0.0159
	(0.0046)	(0.0086)	(0.0128)	(0.0171)	(0.0050)	(0.0092)	(0.0136)	(0.0185)
ERM Date * Financial Crisis Period	0.0088*	-0.0055	0.0076	-0.0438**	0.0069	-0.0091	-0.0005	-0.0480**
	(0.0045)	(0.0087)	(0.0137)	(0.0176)	(0.0048)	(0.0096)	(0.0145)	(0.0188)
ERM Date * RET <= -20%	0.0859***	0.1234**	0.1658	0.1282	0.0558	0.0969	0.1408	0.1287
	(0.0331)	(0.0573)	(0.1101)	(0.1812)	(0.0394)	(0.0749)	(0.1209)	(0.1896)
ERM Date * RET > 20%	0.0218	0.0781	0.1321*	0.0261	0.0240	0.0750	0.1180*	-0.0104
	(0.0247)	(0.0570)	(0.0693)	(0.0738)	(0.0250)	(0.0622)	(0.0712)	(0.0819)
ERM Date * CEO	0.0073***	0.0145***	0.0179**	0.0297***	0.0065***	0.0128***	0.0148**	0.0218**
	(0.0024)	(0.0043)	(0.0071)	(0.0096)	(0.0025)	(0.0043)	(0.0072)	(0.0095)
Insider Type								
CEO	-0.0123***	-0.0288***	-0.0529***	-0.0813***	-0.0106***	-0.0275***	-0.0472***	-0.0699***
	(0.0021)	(0.0037)	(0.0055)	(0.0071)	(0.0021)	(0.0036)	(0.0055)	(0.0070)
CFO	-0.0081***	-0.0162***	-0.0353***	-0.0669***	-0.0072***	-0.0176***	-0.0328***	-0.0588***
	(0.0022)	(0.0040)	(0.0062)	(0.0080)	(0.0022)	(0.0040)	(0.0064)	(0.0079)
Director	-0.0063***	-0.0161***	-0.0324***	-0.0568***	-0.0044**	-0.0151***	-0.0288***	-0.0487***
	(0.0017)	(0.0031)	(0.0045)	(0.0058)	(0.0017)	(0.0030)	(0.0044)	(0.0057)
Officer	-0.0039**	-0.0128***	-0.0285***	-0.0524***	-0.0027*	-0.0137***	-0.0291***	-0.0494***
	(0.0016)	(0.0029)	(0.0043)	(0.0057)	(0.0016)	(0.0029)	(0.0042)	(0.0055)
Large Shareholders	0.0155	0.0217	0.0030	-0.0383	0.0136	0.0297	0.0270	0.0092
	(0.0148)	(0.0283)	(0.0361)	(0.0521)	(0.0140)	(0.0306)	(0.0410)	(0.0556)
Past Stock Performance								
RET <= -20%	0.0059	-0.0264	0.0128	0.0164	0.0098	-0.0250	-0.0174	-0.0007
	(0.0145)	(0.0260)	(0.0385)	(0.0480)	(0.0139)	(0.0272)	(0.0386)	(0.0459)
RET > 20%	-0.0187***	-0.0077	-0.0647***	-0.0652***	-0.0202***	-0.0088	-0.0634***	-0.0609***
	(0.0069)	(0.0128)	(0.0157)	(0.0200)	(0.0067)	(0.0120)	(0.0149)	(0.0187)
Information Uncertainty								
Large Firms	-0.0142***	-0.0363***	-0.0667***	-0.0871***	-0.0168***	-0.0409***	-0.0707***	-0.0883***
	(0.0017)	(0.0030)	(0.0046)	(0.0060)	(0.0016)	(0.0029)	(0.0046)	(0.0059)
Medium Firms	-0.0093***	-0.0253***	-0.0559***	-0.0735***	-0.0108***	-0.0289***	-0.0597***	-0.0734***
	(0.0016)	(0.0030)	(0.0046)	(0.0060)	(0.0016)	(0.0029)	(0.0046)	(0.0058)
High Stock Volatility Firms	-0.0134***	-0.0334***	-0.0560***	-0.0843***	-0.0167***	-0.0432***	-0.0758***	-0.1066***
	(0.0014)	(0.0025)	(0.0038)	(0.0050)	(0.0014)	(0.0025)	(0.0038)	(0.0049)
Medium Stock Volatility Firms	-0.0051***	-0.0125***	-0.0241***	-0.0331***	-0.0057***	-0.0130***	-0.0254***	-0.0366***
	(0.0008)	(0.0015)	(0.0022)	(0.0029)	(0.0008)	(0.0015)	(0.0022)	(0.0029)
Financial Crisis Period (December 2007 to June 2009)	-0.0080*	-0.0203***	-0.0267**	0.0075	-0.0260***	-0.0901***	-0.1880***	-0.2170***
	(0.0043)	(0.0075)	(0.0113)	(0.0151)	(0.0045)	(0.0077)	(0.0118)	(0.0155)

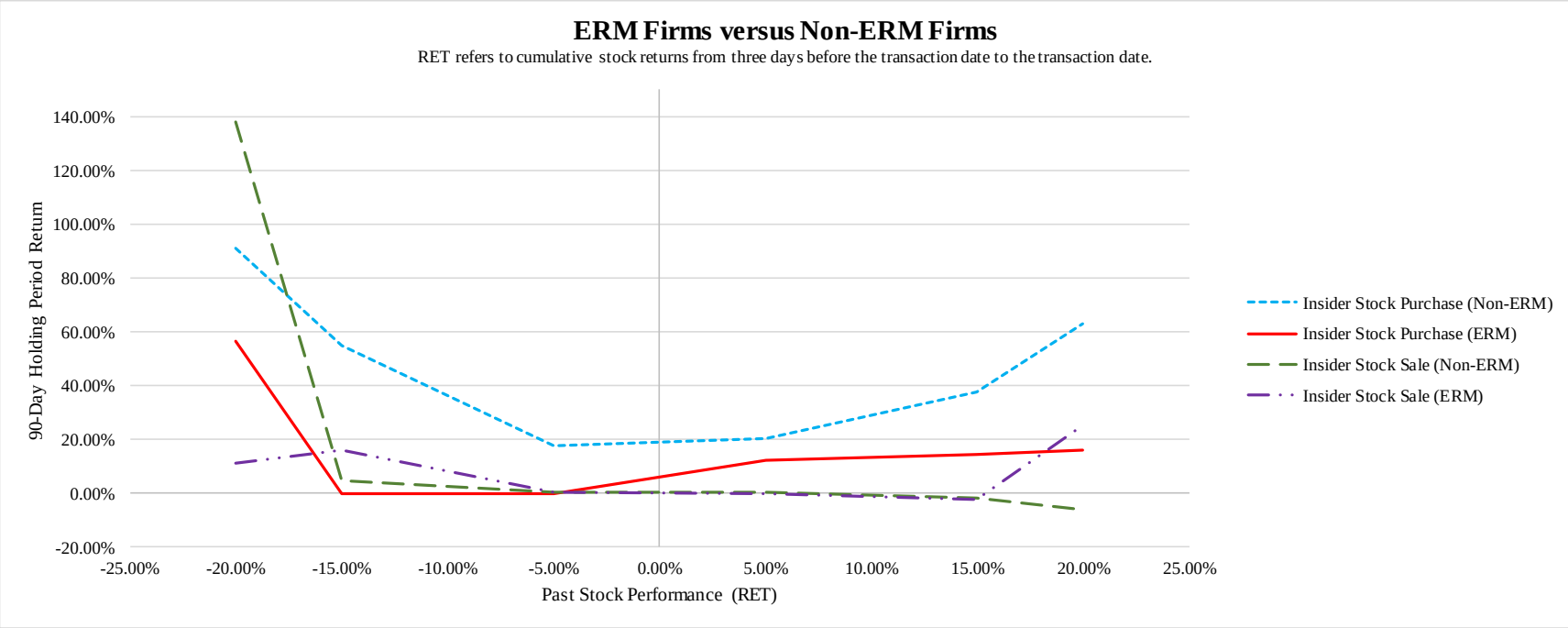
(continued on next page)

Table 3-17: Regression Results with Insider Stock Sale (Interactions with ERM Date) (cont.)

Insider Stock Sale: ERM Date (cont.)

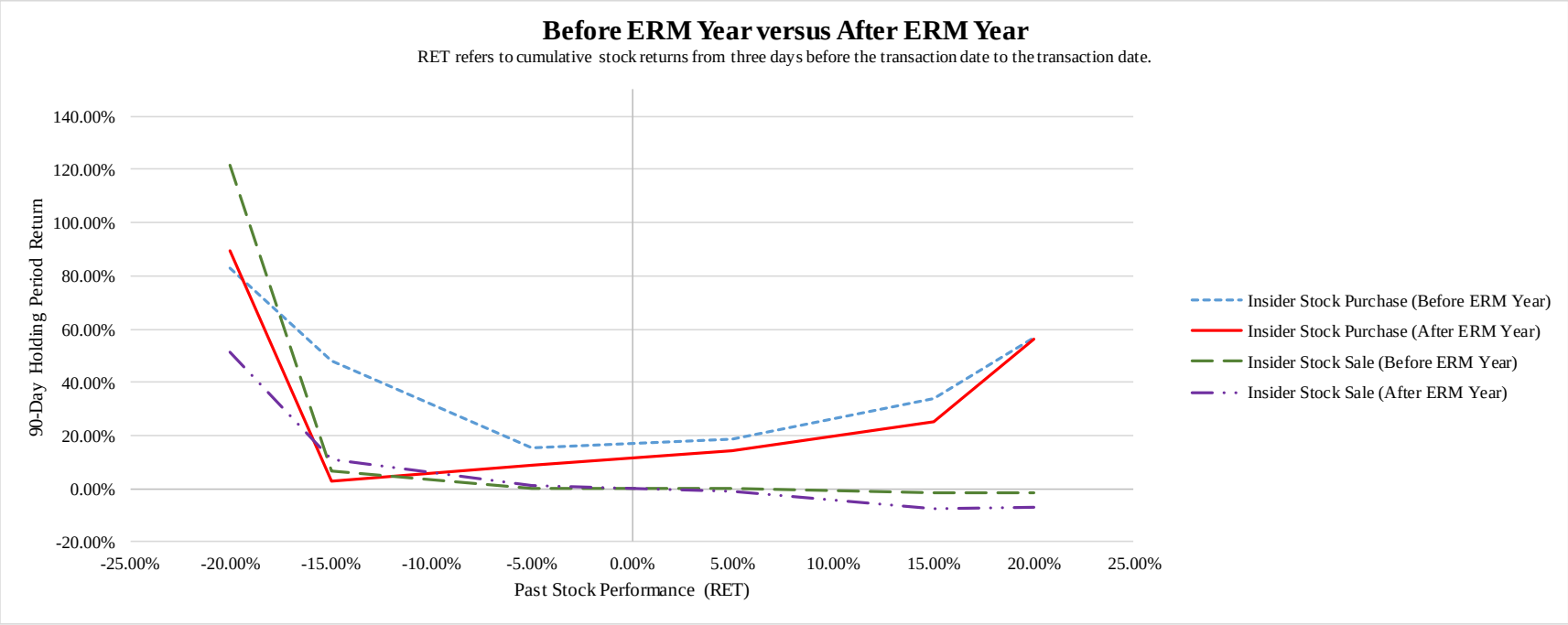
Event Study is based on the Market Model using:	**A. CRSP Value-Weighted Index**				**B. CRSP Equal-Weighted Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Control Variables								
Number of insider shares traded at insider level	<0.0000	<0.0000	<0.0000	<0.0000***	<0.0000	<0.0000	<0.0000	<0.0000***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Number of insider shares traded at company level (%)	-0.0000	-0.0010	-0.0027**	-0.0050***	0.0000	-0.0010	-0.0024**	-0.0046***
	(0.0005)	(0.0008)	(0.0013)	(0.0018)	(0.0005)	(0.0008)	(0.0012)	(0.0016)
Market to book ratio (MTB)	0.0000	0.0000*	0.0000	0.0000	0.0000**	0.0000***	0.0000**	0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Loss (binary variable for net income < 0)	0.0032*	-0.0090***	-0.0186***	-0.0133**	0.0019	-0.0073***	-0.0196***	-0.0169***
	(0.0016)	(0.0029)	(0.0042)	(0.0056)	(0.0016)	(0.0028)	(0.0042)	(0.0055)
Return on assets (ROA)	-0.0148	-0.0470***	-0.0744***	-0.1105***	-0.0127	-0.0449***	-0.0701***	-0.1078***
	(0.0108)	(0.0153)	(0.0203)	(0.0267)	(0.0096)	(0.0145)	(0.0207)	(0.0294)
Leverage ratio (long-term debt/ equity)	-0.0001	-0.0000	-0.0000	0.0001	-0.0001*	-0.0001	-0.0001	-0.0000
	(0.0001)	(0.0001)	(0.0001)	(0.0002)	(0.0001)	(0.0001)	(0.0001)	(0.0002)
Insurance industry	-0.0033	0.0023	0.0171	0.0270	0.0011	0.0033	0.0113	0.0253
	(0.0044)	(0.0088)	(0.0131)	(0.0178)	(0.0047)	(0.0090)	(0.0136)	(0.0184)
Banking industry	0.0004	0.0191**	0.0403***	0.0713***	0.0020	0.0174**	0.0371***	0.0715***
	(0.0037)	(0.0075)	(0.0105)	(0.0142)	(0.0040)	(0.0078)	(0.0108)	(0.0148)
January	0.0027	-0.0108***	-0.0088	-0.0181**	-0.0014	0.0105***	0.0305***	0.0080
	(0.0020)	(0.0041)	(0.0057)	(0.0071)	(0.0020)	(0.0040)	(0.0056)	(0.0071)
Fourth Quarter	0.0069***	0.0222***	0.0321***	0.0346***	0.0021*	-0.0066***	-0.0190***	-0.0083*
	(0.0012)	(0.0022)	(0.0033)	(0.0044)	(0.0012)	(0.0022)	(0.0035)	(0.0044)
Constant	0.0097**	0.0078	0.0044	-0.0025	0.0111**	0.0217**	0.0377***	0.0418**
	(0.0046)	(0.0088)	(0.0125)	(0.0167)	(0.0048)	(0.0090)	(0.0128)	(0.0170)
Year Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Sector Industry Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
R-squared	2.28%	4.62%	6.90%	7.33%	2.72%	5.23%	7.64%	8.03%

1. Heteroscedasticity-consistent standard errors are in parentheses.
2. The symbols ***, **, * show the significance at the 0.01, 0.05, and 0.10 levels of the t-test, respectively.
3. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock transactions, respectively. We employ the event study method based on the Market Model using CRSP value-weighted index and CRSP equal-weighted index, respectively.
4. We employ an indicator variable (ERM Date) to identify whether a firm employs ERM on the specific date over the sample period. For example, if a firm adopts ERM on March 1st 2004, the ERM indicator variable will be assigned with a value of one for March 1st 2014 and the following dates. If we do not find the enactment date of ERM, we use the SEC filing date/report date as the first evidence of ERM of a firm.
5. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares. We employ five binary variables to proxy CEO, CFO, director, officer, and large shareholders who made stock transactions of a firm from 1996 to 2013, respectively.
6. We use two binary variables to proxy significant changes in firm's stock prices (i.e., past stock performance): RET is less than -20% and RET is greater than 20%. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., 4 day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., 2 day past stock performance) to proxy RET and get similar results.
7. We employ two binary variables for firm size based on market capitalization: small firms with market capitalization less than or equal to $202,158,805 (33.33th percentile of the insider stock purchase and sale sample), medium firms with market capitalization between $202,158,805 and $1,068,003,868 (33.33th percentile to 66.66th percentile), and large firms with market capitalization greater than $1,068,003,868 (66.66th percentile).
8. We employ two binary variables for stock volatility of a firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: low stock volatility firms with stock volatility less than or equal to 0.019601 (33.33th percentile of the insider stock purchase and sale sample), medium stock volatility firms with stock volatility between 0.019601 and 0.032981 (33.33th percentile to 66.66th percentile), and high stock volatility firms with stock volatility greater than 0.032981 (66.66th percentile).
9. We employ a binary variable for the period of 2008 financial crisis (December 2007 to June 2009).
10. We also employ several robustness checks and get similar results: models including dollar value of insider stock purchase traded at insider level and at company level, models using the ratio of long-term debt to total assets to proxy the leverage variable, and models with autocorrelation corrections (i.e., Yule-Walker Estimates).
11. Variance inflation factors for all independent variables are less than 10, and thus collinearity does not appear to be problematic for any of the models.



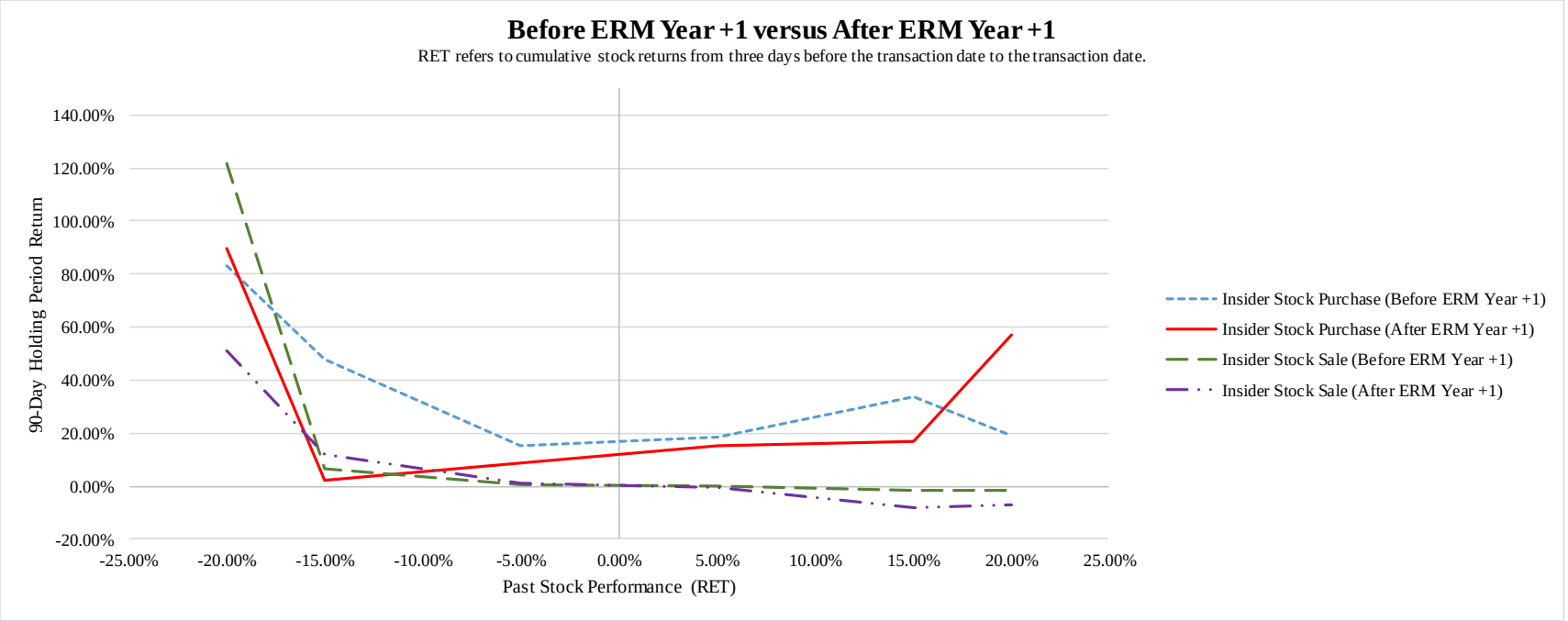
Appendix 3-A: 90-Day Holding Period Return (Figure 3-A1 ERM Firms versus Non-ERM Firms)

1. The 500 firms in the sample are firms randomly chosen from the insider stock purchase and sale sample over the period 1996 to 2013.
2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.
3. The 90-Day Holding Period Return refers to the holding period return from the insider stock transaction date to ninety days after the insider stock transaction.
4. ERM firms refer to firms with the ERM program enactment over the period 1998-2014.
5. We divide the insider stock purchase sample into two groups: ERM firms and non-ERM firms.
6. Likewise, we divide the insider stock sale sample into two groups: ERM firms and non-ERM firms.
7. The insider stock purchase sample is comprised of 4,869 firm-day observations for ERM firms and 12,524 firm-day observations for non-ERM firms from 1996 to 2013.
8. The insider stock sale sample is comprised of 14,929 firm-day observations for ERM firms and 24,610 firm-day observations for non-ERM firms from 1996 to 2013.
9. We divide each group into 6 subgroups based on cumulative daily stock returns (RET) and examine the 90-day holding period return separately for each group to examine the 90-day holding period return of insider stock transactions traded at different levels of past stock performance: $RET \leq -20\%$, $-20\% < RET \leq -10\%$, $-10\% < RET \leq 0\%$, $0\% < RET \leq 10\%$, $10\% < RET \leq 20\%$, and $20\% < RET$.
10. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results.



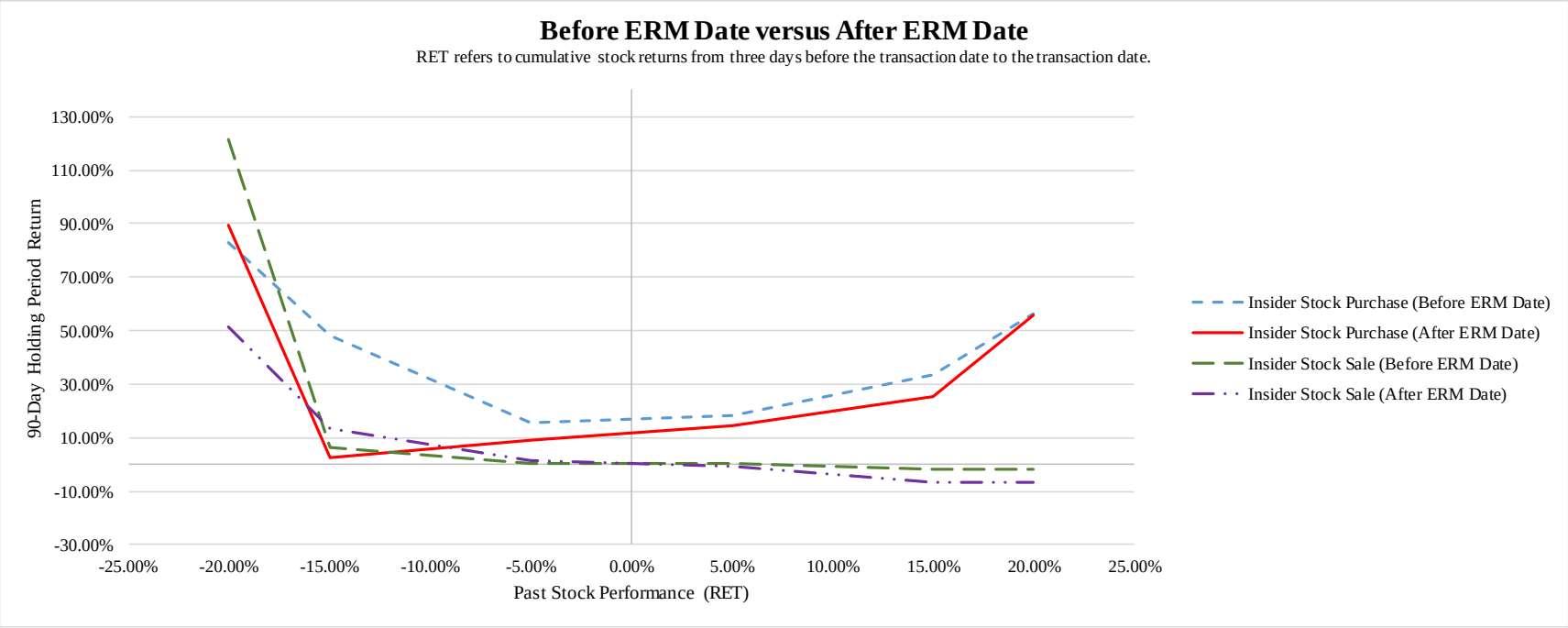
Appendix 3-A: 90-Day Holding Period Return (Figure 3-A2 Before ERM Year versus ERM Year)

1. The 500 firms in the sample are firms randomly chosen from the insider stock purchase and sale sample over the period 1996 to 2013.
2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.
3. The 90-Day Holding Period Return refers to the holding period return from the insider stock transaction date to ninety days after the insider stock transaction.
4. After ERM Year refers to insider stock transactions made in and after the year of the ERM enactment of a firm. For example, if a firm enacted an ERM program in 2004, insider stock purchases made in 2004 and the following years are in the group of Insider Stock Purchase (After ERM Year).
5. We divide the insider stock purchase sample into two groups: After ERM Year and Before ERM Year.
6. Likewise, we divide the insider stock sale sample into two groups: After ERM Year and Before ERM Year.
7. The insider stock purchase sample is comprised of 1,563 firm-day observations for After ERM Year and 15,830 firm-day observations for Before ERM Year from 1996 to 2013.
8. The insider stock sale sample is comprised of 4,832 firm-day observations for After ERM Year and 34,707 firm-day observations for Before ERM Year from 1996 to 2013.
9. We divide each group into 6 subgroups based on cumulative daily stock returns (RET) and examine the 90-day holding period return separately for each group to examine the 90-day holding period return of insider stock transactions traded at different levels of past stock performance: RET $\leq$ -20%, -20% < RET $\leq$ -10%, -10% < RET $\leq$ 0%, 0% < RET $\leq$ 10%, 10% < RET $\leq$ 20%, and 20% < RET.
10. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results.



Appendix 3-A: 90-Day Holding Period Return (Figure 3-A3 Before ERM Year +1 versus ERM Year +1)

1. The 500 firms in the sample are firms randomly chosen from the insider stock purchase and sale sample over the period 1996 to 2013.
2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.
3. The 90-Day Holding Period Return refers to the holding period return from the insider stock transaction date to ninety days after the insider stock transaction.
4. After ERM Year +1 refers to insider stock transactions made after the year of the ERM enactment of a firm. For example, if a firm enacted an ERM program in 2004, insider stock purchases made in 2005 and the following years are in the group of Insider Stock Purchase (After ERM Year +1).
5. We divide the insider stock purchase sample into two groups: After ERM Year +1 and Before ERM Year +1.
6. Likewise, we divide the insider stock sale sample into two groups: After ERM Year +1 and Before ERM Year +1.
7. The insider stock purchase sample is comprised of 1,335 firm-day observations for After ERM Year +1 and 16,058 firm-day observations for Before ERM Year +1 from 1996 to 2013.
8. The insider stock sale sample is comprised of 3,942 firm-day observations for After ERM Year +1 and 35,597 firm-day observations for Before ERM Year +1 from 1996 to 2013.
9. We divide each group into 6 subgroups based on cumulative daily stock returns (RET) and examine the 90-day holding period return separately for each group to examine the 90-day holding period return of insider stock transactions traded at different levels of past stock performance: $RET \leq -20\%$, $-20\% < RET \leq -10\%$, $-10\% < RET \leq 0\%$, $0\% < RET \leq 10\%$, $10\% < RET \leq 20\%$, and $20\% < RET$.
10. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results.



Appendix 3-A: 90-Day Holding Period Return (Figure 3-A4 Before ERM Date versus ERM Date)

1. The 500 firms in the sample are firms randomly chosen from the insider stock purchase and sale sample over the period 1996 to 2013.
2. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.
3. The 90-Day Holding Period Return refers to the holding period return from the insider stock transaction date to ninety days after the insider stock transaction.
4. After ERM Date refers to insider stock transactions made after the date of the ERM enactment of a firm. For example, if a firm enacted an ERM program on March 1st 2004, insider stock purchases made on March 1st 2004 and the following dates are in the group of Insider Stock Purchase (After ERM Date).
5. We divide the insider stock purchase sample into two groups: After ERM Date and Before ERM Date.
6. Likewise, we divide the insider stock sale sample into two groups: After ERM Date and Before ERM Date.
7. The insider stock purchase sample is comprised of 1,506 firm-day observations for After ERM Date and 15,887 firm-day observations for Before ERM Date from 1996 to 2013.
8. The insider stock sale sample is comprised of 4,403 firm-day observations for After ERM Date and 35,136 firm-day observations for Before ERM Date from 1996 to 2013.
9. We divide each group into 6 subgroups based on cumulative daily stock returns (RET) and examine the 90-day holding period return separately for each group to examine the 90-day holding period return of insider stock transactions traded at different levels of past stock performance: RET $\leq$ -20%, -20% < RET $\leq$ -10%, -10% < RET $\leq$ 0%, 0% < RET $\leq$ 10%, 10% < RET $\leq$ 20%, and 20% < RET.
10. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results.

Appendix 3-A: 90-Day Holding Period Return (Table 3-A1 Insider Stock Purchase)

Insider Stock Purchase: 90-Day Holding Period Return (HPR)
RET refers to cumulative stock returns from three days before the transaction date to the transaction date

A. ERM Firms

	RET ≤ -20%	-20% < RET ≤ -10%	-10% < RET ≤ 0%	0% < RET ≤ 10%	10% < RET ≤ 20%	20% < RET
HPR(+1,+90)	56.45%	11.97%*	8.01%**	12.26%	14.27%	15.89%
Number of Obs.	110	275	2,224	1,961	171	53
Number of Firms	44	87	123	124	72	30

B. Non-ERM Firms

	RET ≤ -20%	-20% < RET ≤ -10%	-10% < RET ≤ 0%	0% < RET ≤ 10%	10% < RET ≤ 20%	20% < RET
HPR(+1,+90)	91.14%	54.95%	17.73%	20.42%	37.64%	62.98%
Number of Obs.	393	890	4,975	4,885	744	336
Number of Firms	177	270	370	365	235	136

C. After ERM Year

	RET ≤ -20%	-20% < RET ≤ -10%	-10% < RET ≤ 0%	0% < RET ≤ 10%	10% < RET ≤ 20%	20% < RET
HPR(+1,+90)	89.29%	2.59%	8.97%	14.02%	25.09%	56.01%
Number of Obs.	43	86	765	605	47	11
Number of Firms	18	43	90	80	23	7

D. Before ERM Year

	RET ≤ -20%	-20% < RET ≤ -10%	-10% < RET ≤ 0%	0% < RET ≤ 10%	10% < RET ≤ 20%	20% < RET
HPR(+1,+90)	83.02%	48.17%	15.41%	18.48%	33.71%	56.58%
Number of Obs.	460	1,079	6,434	6,241	868	378
Number of Firms	209	334	481	478	293	160

E. After ERM Year +1

	RET ≤ -20%	-20% < RET ≤ -10%	-10% < RET ≤ 0%	0% < RET ≤ 10%	10% < RET ≤ 20%	20% < RET
HPR(+1,+90)	89.80%	2.16%	8.81%	15.02%	17.12%	57.35%
Number of Obs.	40	77	659	509	39	381
Number of Firms	16	39	78	68	21	5

F. Before ERM Year +1

	RET ≤ -20%	-20% < RET ≤ -10%	-10% < RET ≤ 0%	0% < RET ≤ 10%	10% < RET ≤ 20%	20% < RET
HPR(+1,+90)	83.01%	47.82%	15.33%	18.33%	33.99%	18.93%
Number of Obs.	463	1,088	6,540	6,337	876	8
Number of Firms	210	337	481	480	295	161

G. After ERM Date

	RET ≤ -20%	-20% < RET ≤ -10%	-10% < RET ≤ 0%	0% < RET ≤ 10%	10% < RET ≤ 20%	20% < RET
HPR(+1,+90)	89.29%	2.48%	9.25%	14.51%	25.09%	56.01%
Number of Obs.	43	82	736	581	47	11
Number of Firms	18	43	85	80	23	7

H. Before ERM Date

	RET ≤ -20%	-20% < RET ≤ -10%	-10% < RET ≤ 0%	0% < RET ≤ 10%	10% < RET ≤ 20%	20% < RET
HPR(+1,+90)	83.02%	48.01%	15.35%	18.41%	33.71%	56.58%
Number of Obs.	460	1,083	6,463	6,265	868	378
Number of Firms	209	335	481	478	293	160

1. This table accompanies Figure 3-A1 to Figure 3-A4.
2. The 500 firms in the sample are firms randomly chosen from the insider stock purchase and sale sample over the period 1996 to 2013.
3. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.
4. The 90-Day Holding Period Return refers to the holding period return from the insider stock transaction date to ninety days after the insider stock transaction.
5. We divide the insider stock purchase sample into the following groups: ERM firms and Non-ERM firms, After ERM Year and Before ERM Year, After ERM Year +1 and Before ERM Year +1, and After ERM Date and Before ERM Date, respectively.
6. The insider stock purchase sample is comprised of 4,869 firm-day observations for ERM firms and 12,524 firm-day observations for Non-ERM firms from 1996 to 2013. ERM firms refer to firms with theERM program enactment over the period 1998-2014.
7. The insider stock purchase sample is comprised of 1,563 firm-day observations for After ERM Year and 15,830 firm-day observations for Before ERM Year from 1996 to 2013. After ERM Year refers to insider stock transactions made in and after the year of the ERM enactment of a firm. For example, if a firm enacted an ERM program in 2004, insider stock purchases made in 2004 and the following years are in the group of Insider Stock Purchase (After ERM Year).
8. The insider stock purchase sample is comprised of 1,335 firm-day observations for After ERM Year +1 and 16,058 firm-day observations for Before ERM Year +1 from 1996 to 2013. After ERM Year +1 refers to insider stock transactions made after the year of the ERM enactment of a firm. For example, if a firm enacted an ERM program in 2004, insider stock purchases made in 2005 and the following years are in the group of Insider Stock Purchase (After ERM Year +1).
9. The insider stock purchase sample is comprised of 1,506 firm-day observations for After ERM Date and 15,887 firm-day observations for Before ERM Date from 1996 to 2013. After ERM Date refers to insider stock transactions made after the date of the ERM enactment of a firm. For example, if a firm enacted an ERM program on March 1st 2004, insider stock purchases made on March 1st 2004 and the following dates are in the group of Insider Stock Purchase (After ERM Date).
10. We divide each group into 6 groups based on cumulative daily stock returns (RET) and examine the 90-day holding period return separately for each group to examine the 90-day holding period return of insider stock transactions traded at different levels of past stock performance: RET ≤ -20%, -20% < RET ≤ -10%, -10% < RET ≤ 0%, 0% < RET ≤ 10%, 10% < RET ≤ 20%, and 20% < RET.
11. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results.
12. The symbols *, **, or *** show the significance at the 0.10, 0.05, 0.01 levels of the two sample mean test (ERM and non-ERM; before and after ERM Year; before and after ERM Year +1; before and after ERM Date), respectively.

Appendix 3-A: 90-Day Holding Period Return (Table 3-A2 Insider Stock Sale)

Insider Stock Sale: 90-Day Holding Period Return (HPR)
RET refers to cumulative stock returns from three days before the transaction date to the transaction date

A. ERM Firms

	RET ≤ -20%	-20% < RET ≤ -10%	-10% < RET ≤ 0%	0% < RET ≤ 10%	10% < RET ≤ 20%	20% < RET
HPR(+1,+90)	11.31%	15.80%	0.43%	-0.33%	-2.57%	24.96%
Number of Obs.	32	194	5,078	8,535	663	87
Number of Firms	21	65	125	125	90	45

B. Non-ERM Firms

	RET ≤ -20%	-20% < RET ≤ -10%	-10% < RET ≤ 0%	0% < RET ≤ 10%	10% < RET ≤ 20%	20% < RET
HPR(+1,+90)	137.97%	4.71%	0.44%	0.51%	-2.06%	-6.05%
Number of Obs.	184	810	8,456	12,324	1,740	576
Number of Firms	88	219	373	373	279	175

C. After ERM Year

	RET ≤ -20%	-20% < RET ≤ -10%	-10% < RET ≤ 0%	0% < RET ≤ 10%	10% < RET ≤ 20%	20% < RET
HPR(+1,+90)	51.26%	10.87%	1.04%	-0.80%	-7.71%	-6.94%
Number of Obs.	7	39	1,672	2,885	175	24
Number of Firms	6	25	106	106	57	17

D. Before ERM Year

	RET ≤ -20%	-20% < RET ≤ -10%	-10% < RET ≤ 0%	0% < RET ≤ 10%	10% < RET ≤ 20%	20% < RET
HPR(+1,+90)	121.48%	6.69%	0.35%	0.32%	-1.77%	-1.79%
Number of Obs.	209	965	11,862	17,974	2,228	639
Number of Firms	104	269	481	483	355	205

E. After ERM Year +1

	RET ≤ -20%	-20% < RET ≤ -10%	-10% < RET ≤ 0%	0% < RET ≤ 10%	10% < RET ≤ 20%	20% < RET
HPR(+1,+90)	51.26%	11.81%	1.08%	-0.65%	-8.01%	-6.94%
Number of Obs.	7	31	1,354	2,383	140	24
Number of Firms	6	22	98	96	46	17

F. Before ERM Year +1

	RET ≤ -20%	-20% < RET ≤ -10%	-10% < RET ≤ 0%	0% < RET ≤ 10%	10% < RET ≤ 20%	20% < RET
HPR(+1,+90)	121.48%	6.69%	0.37%	0.27%	-1.84%	-1.79%
Number of Obs.	209	973	12,180	18,476	2,263	639
Number of Firms	104	269	484	489	356	205

G. After ERM Date

	RET ≤ -20%	-20% < RET ≤ -10%	-10% < RET ≤ 0%	0% < RET ≤ 10%	10% < RET ≤ 20%	20% < RET
HPR(+1,+90)	51.26%	13.42%	1.25%	-0.68%	-6.74%	-6.94%
Number of Obs.	7	35	1,503	2,655	158	24
Number of Firms	6	25	103	102	52	17

H. Before ERM Date

	RET ≤ -20%	-20% < RET ≤ -10%	-10% < RET ≤ 0%	0% < RET ≤ 10%	10% < RET ≤ 20%	20% < RET
HPR(+1,+90)	121.48%	6.61%	0.34%	0.29%	-1.88%	-1.79%
Number of Obs.	209	969	12,031	18,204	2,245	639
Number of Firms	104	269	483	486	355	205

1. This table accompanies Figure 3-A1 to Figure 3-A4.
2. The 500 firms in the sample are firms randomly chosen from the insider stock purchase and sale sample over the period 1996 to 2013.
3. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.
4. The 90-Day Holding Period Return refers to the holding period return from the insider stock transaction date to ninety days after the insider stock transaction.
5. We divide the insider stock sale sample into the following groups: ERM firms and Non-ERM firms, After ERM Year and Before ERM Year, After ERM Year +1 and Before ERM Year +1, and After ERM Date and Before ERM Date, respectively.
6. The insider stock sale sample is comprised of 14,929 firm-day observations for ERM firms and 24,610 firm-day observations for Non-ERM firms from 1996 to 2013. ERM firms refer to firms with the ERM program enactment over the period 1998-2014.
7. The insider stock sale sample is comprised of 4,832 firm-day observations for After ERM Year and 34,707 firm-day observations for Before ERM Year from 1996 to 2013. After ERM Year refers to insider stock transactions made in and after the year of the ERM enactment of a firm. For example, if a firm enacted an ERM program in 2004, insider stock sales made in 2004 and the following years are in the group of Insider Stock Sale (After ERM Year).
8. The insider stock sale sample is comprised of 3,942 firm-day observations for After ERM Year +1 and 35,597 firm-day observations for Before ERM Year +1 from 1996 to 2013. After ERM Year +1 refers to insider stock transactions made after the year of the ERM enactment of a firm. For example, if a firm enacted an ERM program in 2004, insider stock sales made in 2005 and the following years are in the group of Insider Stock Sale (After ERM Year +1).
9. The insider stock sale sample is comprised of 4,403 firm-day observations for After ERM Date and 35,136 firm-day observations for Before ERM Date from 1996 to 2013. After ERM Date refers to insider stock transactions made after the date of the ERM enactment of a firm. For example, if a firm enacted an ERM program on March 1st 2004, insider stock sales made on March 1st 2004 and the following dates are in the group of Insider Stock Sale (After ERM Date).
10. We divide each group into 6 groups based on cumulative daily stock returns (RET) and examine the 90-day holding period return separately for each group to examine the 90-day holding period return of insider stock transactions traded at different levels of past stock performance: RET ≤ -20%, -20% < RET ≤ -10%, -10% < RET ≤ 0%, 0% < RET ≤ 10%, 10% < RET ≤ 20%, and 20% < RET.
11. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., four day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., two day past stock performance) to proxy RET and get similar results.
12. The symbols *, **, or *** show the significance at the 0.10, 0.05, 0.01 levels of the two sample mean test (ERM and non-ERM; before and after ERM Year; before and after ERM Year +1; before and after ERM Date), respectively.

Appendix 3-B: Regression Results with Insider Purchase (Accrual Quality) (Table 3-B1 ERM Year)

Insider Stock Purchase: ERM Year
Cumulative Abnormal Return (CAR) Ordinary Least Squares Regression Model with Heteroscedasticity-Consistent Standard Errors
Number of Transactions = 11,355 (Insider-Firm-Day Level Data); Sample Period = 1996 to 2013

Event Study is based on the Market Model using:	**A. CRSP Value-Weighted Index**				**B. CRSP Equal-Weighted Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Independent Variables								
ERM Year	-0.0109**	-0.0359***	-0.0499***	-0.0415**	-0.0107**	-0.0346***	-0.0430***	-0.0317*
	(0.0046)	(0.0081)	(0.0130)	(0.0175)	(0.0046)	(0.0079)	(0.0132)	(0.0176)
Insider Type								
CEO	0.0146***	0.0301***	0.0296**	0.0420***	0.0188***	0.0350***	0.0353***	0.0498***
	(0.0050)	(0.0084)	(0.0125)	(0.0158)	(0.0049)	(0.0082)	(0.0123)	(0.0154)
CFO	0.0234***	0.0410***	0.0397**	0.0240	0.0245***	0.0424***	0.0431***	0.0315
	(0.0073)	(0.0121)	(0.0170)	(0.0208)	(0.0069)	(0.0116)	(0.0161)	(0.0199)
Director	0.0085***	0.0114**	-0.0110	-0.0288***	0.0103***	0.0131**	-0.0075	-0.0210**
	(0.0032)	(0.0053)	(0.0077)	(0.0099)	(0.0032)	(0.0053)	(0.0075)	(0.0096)
Officer	0.0185***	0.0202***	0.0146	-0.0015	0.0173***	0.0190***	0.0094	-0.0029
	(0.0043)	(0.0074)	(0.0101)	(0.0129)	(0.0041)	(0.0071)	(0.0098)	(0.0125)
Large Shareholders	0.0084	0.0121	0.0626	0.1490**	0.0148	0.0095	0.0989***	0.2205***
	(0.0393)	(0.0160)	(0.0401)	(0.0638)	(0.0352)	(0.0185)	(0.0382)	(0.0564)
Past Stock Performance								
RET <= -20%	0.0616***	0.0738***	0.0755***	0.0599**	0.0675***	0.0654***	0.0467**	0.0200
	(0.0104)	(0.0162)	(0.0219)	(0.0284)	(0.0103)	(0.0159)	(0.0218)	(0.0282)
RET > 20%	0.0107	0.0026	0.0005	0.0455	0.0072	-0.0116	-0.0159	0.0300
	(0.0117)	(0.0172)	(0.0227)	(0.0305)	(0.0112)	(0.0167)	(0.0224)	(0.0296)
Information Uncertainty								
Small Firms	0.0307***	0.0642***	0.1052***	0.1212***	0.0258***	0.0484***	0.0921***	0.1012***
	(0.0036)	(0.0061)	(0.0089)	(0.0118)	(0.0036)	(0.0061)	(0.0088)	(0.0115)
Medium Firms	0.0156***	0.0316***	0.0441***	0.0416***	0.0100***	0.0177***	0.0396***	0.0327***
	(0.0038)	(0.0062)	(0.0091)	(0.0116)	(0.0037)	(0.0063)	(0.0091)	(0.0115)
High Stock Volatility Firms	0.0202***	0.0301***	0.0662***	0.0955***	0.0183***	0.0234***	0.0440***	0.0634***
	(0.0031)	(0.0050)	(0.0075)	(0.0099)	(0.0030)	(0.0049)	(0.0075)	(0.0098)
Medium Stock Volatility Firms	0.0074***	0.0007	0.0198***	0.0264***	0.0087***	0.0012	0.0136**	0.0197***
	(0.0024)	(0.0040)	(0.0059)	(0.0075)	(0.0023)	(0.0040)	(0.0059)	(0.0075)
Financial Crisis Period (December 2007 to June 2009)	0.0098	0.1199***	0.2411***	0.2722***	0.0007	0.0603***	0.1137***	0.1127***
	(0.0092)	(0.0177)	(0.0254)	(0.0332)	(0.0087)	(0.0160)	(0.0217)	(0.0286)
Accrual Quality (FLOS, 2005)	<-0.0000	<0.0000**	<0.0000**	0.0001**	<-0.0000	<0.0000**	<0.0000*	<0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)

(continued on next page)

Appendix 3-B: Regression Results with Insider Purchase (Accrual Quality) (Table 3-B1 ERM Year) (cont.)

Insider Stock Purchase: ERM Year (cont.)

Event Study is based on the Market Model using:	**A. CRSP Value-Weighted Index**				**B. CRSP Equal-Weighted Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Control Variables								
Number of insider shares traded at insider level	<0.0000***	<0.0000**	<0.0000	<0.0000	<0.0000***	<0.0000**	<0.0000	<0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Number of insider shares traded at company level (%)	0.0111*	-0.0037	-0.0198***	-0.0517***	0.0142**	0.0031	-0.0144**	-0.0432***
	(0.0059)	(0.0035)	(0.0071)	(0.0172)	(0.0063)	(0.0038)	(0.0061)	(0.0151)
Market to book ratio (MTB)	0.0001	-0.0000	-0.0002	-0.0002	0.0001	-0.0001	-0.0002	-0.0003
	(0.0001)	(0.0001)	(0.0002)	(0.0002)	(0.0001)	(0.0001)	(0.0002)	(0.0003)
Loss (binary variable for net income < 0)	0.0034	-0.0005	-0.0089	0.0158	0.0023	-0.0028	-0.0080	0.0061
	(0.0035)	(0.0060)	(0.0082)	(0.0104)	(0.0034)	(0.0057)	(0.0079)	(0.0100)
Return on assets (ROA)	0.0005	-0.1335**	-0.2272***	-0.1705	-0.0202	-0.1421**	-0.2413***	-0.2237**
	(0.0354)	(0.0671)	(0.0819)	(0.1062)	(0.0344)	(0.0626)	(0.0780)	(0.1021)
Leverage ratio (long-term debt/ equity)	-0.0000	0.0001	0.0003	0.0003	-0.0001	0.0001	0.0003	0.0003
	(0.0001)	(0.0001)	(0.0002)	(0.0003)	(0.0002)	(0.0002)	(0.0003)	(0.0003)
Insurance industry	-0.0104	0.0143	-0.1129	-0.0998	-0.0085	0.0083	-0.1191	-0.1223
	(0.0284)	(0.0549)	(0.0849)	(0.0976)	(0.0257)	(0.0517)	(0.0854)	(0.0954)
January	-0.0203***	-0.0588***	-0.0532***	-0.0690***	-0.0190***	-0.0163*	0.0089	-0.0150
	(0.0059)	(0.0095)	(0.0131)	(0.0166)	(0.0055)	(0.0094)	(0.0131)	(0.0167)
Fourth Quarter	0.0100***	0.0320***	0.0415***	0.0658***	-0.0055*	-0.0182***	-0.0169**	-0.0011
	(0.0033)	(0.0055)	(0.0079)	(0.0103)	(0.0032)	(0.0054)	(0.0079)	(0.0100)
Constant	-0.0354	-0.0814	-0.0009	0.0103	-0.0323	-0.0586	0.0326	0.0765
	(0.0268)	(0.0528)	(0.0817)	(0.0920)	(0.0240)	(0.0489)	(0.0820)	(0.0886)
Year Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Sector Industry Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
R-squared	10.07%	14.32%	17.32%	18.59%	9.28%	10.34%	12.29%	12.84%

1. Heteroscedasticity-consistent standard errors are in parentheses.
2. The symbols ***, **, * show the significance at the 0.01, 0.05, and 0.10 levels of the t-test, respectively.
3. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock transactions, respectively. We employ the event study method based on the Market Model using CRSP value-weighted index and CRSP equal-weighted index, respectively.
4. We employ an indicator variable (ERM Year) to identify whether a firm employs ERM in any given year over the sample period. For example, if a firm adopts ERM in 2004, the ERM indicator variable will be assigned with a value of one for year 2004 and the following years.
5. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares. We employ five binary variables to proxy CEO, CFO, director, officer, and large shareholders who made stock transactions of a firm from 1996 to 2013, respectively.
6. We use two binary variables to proxy significant changes in firm's stock prices (i.e., past stock performance): RET is less than -20% and RET is greater than 20%. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., 4 day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., 2 day past stock performance) to proxy RET and get similar results.
7. We employ two binary variables for firm size based on market capitalization: small firms with market capitalization less than or equal to $202,158,805 (33.33th percentile of the insider stock purchase and sale sample), medium firms with market capitalization between $202,158,805 and $1,068,003,868 (33.33th percentile to 66.66th percentile), and large firms with market capitalization greater than $1,068,003,868 (66.66th percentile).
8. We employ two binary variables for stock volatility of a firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: low stock volatility firms with stock volatility less than or equal to 0.019601 (33.33th percentile of the insider stock purchase and sale sample), medium stock volatility firms with stock volatility between 0.019601 and 0.032981 (33.33th percentile to 66.66th percentile), and high stock volatility firms with stock volatility greater than 0.032981 (66.66th percentile).
9. We employ a binary variable for the period of 2008 financial crisis (December 2007 to June 2009).
10. We use accrual quality to proxy information risk based on the model used in FLOS (2005) (Eckles, Halek, and Zhang, 2013).

Appendix 3-B: Regression Results with Insider Purchase (Accrual Quality) (Table 3-B2 ERM Year +1)

Insider Stock Purchase: ERM Year +1
Cumulative Abnormal Return (CAR) Ordinary Least Squares Regression Model with Heteroscedasticity-Consistent Standard Errors
Number of Transactions = 11,355 (Insider-Firm-Day Level Data); Sample Period = 1996 to 2013

Event Study is based on the Market Model using:	**A. CRSP Value-Weighted Index**				**B. CRSP Equal-Weighted Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Independent Variables								
ERM Year +1	-0.0006	-0.0119	-0.0485***	-0.0751***	-0.0003	-0.0107	-0.0444***	-0.0677***
	(0.0047)	(0.0080)	(0.0134)	(0.0188)	(0.0047)	(0.0078)	(0.0140)	(0.0192)
Insider Type								
CEO	0.0142***	0.0293***	0.0296**	0.0432***	0.0185***	0.0342***	0.0355***	0.0511***
	(0.0050)	(0.0084)	(0.0125)	(0.0158)	(0.0049)	(0.0082)	(0.0123)	(0.0154)
CFO	0.0232***	0.0404***	0.0398**	0.0250	0.0242***	0.0418***	0.0433***	0.0326
	(0.0073)	(0.0121)	(0.0170)	(0.0207)	(0.0069)	(0.0116)	(0.0161)	(0.0199)
Director	0.0083***	0.0109**	-0.0110	-0.0279***	0.0101***	0.0126**	-0.0074	-0.0201**
	(0.0032)	(0.0053)	(0.0077)	(0.0099)	(0.0032)	(0.0053)	(0.0075)	(0.0096)
Officer	0.0185***	0.0201***	0.0148	-0.0010	0.0172***	0.0189***	0.0096	-0.0024
	(0.0043)	(0.0074)	(0.0101)	(0.0129)	(0.0041)	(0.0071)	(0.0098)	(0.0125)
Large Shareholders	0.0079	0.0108	0.0626	0.1510**	0.0142	0.0082	0.0991***	0.2226***
	(0.0393)	(0.0158)	(0.0400)	(0.0638)	(0.0351)	(0.0185)	(0.0382)	(0.0565)
Past Stock Performance								
RET <= -20%	0.0612***	0.0730***	0.0755***	0.0610**	0.0672***	0.0646***	0.0467**	0.0212
	(0.0104)	(0.0163)	(0.0219)	(0.0283)	(0.0103)	(0.0159)	(0.0217)	(0.0281)
RET > 20%	0.0107	0.0027	0.0002	0.0447	0.0073	-0.0115	-0.0163	0.0293
	(0.0117)	(0.0173)	(0.0227)	(0.0304)	(0.0112)	(0.0167)	(0.0223)	(0.0295)
Information Uncertainty								
Small Firms	0.0309***	0.0646***	0.1050***	0.1203***	0.0260***	0.0488***	0.0919***	0.1002***
	(0.0036)	(0.0061)	(0.0089)	(0.0118)	(0.0036)	(0.0061)	(0.0087)	(0.0115)
Medium Firms	0.0160***	0.0327***	0.0442***	0.0401***	0.0105***	0.0187***	0.0395***	0.0310***
	(0.0038)	(0.0062)	(0.0091)	(0.0116)	(0.0038)	(0.0063)	(0.0091)	(0.0115)
High Stock Volatility Firms	0.0200***	0.0297***	0.0659***	0.0954***	0.0182***	0.0230***	0.0437***	0.0634***
	(0.0031)	(0.0050)	(0.0075)	(0.0098)	(0.0030)	(0.0049)	(0.0075)	(0.0098)
Medium Stock Volatility Firms	0.0074***	0.0006	0.0198***	0.0266***	0.0087***	0.0011	0.0136**	0.0198***
	(0.0024)	(0.0040)	(0.0059)	(0.0075)	(0.0023)	(0.0040)	(0.0059)	(0.0075)
Financial Crisis Period (December 2007 to June 2009)	0.0098	0.1199***	0.2411***	0.2722***	0.0007	0.0603***	0.1137***	0.1126***
	(0.0092)	(0.0177)	(0.0254)	(0.0332)	(0.0087)	(0.0160)	(0.0217)	(0.0286)
Accrual Quality (FLOS, 2005)	<-0.0000	<0.0000**	<0.0000**	0.0001**	<-0.0000	<0.0000*	<0.0000	<0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)

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Appendix 3-B: Regression Results with Insider Purchase (Accrual Quality) (Table 3-B2 ERM Year +1) (cont.)

Insider Stock Purchase: ERM Year +1 (cont.)

Event Study is based on the Market Model using:	**A. CRSP Value-Weighted Index**				**B. CRSP Equal-Weighted Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Control Variables								
Number of insider shares traded at insider level	<0.0000***	<0.0000**	<0.0000	<0.0000	<0.0000***	<0.0000*	<0.0000	<0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Number of insider shares traded at company level (%)	0.0114*	-0.0031	-0.0195***	-0.0521***	0.0145**	0.0037	-0.0142**	-0.0437***
	(0.0059)	(0.0035)	(0.0071)	(0.0171)	(0.0063)	(0.0038)	(0.0060)	(0.0150)
Market to book ratio (MTB)	0.0001	-0.0000	-0.0002	-0.0003	0.0001	-0.0001	-0.0002	-0.0003
	(0.0001)	(0.0001)	(0.0002)	(0.0002)	(0.0001)	(0.0001)	(0.0002)	(0.0003)
Loss (binary variable for net income < 0)	0.0033	-0.0010	-0.0094	0.0155	0.0021	-0.0033	-0.0085	0.0059
	(0.0035)	(0.0060)	(0.0082)	(0.0104)	(0.0034)	(0.0057)	(0.0079)	(0.0100)
Return on assets (ROA)	-0.0011	-0.1377**	-0.2300***	-0.1694	-0.0217	-0.1462**	-0.2434***	-0.2219**
	(0.0353)	(0.0671)	(0.0819)	(0.1062)	(0.0343)	(0.0626)	(0.0780)	(0.1021)
Leverage ratio (long-term debt/ equity)	-0.0000	0.0001	0.0003	0.0003	-0.0001	0.0001	0.0003	0.0003
	(0.0001)	(0.0001)	(0.0002)	(0.0003)	(0.0002)	(0.0002)	(0.0003)	(0.0003)
Insurance industry	-0.0119	0.0097	-0.1185	-0.1033	-0.0100	0.0038	-0.1238	-0.1247
	(0.0285)	(0.0549)	(0.0848)	(0.0976)	(0.0258)	(0.0517)	(0.0854)	(0.0955)
January	-0.0204***	-0.0591***	-0.0532***	-0.0685***	-0.0191***	-0.0166*	0.0089	-0.0145
	(0.0059)	(0.0095)	(0.0131)	(0.0166)	(0.0055)	(0.0094)	(0.0131)	(0.0167)
Fourth Quarter	0.0101***	0.0322***	0.0417***	0.0659***	-0.0055*	-0.0180***	-0.0167**	-0.0010
	(0.0033)	(0.0055)	(0.0079)	(0.0103)	(0.0032)	(0.0054)	(0.0079)	(0.0100)
Constant	-0.0353	-0.0812	-0.0010	0.0099	-0.0322	-0.0584	0.0325	0.0762
	(0.0268)	(0.0529)	(0.0817)	(0.0920)	(0.0240)	(0.0489)	(0.0819)	(0.0886)
Year Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Sector Industry Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
R-squared	10.04%	14.23%	17.30%	18.66%	9.25%	10.25%	12.28%	12.91%

1. Heteroscedasticity-consistent standard errors are in parentheses.
2. The symbols ***, **, * show the significance at the 0.01, 0.05, and 0.10 levels of the t-test, respectively.
3. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock transactions, respectively. We employ the event study method based on the Market Model using CRSP value-weighted index and CRSP equal-weighted index, respectively.
4. We employ an indicator variable (ERM Year +1) to identify whether a firm employs ERM in any given year plus one year over the sample period. For example, if a firm adopts ERM in 2004, the ERM indicator variable will be assigned with a value of one for year 2005 and the following years.
5. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares. We employ five binary variables to proxy CEO, CFO, director, officer, and large shareholders who made stock transactions of a firm from 1996 to 2013, respectively.
6. We use two binary variables to proxy significant changes in firm's stock prices (i.e., past stock performance): RET is less than -20% and RET is greater than 20%. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., 4 day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., 2 day past stock performance) to proxy RET and get similar results.
7. We employ two binary variables for firm size based on market capitalization: small firms with market capitalization less than or equal to $202,158,805 (33.33th percentile of the insider stock purchase and sale sample), medium firms with market capitalization between $202,158,805 and $1,068,003,868 (33.33th percentile to 66.66th percentile), and large firms with market capitalization greater than $1,068,003,868 (66.66th percentile).
8. We employ two binary variables for stock volatility of a firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: low stock volatility firms with stock volatility less than or equal to 0.019601 (33.33th percentile of the insider stock purchase and sale sample), medium stock volatility firms with stock volatility between 0.019601 and 0.032981 (33.33th percentile to 66.66th percentile), and high stock volatility firms with stock volatility greater than 0.032981 (66.66th percentile).
9. We employ a binary variable for the period of 2008 financial crisis (December 2007 to June 2009).
10. We use accrual quality to proxy information risk based on the model used in FLOS (2005) (Eckles, Halek, and Zhang, 2013).

Appendix 3-B: Regression Results with Insider Purchase (Accrual Quality) (Table 3-B3 ERM Date)

Insider Stock Purchase: ERM Date
Cumulative Abnormal Return (CAR) Ordinary Least Squares Regression Model with Heteroscedasticity-Consistent Standard Errors
Number of Transactions = 11,355 (Insider-Firm-Day Level Data); Sample Period = 1996 to 2013

Event Study is based on the Market Model using:	**A. CRSP Value-Weighted Index**				**B. CRSP Equal-Weighted Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Independent Variables								
ERM Date	-0.0118**	-0.0345***	-0.0379***	-0.0317*	-0.0123***	-0.0350***	-0.0341***	-0.0258
	(0.0047)	(0.0083)	(0.0130)	(0.0177)	(0.0046)	(0.0080)	(0.0132)	(0.0179)
Insider Type								
CEO	0.0146***	0.0301***	0.0293**	0.0417***	0.0189***	0.0351***	0.0351***	0.0497***
	(0.0050)	(0.0084)	(0.0126)	(0.0158)	(0.0049)	(0.0082)	(0.0123)	(0.0154)
CFO	0.0235***	0.0411***	0.0395**	0.0238	0.0245***	0.0425***	0.0430***	0.0314
	(0.0073)	(0.0121)	(0.0170)	(0.0208)	(0.0069)	(0.0116)	(0.0161)	(0.0199)
Director	0.0085***	0.0113**	-0.0113	-0.0290***	0.0104***	0.0132**	-0.0077	-0.0211**
	(0.0032)	(0.0054)	(0.0077)	(0.0099)	(0.0032)	(0.0053)	(0.0075)	(0.0096)
Officer	0.0186***	0.0202***	0.0146	-0.0016	0.0173***	0.0191***	0.0094	-0.0029
	(0.0043)	(0.0074)	(0.0101)	(0.0129)	(0.0041)	(0.0071)	(0.0099)	(0.0125)
Large Shareholders	0.0085	0.0121	0.0620	0.1485**	0.0149	0.0096	0.0985***	0.2202***
	(0.0393)	(0.0160)	(0.0400)	(0.0638)	(0.0352)	(0.0185)	(0.0382)	(0.0564)
Past Stock Performance								
RET <= -20%	0.0616***	0.0738***	0.0751***	0.0596**	0.0676***	0.0654***	0.0464**	0.0198
	(0.0104)	(0.0162)	(0.0219)	(0.0284)	(0.0103)	(0.0159)	(0.0218)	(0.0282)
RET > 20%	0.0107	0.0026	0.0006	0.0456	0.0072	-0.0116	-0.0158	0.0301
	(0.0117)	(0.0172)	(0.0227)	(0.0305)	(0.0112)	(0.0167)	(0.0224)	(0.0295)
Information Uncertainty								
Small Firms	0.0307***	0.0642***	0.1054***	0.1214***	0.0258***	0.0484***	0.0923***	0.1013***
	(0.0036)	(0.0061)	(0.0089)	(0.0118)	(0.0036)	(0.0061)	(0.0088)	(0.0115)
Medium Firms	0.0155***	0.0317***	0.0447***	0.0421***	0.0099***	0.0177***	0.0400***	0.0329***
	(0.0038)	(0.0062)	(0.0091)	(0.0116)	(0.0037)	(0.0063)	(0.0091)	(0.0115)
High Stock Volatility Firms	0.0202***	0.0300***	0.0660***	0.0953***	0.0183***	0.0233***	0.0439***	0.0633***
	(0.0031)	(0.0050)	(0.0075)	(0.0099)	(0.0030)	(0.0049)	(0.0075)	(0.0098)
Medium Stock Volatility Firms	0.0075***	0.0007	0.0197***	0.0264***	0.0088***	0.0012	0.0136**	0.0197***
	(0.0024)	(0.0040)	(0.0059)	(0.0075)	(0.0023)	(0.0040)	(0.0059)	(0.0075)
Financial Crisis Period (December 2007 to June 2009)	0.0098	0.1199***	0.2411***	0.2722***	0.0007	0.0603***	0.1136***	0.1126***
	(0.0092)	(0.0177)	(0.0254)	(0.0332)	(0.0087)	(0.0160)	(0.0217)	(0.0286)
Accrual Quality (FLOS, 2005)	<-0.0000	<0.0000**	<0.0000**	<0.0000**	<-0.0000	<0.0000**	<0.0000*	<0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)

(continued on next page)

Appendix 3-B: Regression Results with Insider Purchase (Accrual Quality) (Table 3-B3 ERM Date) (cont.)

Insider Stock Purchase: ERM Date (cont.)

Event Study is based on the Market Model using:	**A. CRSP Value-Weighted Index**				**B. CRSP Equal-Weighted Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Control Variables								
Number of insider shares traded at insider level	<0.0000***	<0.0000**	<0.0000	<0.0000	<0.0000***	<0.0000**	<0.0000	<0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Number of insider shares traded at company level (%)	0.0111*	-0.0037	-0.0195***	-0.0515***	0.0142**	0.0031	-0.0142**	-0.0431***
	(0.0059)	(0.0035)	(0.0071)	(0.0172)	(0.0063)	(0.0038)	(0.0061)	(0.0151)
Market to book ratio (MTB)	0.0001	-0.0000	-0.0002	-0.0002	0.0001	-0.0001	-0.0002	-0.0003
	(0.0001)	(0.0001)	(0.0002)	(0.0002)	(0.0001)	(0.0001)	(0.0002)	(0.0003)
Loss (binary variable for net income < 0)	0.0034	-0.0006	-0.0092	0.0155	0.0023	-0.0029	-0.0082	0.0059
	(0.0035)	(0.0060)	(0.0082)	(0.0104)	(0.0034)	(0.0057)	(0.0079)	(0.0100)
Return on assets (ROA)	0.0006	-0.1339**	-0.2292***	-0.1721	-0.0200	-0.1422**	-0.2428***	-0.2247**
	(0.0354)	(0.0671)	(0.0819)	(0.1062)	(0.0344)	(0.0626)	(0.0779)	(0.1021)
Leverage ratio (long-term debt/ equity)	-0.0000	0.0001	0.0003	0.0003	-0.0001	0.0001	0.0003	0.0003
	(0.0001)	(0.0001)	(0.0002)	(0.0003)	(0.0002)	(0.0002)	(0.0003)	(0.0003)
Insurance industry	-0.0103	0.0142	-0.1146	-0.1011	-0.0083	0.0084	-0.1204	-0.1231
	(0.0284)	(0.0549)	(0.0848)	(0.0976)	(0.0257)	(0.0517)	(0.0854)	(0.0954)
January	-0.0203***	-0.0589***	-0.0534***	-0.0692***	-0.0190***	-0.0163*	0.0087	-0.0152
	(0.0059)	(0.0095)	(0.0131)	(0.0166)	(0.0055)	(0.0094)	(0.0131)	(0.0167)
Fourth Quarter	0.0100***	0.0320***	0.0416***	0.0659***	-0.0055*	-0.0182***	-0.0168**	-0.0010
	(0.0033)	(0.0055)	(0.0079)	(0.0103)	(0.0032)	(0.0054)	(0.0079)	(0.0100)
Constant	-0.0354	-0.0814	-0.0009	0.0103	-0.0323	-0.0586	0.0326	0.0766
	(0.0268)	(0.0528)	(0.0817)	(0.0920)	(0.0240)	(0.0489)	(0.0820)	(0.0886)
Year Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Sector Industry Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
R-squared	10.07%	14.31%	17.28%	18.57%	9.28%	10.34%	12.26%	12.83%

1. Heteroscedasticity-consistent standard errors are in parentheses.
2. The symbols ***, **, * show the significance at the 0.01, 0.05, and 0.10 levels of the t-test, respectively.
3. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock transactions, respectively. We employ the event study method based on the Market Model using CRSP value-weighted index and CRSP equal-weighted index, respectively.
4. We employ an indicator variable (ERM Date) to identify whether a firm employs ERM on the specific date over the sample period. For example, if a firm adopts ERM on March 1st 2004, the ERM indicator variable will be assigned with a value of one for March 1st 2014 and the following dates. If we do not find the enactment date of ERM, we use the SEC filing date/report date as the first evidence of ERM of a firm.
5. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares. We employ five binary variables to proxy CEO, CFO, director, officer, and large shareholders who made stock transactions of a firm from 1996 to 2013, respectively.
6. We use two binary variables to proxy significant changes in firm's stock prices (i.e., past stock performance): RET is less than -20% and RET is greater than 20%. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., 4 day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., 2 day past stock performance) to proxy RET and get similar results.
7. We employ two binary variables for firm size based on market capitalization: small firms with market capitalization less than or equal to $202,158,805 (33.33th percentile of the insider stock purchase and sale sample), medium firms with market capitalization between $202,158,805 and $1,068,003,868 (33.33th percentile to 66.66th percentile), and large firms with market capitalization greater than $1,068,003,868 (66.66th percentile).
8. We employ two binary variables for stock volatility of a firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: low stock volatility firms with stock volatility less than or equal to 0.019601 (33.33th percentile of the insider stock purchase and sale sample), medium stock volatility firms with stock volatility between 0.019601 and 0.032981 (33.33th percentile to 66.66th percentile), and high stock volatility firms with stock volatility greater than 0.032981 (66.66th percentile).
9. We employ a binary variable for the period of 2008 financial crisis (December 2007 to June 2009).
10. We use accrual quality to proxy information risk based on the model used in FLOS (2005) (Eckles, Halek, and Zhang, 2013).

Appendix 3-C: Regression Results with Insider Purchase (Information Quality) (Table 3-C1 ERM Year)

Insider Stock Purchase: ERM Year
Cumulative Abnormal Return (CAR) Ordinary Least Squares Regression Model with Heteroscedasticity-Consistent Standard Errors
Number of Transactions = 10,981 (Insider-Firm-Day Level Data); Sample Period = 1996 to 2013

Event Study is based on the Market Model using:	**A. CRSP Value-Weighted Index**				**B. CRSP Equal-Weighted Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Independent Variables								
ERM Year	0.0035	0.0026	0.0160*	0.0171	0.0050	0.0056	0.0146*	0.0178
	(0.0032)	(0.0053)	(0.0085)	(0.0109)	(0.0031)	(0.0053)	(0.0085)	(0.0111)
Insider Type								
CEO	0.0130**	0.0352***	0.0183	0.0240	0.0107**	0.0297***	0.0142	0.0188
	(0.0051)	(0.0090)	(0.0128)	(0.0173)	(0.0051)	(0.0087)	(0.0127)	(0.0173)
CFO	0.0218***	0.0409***	0.0217	0.0238	0.0234***	0.0372***	0.0204	0.0282
	(0.0073)	(0.0124)	(0.0175)	(0.0230)	(0.0072)	(0.0120)	(0.0176)	(0.0233)
Director	0.0134***	0.0308***	0.0023	-0.0013	0.0124***	0.0268***	0.0003	0.0020
	(0.0035)	(0.0062)	(0.0096)	(0.0123)	(0.0034)	(0.0060)	(0.0092)	(0.0118)
Officer	0.0135***	0.0313***	0.0102	0.0012	0.0114***	0.0277***	0.0106	0.0061
	(0.0041)	(0.0072)	(0.0108)	(0.0142)	(0.0040)	(0.0069)	(0.0105)	(0.0138)
Past Stock Performance								
RET <= -20%	0.0497***	0.0556***	0.1004***	0.0896***	0.0553***	0.0491***	0.0638***	0.0269
	(0.0107)	(0.0168)	(0.0212)	(0.0272)	(0.0104)	(0.0159)	(0.0208)	(0.0266)
RET > 20%	0.0047	0.0094	-0.0056	0.0467	-0.0069	-0.0159	-0.0299	0.0187
	(0.0133)	(0.0211)	(0.0276)	(0.0438)	(0.0131)	(0.0199)	(0.0279)	(0.0430)
Information Uncertainty								
Small Firms	0.0171***	0.0466***	0.0798***	0.0930***	0.0139***	0.0315***	0.0681***	0.0786***
	(0.0041)	(0.0070)	(0.0108)	(0.0132)	(0.0041)	(0.0069)	(0.0109)	(0.0134)
Medium Firms	0.0053	0.0110**	0.0206**	0.0186*	0.0055*	0.0079	0.0244***	0.0225**
	(0.0033)	(0.0054)	(0.0084)	(0.0105)	(0.0034)	(0.0055)	(0.0085)	(0.0108)
High Stock Volatility Firms	0.0084***	0.0072	0.0114	0.0297***	0.0072**	0.0050	-0.0123	-0.0077
	(0.0030)	(0.0052)	(0.0080)	(0.0101)	(0.0030)	(0.0051)	(0.0079)	(0.0100)
Medium Stock Volatility Firms	0.0030	0.0023	0.0084*	0.0191***	0.0034*	0.0032	0.0037	0.0101
	(0.0019)	(0.0034)	(0.0050)	(0.0062)	(0.0019)	(0.0033)	(0.0049)	(0.0062)
Financial Crisis Period (December 2007 to June 2009)	-0.0029	0.0437***	0.1490***	0.1041***	-0.0222***	-0.0293*	0.0089	-0.0870***
	(0.0083)	(0.0167)	(0.0216)	(0.0267)	(0.0080)	(0.0151)	(0.0198)	(0.0255)
Information Quality (Transparency)	0.0143***	0.0350***	0.0663***	0.1005***	0.0142***	0.0371***	0.0711***	0.1060***
	(0.0041)	(0.0066)	(0.0088)	(0.0109)	(0.0040)	(0.0065)	(0.0087)	(0.0108)

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Appendix 3-C: Regression Results with Insider Purchase (Information Quality) (Table 3-C1 ERM Year) (cont.)

Insider Stock Purchase: ERM Year (cont.)

Event Study is based on the Market Model using:	**A. CRSP Value-Weighted Index**				**B. CRSP Equal-Weighted Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Control Variables								
Number of insider shares traded at insider level	<0.0000	<0.0000	<-0.0000	<0.0000	<0.0000	<0.0000	<-0.0000	<-0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Number of insider shares traded at company level (%)	0.0141**	0.0116	0.0387***	0.0210	0.0133**	0.0126*	0.0388***	0.0260*
	(0.0060)	(0.0080)	(0.0137)	(0.0155)	(0.0058)	(0.0076)	(0.0132)	(0.0155)
Market to book ratio (MTB)	-0.0001	-0.0005	-0.0011*	-0.0014*	-0.0000	-0.0004	-0.0009	-0.0012*
	(0.0001)	(0.0004)	(0.0006)	(0.0007)	(0.0001)	(0.0003)	(0.0005)	(0.0006)
Loss (binary variable for net income < 0)	0.0023	-0.0106*	-0.0149*	-0.0056	0.0055	-0.0076	-0.0086	0.0004
	(0.0037)	(0.0057)	(0.0083)	(0.0105)	(0.0034)	(0.0054)	(0.0082)	(0.0104)
Return on assets (ROA)	-0.0517	-0.2323***	-0.2000***	-0.1814***	-0.0471*	-0.1667***	-0.1273***	-0.1282***
	(0.0348)	(0.0467)	(0.0425)	(0.0547)	(0.0269)	(0.0344)	(0.0404)	(0.0497)
Leverage ratio (long-term debt/ equity)	0.0002	0.0009*	0.0017**	0.0021**	0.0001	0.0007*	0.0014*	0.0018**
	(0.0002)	(0.0005)	(0.0008)	(0.0010)	(0.0002)	(0.0004)	(0.0007)	(0.0009)
Insurance industry	0.0145	0.0267*	0.0166	0.0150	0.0134	0.0254*	0.0045	-0.0060
	(0.0105)	(0.0140)	(0.0229)	(0.0265)	(0.0105)	(0.0141)	(0.0218)	(0.0255)
Banking industry	-0.0131**	-0.0054	0.0257**	0.0328**	-0.0137***	-0.0061	0.0090	0.0086
	(0.0051)	(0.0087)	(0.0112)	(0.0148)	(0.0051)	(0.0088)	(0.0116)	(0.0154)
January	-0.0082*	-0.0472***	0.0048	-0.0058	-0.0109**	-0.0101	0.0678***	0.0398***
	(0.0049)	(0.0082)	(0.0117)	(0.0142)	(0.0048)	(0.0082)	(0.0117)	(0.0144)
Fourth Quarter	-0.0011	0.0227***	0.0031	0.0194**	-0.0078**	-0.0183***	-0.0565***	-0.0364***
	(0.0032)	(0.0054)	(0.0076)	(0.0095)	(0.0031)	(0.0053)	(0.0076)	(0.0095)
Constant	-0.0035	-0.0278*	-0.0603**	-0.0821***	0.0051	-0.0063	-0.0257	-0.0277
	(0.0096)	(0.0165)	(0.0240)	(0.0307)	(0.0095)	(0.0164)	(0.0241)	(0.0310)
Year Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Sector Industry Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
R-squared	8.33%	12.16%	13.40%	12.56%	7.99%	7.95%	10.09%	10.16%

1. Heteroscedasticity-consistent standard errors are in parentheses.
2. The symbols ***, **, * show the significance at the 0.01, 0.05, and 0.10 levels of the t-test, respectively.
3. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock transactions, respectively. We employ the event study method based on the Market Model using CRSP value-weighted index and CRSP equal-weighted index, respectively.
4. We employ an indicator variable (ERM Year) to identify whether a firm employs ERM in any given year over the sample period. For example, if a firm adopts ERM in 2004, the ERM indicator variable will be assigned with a value of one for year 2004 and the following years.
5. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares. We employ five binary variables to proxy CEO, CFO, director, officer, and large shareholders who made stock transactions of a firm from 1996 to 2013, respectively.
6. We use two binary variables to proxy significant changes in firm's stock prices (i.e., past stock performance): RET is less than -20% and RET is greater than 20%. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., 4 day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., 2 day past stock performance) to proxy RET and get similar results.
7. We employ two binary variables for firm size based on market capitalization: small firms with market capitalization less than or equal to $202,158,805 (33.33th percentile of the insider stock purchase and sale sample), medium firms with market capitalization between $202,158,805 and $1,068,003,868 (33.33th percentile to 66.66th percentile), and large firms with market capitalization greater than $1,068,003,868 (66.66th percentile).
8. We employ two binary variables for stock volatility of a firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: low stock volatility firms with stock volatility less than or equal to 0.019601 (33.33th percentile of the insider stock purchase and sale sample), medium stock volatility firms with stock volatility between 0.019601 and 0.032981 (33.33th percentile to 66.66th percentile), and high stock volatility firms with stock volatility greater than 0.032981 (66.66th percentile).
9. We employ a binary variable for the period of 2008 financial crisis (December 2007 to June 2009).
10. As for information quality (transparency) variable, we follow Wade, Hoyt, and Liebenberg (2015) and calculate dispersion (DISP) based on Diether, Malloy, and Scherbina (2002).

Appendix 3-C: Regression Results with Insider Purchase (Information Quality) (Table 3-C2 ERM Year +1)

Insider Stock Purchase: ERM Year +1
Cumulative Abnormal Return (CAR) Ordinary Least Squares Regression Model with Heteroscedasticity-Consistent Standard Errors
Number of Transactions = 10,981 (Insider-Firm-Day Level Data); Sample Period = 1996 to 2013

Event Study is based on the Market Model using:	**A. CRSP Value-Weighted Index**				**B. CRSP Equal-Weighted Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Independent Variables								
ERM Year +1	0.0063*	0.0069	0.0145*	0.0093	0.0075**	0.0111**	0.0147*	0.0112
	(0.0033)	(0.0056)	(0.0088)	(0.0115)	(0.0032)	(0.0054)	(0.0088)	(0.0117)
Insider Type								
CEO	0.0129**	0.0350***	0.0184	0.0245	0.0106**	0.0295***	0.0142	0.0192
	(0.0051)	(0.0090)	(0.0128)	(0.0173)	(0.0051)	(0.0087)	(0.0127)	(0.0173)
CFO	0.0216***	0.0406***	0.0220	0.0245	0.0232***	0.0369***	0.0206	0.0288
	(0.0073)	(0.0123)	(0.0175)	(0.0230)	(0.0072)	(0.0120)	(0.0175)	(0.0233)
Director	0.0133***	0.0306***	0.0026	-0.0006	0.0123***	0.0266***	0.0005	0.0025
	(0.0035)	(0.0062)	(0.0096)	(0.0123)	(0.0034)	(0.0060)	(0.0092)	(0.0118)
Officer	0.0135***	0.0313***	0.0103	0.0015	0.0114***	0.0276***	0.0107	0.0064
	(0.0041)	(0.0072)	(0.0108)	(0.0142)	(0.0040)	(0.0069)	(0.0105)	(0.0137)
Past Stock Performance								
RET <= -20%	0.0496***	0.0555***	0.1005***	0.0898***	0.0553***	0.0489***	0.0637***	0.0271
	(0.0107)	(0.0168)	(0.0212)	(0.0272)	(0.0104)	(0.0159)	(0.0208)	(0.0265)
RET > 20%	0.0049	0.0096	-0.0055	0.0465	-0.0067	-0.0156	-0.0298	0.0186
	(0.0133)	(0.0211)	(0.0276)	(0.0438)	(0.0131)	(0.0200)	(0.0279)	(0.0430)
Information Uncertainty								
Small Firms	0.0174***	0.0470***	0.0799***	0.0926***	0.0141***	0.0320***	0.0683***	0.0782***
	(0.0041)	(0.0070)	(0.0108)	(0.0132)	(0.0041)	(0.0069)	(0.0109)	(0.0134)
Medium Firms	0.0054	0.0113**	0.0204**	0.0180*	0.0057*	0.0082	0.0243***	0.0220**
	(0.0033)	(0.0054)	(0.0084)	(0.0105)	(0.0034)	(0.0055)	(0.0085)	(0.0108)
High Stock Volatility Firms	0.0082***	0.0070	0.0112	0.0298***	0.0071**	0.0048	-0.0125	-0.0077
	(0.0030)	(0.0052)	(0.0079)	(0.0101)	(0.0030)	(0.0051)	(0.0079)	(0.0100)
Medium Stock Volatility Firms	0.0029	0.0022	0.0082	0.0190***	0.0033*	0.0031	0.0034	0.0099
	(0.0019)	(0.0034)	(0.0050)	(0.0062)	(0.0019)	(0.0033)	(0.0049)	(0.0062)
Financial Crisis Period (December 2007 to June 2009)	-0.0029	0.0437***	0.1489***	0.1038***	-0.0222***	-0.0293*	0.0087	-0.0872***
	(0.0083)	(0.0167)	(0.0216)	(0.0267)	(0.0080)	(0.0152)	(0.0198)	(0.0255)
Information Quality (Transparency)	0.0142***	0.0350***	0.0661***	0.1003***	0.0141***	0.0370***	0.0709***	0.1058***
	(0.0041)	(0.0066)	(0.0088)	(0.0109)	(0.0040)	(0.0065)	(0.0087)	(0.0108)

(continued on next page)

Appendix 3-C: Regression Results with Insider Purchase (Information Quality) (Table 3-C2 ERM Year +1) (cont.)

Insider Stock Purchase: ERM Year +1 (cont.)

Event Study is based on the Market Model using:	**A. CRSP Value-Weighted Index**				**B. CRSP Equal-Weighted Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Control Variables								
Number of insider shares traded at insider level	<0.0000	<0.0000	<-0.0000	<0.0000	<0.0000	<0.0000	<-0.0000	<-0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Number of insider shares traded at company level (%)	0.0141**	0.0117	0.0386***	0.0206	0.0133**	0.0127*	0.0387***	0.0256*
	(0.0060)	(0.0080)	(0.0137)	(0.0155)	(0.0058)	(0.0076)	(0.0132)	(0.0155)
Market to book ratio (MTB)	-0.0001	-0.0005	-0.0011*	-0.0014*	-0.0000	-0.0004	-0.0009	-0.0012*
	(0.0001)	(0.0004)	(0.0006)	(0.0007)	(0.0001)	(0.0003)	(0.0005)	(0.0006)
Loss (binary variable for net income < 0)	0.0022	-0.0106*	-0.0150*	-0.0056	0.0055	-0.0076	-0.0086	0.0003
	(0.0037)	(0.0057)	(0.0083)	(0.0105)	(0.0034)	(0.0054)	(0.0082)	(0.0104)
Return on assets (ROA)	-0.0514	-0.2320***	-0.1999***	-0.1818***	-0.0468*	-0.1662***	-0.1270***	-0.1285***
	(0.0348)	(0.0467)	(0.0425)	(0.0548)	(0.0269)	(0.0344)	(0.0404)	(0.0497)
Leverage ratio (long-term debt/ equity)	0.0002	0.0009*	0.0017**	0.0021**	0.0001	0.0007*	0.0014*	0.0018**
	(0.0002)	(0.0005)	(0.0008)	(0.0010)	(0.0002)	(0.0004)	(0.0007)	(0.0009)
Insurance industry	0.0150	0.0273*	0.0181	0.0161	0.0141	0.0264*	0.0059	-0.0048
	(0.0105)	(0.0140)	(0.0229)	(0.0266)	(0.0104)	(0.0141)	(0.0218)	(0.0256)
Banking industry	-0.0136***	-0.0063	0.0270**	0.0357**	-0.0140***	-0.0072	0.0099	0.0112
	(0.0051)	(0.0086)	(0.0111)	(0.0147)	(0.0050)	(0.0088)	(0.0115)	(0.0153)
January	-0.0083*	-0.0475***	0.0050	-0.0051	-0.0110**	-0.0104	0.0679***	0.0405***
	(0.0049)	(0.0082)	(0.0116)	(0.0142)	(0.0047)	(0.0082)	(0.0117)	(0.0144)
Fourth Quarter	-0.0010	0.0228***	0.0031	0.0192**	-0.0077**	-0.0181***	-0.0565***	-0.0366***
	(0.0032)	(0.0054)	(0.0076)	(0.0095)	(0.0031)	(0.0053)	(0.0076)	(0.0095)
Constant	-0.0036	-0.0279*	-0.0608**	-0.0825***	0.0049	-0.0065	-0.0261	-0.0282
	(0.0096)	(0.0165)	(0.0240)	(0.0307)	(0.0095)	(0.0164)	(0.0241)	(0.0309)
Year Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Sector Industry Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
R-squared	8.35%	12.17%	13.40%	12.55%	8.00%	7.96%	10.09%	10.14%

1. Heteroscedasticity-consistent standard errors are in parentheses.
2. The symbols ***, **, * show the significance at the 0.01, 0.05, and 0.10 levels of the t-test, respectively.
3. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock transactions, respectively. We employ the event study method based on the Market Model using CRSP value-weighted index and CRSP equal-weighted index, respectively.
4. We employ an indicator variable (ERM Year +1) to identify whether a firm employs ERM in any given year plus one year over the sample period. For example, if a firm adopts ERM in 2004, the ERM indicator variable will be assigned with a value of one for year 2005 and the following years.
5. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares. We employ five binary variables to proxy CEO, CFO, director, officer, and large shareholders who made stock transactions of a firm from 1996 to 2013, respectively.
6. We use two binary variables to proxy significant changes in firm's stock prices (i.e., past stock performance): RET is less than -20% and RET is greater than 20%. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., 4 day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., 2 day past stock performance) to proxy RET and get similar results.
7. We employ two binary variables for firm size based on market capitalization: small firms with market capitalization less than or equal to $202,158,805 (33.33th percentile of the insider stock purchase and sale sample), medium firms with market capitalization between $202,158,805 and $1,068,003,868 (33.33th percentile to 66.66th percentile), and large firms with market capitalization greater than $1,068,003,868 (66.66th percentile).
8. We employ two binary variables for stock volatility of a firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: low stock volatility firms with stock volatility less than or equal to 0.019601 (33.33th percentile of the insider stock purchase and sale sample), medium stock volatility firms with stock volatility between 0.019601 and 0.032981 (33.33th percentile to 66.66th percentile), and high stock volatility firms with stock volatility greater than 0.032981 (66.66th percentile).
9. We employ a binary variable for the period of 2008 financial crisis (December 2007 to June 2009).
10. As for information quality (transparency) variable, we follow Wade, Hoyt, and Liebenberg (2015) and calculate dispersion (DISP) based on Diether, Malloy, and Scherbina (2002).

Appendix 3-C: Regression Results with Insider Purchase (Information Quality) (Table 3-C3 ERM Date)

Insider Stock Purchase: ERM Date
Cumulative Abnormal Return (CAR) Ordinary Least Squares Regression Model with Heteroscedasticity-Consistent Standard Errors
Number of Transactions = 10,981 (Insider-Firm-Day Level Data); Sample Period = 1996 to 2013

Event Study is based on the Market Model using:	**A. CRSP Value-Weighted Index**				**B. CRSP Equal-Weighted Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Independent Variables								
ERM Date	0.0029	0.0029	0.0155*	0.0113	0.0042	0.0060	0.0143*	0.0109
	(0.0032)	(0.0054)	(0.0086)	(0.0111)	(0.0032)	(0.0053)	(0.0086)	(0.0112)
Insider Type								
CEO	0.0130**	0.0352***	0.0182	0.0243	0.0107**	0.0297***	0.0141	0.0191
	(0.0051)	(0.0090)	(0.0128)	(0.0173)	(0.0051)	(0.0087)	(0.0127)	(0.0173)
CFO	0.0218***	0.0409***	0.0218	0.0243	0.0234***	0.0371***	0.0205	0.0287
	(0.0073)	(0.0124)	(0.0176)	(0.0230)	(0.0072)	(0.0120)	(0.0176)	(0.0233)
Director	0.0135***	0.0308***	0.0024	-0.0008	0.0124***	0.0268***	0.0004	0.0024
	(0.0035)	(0.0062)	(0.0096)	(0.0123)	(0.0034)	(0.0060)	(0.0092)	(0.0118)
Officer	0.0136***	0.0313***	0.0102	0.0013	0.0115***	0.0277***	0.0106	0.0063
	(0.0041)	(0.0072)	(0.0108)	(0.0142)	(0.0040)	(0.0069)	(0.0105)	(0.0138)
Past Stock Performance								
RET <= -20%	0.0497***	0.0556***	0.1005***	0.0898***	0.0554***	0.0491***	0.0638***	0.0271
	(0.0107)	(0.0168)	(0.0212)	(0.0272)	(0.0104)	(0.0159)	(0.0208)	(0.0265)
RET > 20%	0.0047	0.0094	-0.0055	0.0465	-0.0069	-0.0159	-0.0299	0.0185
	(0.0133)	(0.0211)	(0.0276)	(0.0438)	(0.0131)	(0.0199)	(0.0279)	(0.0430)
Information Uncertainty								
Small Firms	0.0170***	0.0466***	0.0798***	0.0927***	0.0138***	0.0315***	0.0681***	0.0781***
	(0.0041)	(0.0070)	(0.0108)	(0.0132)	(0.0041)	(0.0069)	(0.0109)	(0.0134)
Medium Firms	0.0052	0.0111**	0.0206**	0.0182*	0.0055	0.0079	0.0244***	0.0220**
	(0.0033)	(0.0054)	(0.0084)	(0.0105)	(0.0034)	(0.0055)	(0.0085)	(0.0108)
High Stock Volatility Firms	0.0083***	0.0072	0.0112	0.0297***	0.0072**	0.0050	-0.0124	-0.0077
	(0.0030)	(0.0052)	(0.0079)	(0.0101)	(0.0030)	(0.0051)	(0.0079)	(0.0100)
Medium Stock Volatility Firms	0.0030	0.0022	0.0083*	0.0190***	0.0033*	0.0031	0.0035	0.0099
	(0.0019)	(0.0034)	(0.0050)	(0.0062)	(0.0019)	(0.0033)	(0.0049)	(0.0062)
Financial Crisis Period (December 2007 to June 2009)	-0.0030	0.0437***	0.1490***	0.1039***	-0.0222***	-0.0293*	0.0089	-0.0871***
	(0.0083)	(0.0167)	(0.0216)	(0.0267)	(0.0080)	(0.0151)	(0.0198)	(0.0255)
Information Quality (Transparency)	0.0143***	0.0350***	0.0662***	0.1004***	0.0141***	0.0371***	0.0710***	0.1059***
	(0.0041)	(0.0066)	(0.0088)	(0.0109)	(0.0040)	(0.0065)	(0.0087)	(0.0108)

(continued on next page)

Appendix 3-C: Regression Results with Insider Purchase (Information Quality) (Table 3-C3 ERM Date) (cont.)

Insider Stock Purchase: ERM Date (cont.)

Event Study is based on the Market Model using:	**A. CRSP Value-Weighted Index**				**B. CRSP Equal-Weighted Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Control Variables								
Number of insider shares traded at insider level	<0.0000	<0.0000	<-0.0000	<0.0000	<0.0000	<0.0000	<-0.0000	<-0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Number of insider shares traded at company level (%)	0.0140**	0.0116	0.0387***	0.0208	0.0132**	0.0126*	0.0388***	0.0257*
	(0.0060)	(0.0080)	(0.0137)	(0.0155)	(0.0058)	(0.0076)	(0.0132)	(0.0155)
Market to book ratio (MTB)	-0.0001	-0.0005	-0.0011*	-0.0014*	-0.0000	-0.0004	-0.0009	-0.0012*
	(0.0001)	(0.0004)	(0.0006)	(0.0007)	(0.0001)	(0.0003)	(0.0005)	(0.0006)
Loss (binary variable for net income < 0)	0.0023	-0.0106*	-0.0149*	-0.0056	0.0055	-0.0076	-0.0086	0.0004
	(0.0037)	(0.0057)	(0.0083)	(0.0105)	(0.0034)	(0.0054)	(0.0082)	(0.0104)
Return on assets (ROA)	-0.0517	-0.2323***	-0.2001***	-0.1818***	-0.0471*	-0.1667***	-0.1274***	-0.1287***
	(0.0348)	(0.0467)	(0.0425)	(0.0548)	(0.0269)	(0.0344)	(0.0404)	(0.0497)
Leverage ratio (long-term debt/ equity)	0.0002	0.0009*	0.0017**	0.0021**	0.0001	0.0007*	0.0014*	0.0018**
	(0.0002)	(0.0005)	(0.0008)	(0.0010)	(0.0002)	(0.0004)	(0.0007)	(0.0009)
Insurance industry	0.0145	0.0267*	0.0167	0.0152	0.0134	0.0255*	0.0045	-0.0058
	(0.0105)	(0.0140)	(0.0229)	(0.0266)	(0.0105)	(0.0141)	(0.0218)	(0.0256)
Banking industry	-0.0128**	-0.0054	0.0262**	0.0348**	-0.0133***	-0.0061	0.0095	0.0109
	(0.0051)	(0.0087)	(0.0112)	(0.0147)	(0.0051)	(0.0088)	(0.0115)	(0.0153)
January	-0.0080*	-0.0471***	0.0053	-0.0050	-0.0107**	-0.0099	0.0682***	0.0407***
	(0.0049)	(0.0082)	(0.0116)	(0.0142)	(0.0047)	(0.0082)	(0.0117)	(0.0143)
Fourth Quarter	-0.0011	0.0227***	0.0031	0.0192**	-0.0079**	-0.0183***	-0.0566***	-0.0367***
	(0.0032)	(0.0054)	(0.0076)	(0.0095)	(0.0031)	(0.0053)	(0.0076)	(0.0095)
Constant	-0.0035	-0.0278*	-0.0605**	-0.0823***	0.0050	-0.0063	-0.0258	-0.0280
	(0.0096)	(0.0165)	(0.0240)	(0.0307)	(0.0095)	(0.0164)	(0.0241)	(0.0309)
Year Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Sector Industry Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
R-squared	8.33%	12.16%	13.40%	12.55%	7.98%	7.95%	10.09%	10.14%

1. Heteroscedasticity-consistent standard errors are in parentheses.
2. The symbols ***, **, * show the significance at the 0.01, 0.05, and 0.10 levels of the t-test, respectively.
3. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock transactions, respectively. We employ the event study method based on the Market Model using CRSP value-weighted index and CRSP equal-weighted index, respectively.
4. We employ an indicator variable (ERM Date) to identify whether a firm employs ERM on the specific date over the sample period. For example, if a firm adopts ERM on March 1st 2004, the ERM indicator variable will be assigned with a value of one for March 1st 2014 and the following dates. If we do not find the enactment date of ERM, we use the SEC filing date/report date as the first evidence of ERM of a firm.
5. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares. We employ five binary variables to proxy CEO, CFO, director, officer, and large shareholders who made stock transactions of a firm from 1996 to 2013, respectively.
6. We use two binary variables to proxy significant changes in firm's stock prices (i.e., past stock performance): RET is less than -20% and RET is greater than 20%. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., 4 day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., 2 day past stock performance) to proxy RET and get similar results.
7. We employ two binary variables for firm size based on market capitalization: small firms with market capitalization less than or equal to $202,158,805 (33.33th percentile of the insider stock purchase and sale sample), medium firms with market capitalization between $202,158,805 and $1,068,003,868 (33.33th percentile to 66.66th percentile), and large firms with market capitalization greater than $1,068,003,868 (66.66th percentile).
8. We employ two binary variables for stock volatility of a firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: low stock volatility firms with stock volatility less than or equal to 0.019601 (33.33th percentile of the insider stock purchase and sale sample), medium stock volatility firms with stock volatility between 0.019601 and 0.032981 (33.33th percentile to 66.66th percentile), and high stock volatility firms with stock volatility greater than 0.032981 (66.66th percentile).
9. We employ a binary variable for the period of 2008 financial crisis (December 2007 to June 2009).
10. As for information quality (transparency) variable, we follow Wade, Hoyt, and Liebenberg (2015) and calculate dispersion (DISP) based on Diether, Malloy, and Scherbina (2002).

Appendix 3-D: Regression Results with Insider Purchase (Accrual Quality with ERM) (Table 3-D1 ERM Year)

Insider Stock Purchase: ERM Year
Cumulative Abnormal Return (CAR) Ordinary Least Squares Regression Model with Heteroscedasticity-Consistent Standard Errors
Number of Transactions = 11,355 (Insider-Firm-Day Level Data); Sample Period = 1996 to 2013

Event Study is based on the Market Model using:	A. CRSP Value-Weighted Index				B. CRSP Equal-Weighted Index			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Independent Variables								
ERM								
ERM Year	-0.0119**	0.0046	0.0207	0.0647***	-0.0115**	0.0037	0.0190	0.0591***
	(0.0055)	(0.0090)	(0.0141)	(0.0178)	(0.0055)	(0.0090)	(0.0141)	(0.0175)
ERM Year * Small Firms	0.0109	-0.0091	-0.0356	-0.0073	0.0073	-0.0116	-0.0163	0.0171
	(0.0088)	(0.0149)	(0.0219)	(0.0310)	(0.0086)	(0.0143)	(0.0216)	(0.0303)
ERM Year * High Stock Volatility Firms	-0.0211**	-0.0790***	-0.0598**	-0.0468	-0.0107	-0.0624***	-0.0445*	-0.0275
	(0.0090)	(0.0156)	(0.0251)	(0.0318)	(0.0088)	(0.0152)	(0.0250)	(0.0317)
ERM Year * Financial Crisis Period	0.0323**	-0.0435**	-0.2080***	-0.4197***	0.0290**	-0.0487**	-0.2265***	-0.4268***
	(0.0139)	(0.0204)	(0.0391)	(0.0517)	(0.0139)	(0.0201)	(0.0413)	(0.0545)
ERM Year * Accrual Quality (FLOS, 2005)	<0.0000	<-0.0000	<-0.0000	-0.0001***	<0.0000	<-0.0000	<-0.0000	-0.0001**
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
ERM Year * RET <= -20%	-0.0122	-0.0904**	-0.1378**	-0.2095**	-0.0329	-0.0966**	-0.1479**	-0.2258**
	(0.0290)	(0.0445)	(0.0688)	(0.0925)	(0.0291)	(0.0407)	(0.0738)	(0.0968)
ERM Year * RET > 20%	-0.0793***	-0.0635	0.3929***	0.7619**	-0.0836***	-0.0556	0.3976***	0.7716**
	(0.0300)	(0.0557)	(0.1404)	(0.3296)	(0.0254)	(0.0727)	(0.1313)	(0.3066)
ERM Year * CEO	-0.0088	-0.0011	-0.0127	-0.0671	-0.0149	-0.0097	-0.0266	-0.0832
	(0.0128)	(0.0252)	(0.0447)	(0.0514)	(0.0126)	(0.0254)	(0.0459)	(0.0530)
Insider Type								
CEO	0.0149***	0.0287***	0.0289**	0.0454***	0.0197***	0.0344***	0.0360***	0.0547***
	(0.0052)	(0.0087)	(0.0129)	(0.0163)	(0.0051)	(0.0085)	(0.0126)	(0.0158)
CFO	0.0234***	0.0393***	0.0371**	0.0206	0.0246***	0.0409***	0.0408**	0.0286
	(0.0073)	(0.0121)	(0.0170)	(0.0208)	(0.0069)	(0.0116)	(0.0162)	(0.0200)
Director	0.0084***	0.0101*	-0.0126	-0.0303***	0.0103***	0.0121**	-0.0088	-0.0222**
	(0.0032)	(0.0053)	(0.0077)	(0.0099)	(0.0032)	(0.0053)	(0.0075)	(0.0096)
Officer	0.0185***	0.0184**	0.0114	-0.0059	0.0174***	0.0175**	0.0065	-0.0068
	(0.0043)	(0.0074)	(0.0101)	(0.0129)	(0.0041)	(0.0071)	(0.0099)	(0.0125)
Large Shareholders	0.0083	0.0100	0.0606	0.1479**	0.0149	0.0079	0.0980**	0.2209***
	(0.0394)	(0.0160)	(0.0405)	(0.0646)	(0.0353)	(0.0185)	(0.0386)	(0.0570)
Past Stock Performance								
RET <= -20%	0.0627***	0.0822***	0.0892***	0.0828***	0.0700***	0.0740***	0.0617***	0.0448
	(0.0110)	(0.0171)	(0.0228)	(0.0292)	(0.0109)	(0.0167)	(0.0225)	(0.0287)
RET > 20%	0.0121	0.0032	-0.0073	0.0322	0.0088	-0.0110	-0.0233	0.0171
	(0.0119)	(0.0175)	(0.0228)	(0.0296)	(0.0114)	(0.0169)	(0.0224)	(0.0288)
Information Uncertainty								
Small Firms	0.0299***	0.0641***	0.1065***	0.1212***	0.0252***	0.0487***	0.0914***	0.0982***
	(0.0037)	(0.0063)	(0.0092)	(0.0119)	(0.0037)	(0.0063)	(0.0090)	(0.0117)
Medium Firms	0.0152***	0.0327***	0.0467***	0.0456***	0.0099***	0.0189***	0.0412***	0.0352***
	(0.0038)	(0.0062)	(0.0091)	(0.0114)	(0.0038)	(0.0063)	(0.0091)	(0.0113)
High Stock Volatility Firms	0.0214***	0.0355***	0.0706***	0.0981***	0.0189***	0.0276***	0.0471***	0.0646***
	(0.0032)	(0.0052)	(0.0078)	(0.0101)	(0.0031)	(0.0051)	(0.0077)	(0.0100)
Medium Stock Volatility Firms	0.0073***	0.0010	0.0205***	0.0264***	0.0086***	0.0015	0.0140**	0.0193***
	(0.0024)	(0.0041)	(0.0059)	(0.0075)	(0.0023)	(0.0040)	(0.0059)	(0.0074)
Financial Crisis Period (December 2007 to June 2009)	0.0084	0.1204***	0.2478***	0.2875***	-0.0004	0.0612***	0.1213***	0.1285***
	(0.0092)	(0.0177)	(0.0254)	(0.0333)	(0.0088)	(0.0160)	(0.0217)	(0.0287)
Accrual Quality (FLOS, 2005)	<-0.0000	<0.0000*	0.0001*	0.0001***	<-0.0000	<0.0000	<0.0000	<0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)

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Appendix 3-D: Regression Results with Insider Purchase (Accrual Quality with ERM) (Table 3-D1 ERM Year) (cont.)

Insider Stock Purchase: ERM Year (cont.)

Event Study is based on the Market Model using:	**A. CRSP Value-Weighted Index**				**B. CRSP Equal-Weighted Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Control Variables								
Number of insider shares traded at insider level	<0.0000***	<0.0000**	<0.0000	<0.0000	<0.0000***	<0.0000**	<0.0000	<0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Number of insider shares traded at company level (%)	0.0112*	-0.0043	-0.0207***	-0.0526***	0.0143**	0.0026	-0.0152**	-0.0440***
	(0.0058)	(0.0034)	(0.0071)	(0.0174)	(0.0063)	(0.0037)	(0.0060)	(0.0153)
Market to book ratio (MTB)	0.0001	-0.0000	-0.0002	-0.0003	0.0001	-0.0001	-0.0002	-0.0003
	(0.0001)	(0.0001)	(0.0002)	(0.0002)	(0.0001)	(0.0001)	(0.0002)	(0.0003)
Loss (binary variable for net income < 0)	0.0035	-0.0001	-0.0086	0.0160	0.0024	-0.0024	-0.0079	0.0061
	(0.0035)	(0.0060)	(0.0082)	(0.0104)	(0.0034)	(0.0057)	(0.0079)	(0.0100)
Return on assets (ROA)	0.0024	-0.1289*	-0.2269***	-0.1703	-0.0189	-0.1385**	-0.2415***	-0.2245**
	(0.0355)	(0.0673)	(0.0822)	(0.1067)	(0.0345)	(0.0628)	(0.0782)	(0.1026)
Leverage ratio (long-term debt/ equity)	-0.0000	0.0001	0.0003	0.0003	-0.0001	0.0001	0.0003	0.0004
	(0.0001)	(0.0001)	(0.0002)	(0.0003)	(0.0002)	(0.0002)	(0.0003)	(0.0003)
Insurance industry	-0.0094	0.0193	-0.1123	-0.1152	-0.0084	0.0118	-0.1237	-0.1434
	(0.0284)	(0.0554)	(0.0855)	(0.0977)	(0.0257)	(0.0521)	(0.0859)	(0.0952)
January	-0.0200***	-0.0584***	-0.0535***	-0.0697***	-0.0188***	-0.0161*	0.0083	-0.0161
	(0.0059)	(0.0095)	(0.0131)	(0.0165)	(0.0055)	(0.0094)	(0.0130)	(0.0166)
Fourth Quarter	0.0100***	0.0313***	0.0401***	0.0629***	-0.0055*	-0.0189***	-0.0182**	-0.0038
	(0.0033)	(0.0055)	(0.0079)	(0.0102)	(0.0032)	(0.0054)	(0.0079)	(0.0099)
Constant	-0.0343	-0.0787	0.0016	0.0149	-0.0316	-0.0564	0.0366	0.0833
	(0.0269)	(0.0530)	(0.0820)	(0.0922)	(0.0240)	(0.0491)	(0.0822)	(0.0888)
Year Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Sector Industry Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
R-squared	10.15%	14.63%	17.76%	19.49%	9.35%	10.62%	12.81%	13.89%

1. Heteroscedasticity-consistent standard errors are in parentheses.
2. The symbols ***, **, * show the significance at the 0.01, 0.05, and 0.10 levels of the t-test, respectively.
3. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock transactions, respectively. We employ the event study method based on the Market Model using CRSP value-weighted index and CRSP equal-weighted index, respectively.
4. We employ an indicator variable (ERM Year) to identify whether a firm employs ERM in any given year over the sample period. For example, if a firm adopts ERM in 2004, the ERM indicator variable will be assigned with a value of one for year 2004 and the following years.
5. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares. We employ five binary variables to proxy CEO, CFO, director, officer, and large shareholders who made stock transactions of a firm from 1996 to 2013, respectively.
6. We use two binary variables to proxy significant changes in firm's stock prices (i.e., past stock performance): RET is less than -20% and RET is greater than 20%. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., 4 day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., 2 day past stock performance) to proxy RET and get similar results.
7. We employ two binary variables for firm size based on market capitalization: small firms with market capitalization less than or equal to $202,158,805 (33.33th percentile of the insider stock purchase and sale sample), medium firms with market capitalization between $202,158,805 and $1,068,003,868 (33.33th percentile to 66.66th percentile), and large firms with market capitalization greater than $1,068,003,868 (66.66th percentile).
8. We employ two binary variables for stock volatility of a firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: low stock volatility firms with stock volatility less than or equal to 0.019601 (33.33th percentile of the insider stock purchase and sale sample), medium stock volatility firms with stock volatility between 0.019601 and 0.032981 (33.33th percentile to 66.66th percentile), and high stock volatility firms with stock volatility greater than 0.032981 (66.66th percentile).
9. We employ a binary variable for the period of 2008 financial crisis (December 2007 to June 2009).
10. We use accrual quality to proxy information risk based on the model used in FLOS (2005) (Eckles, Halek, and Zhang, 2013).

Appendix 3-D: Regression Results with Insider Purchase (Accrual Quality with ERM) (Table 3-D2 ERM Year +1)

Insider Stock Purchase: ERM Year +1
Cumulative Abnormal Return (CAR) Ordinary Least Squares Regression Model with Heteroscedasticity-Consistent Standard Errors
Number of Transactions = 11,355 (Insider-Firm-Day Level Data); Sample Period = 1996 to 2013

Event Study is based on the Market Model using:	A. CRSP Value-Weighted Index				B. CRSP Equal-Weighted Index			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Independent Variables								
ERM								
ERM Year +1	-0.0068	0.0107	0.0186	0.0441**	-0.0056	0.0126	0.0194	0.0415**
	(0.0055)	(0.0092)	(0.0147)	(0.0184)	(0.0055)	(0.0092)	(0.0146)	(0.0181)
ERM Year +1 * Small Firms	0.0337***	0.0405***	-0.0109	-0.0087	0.0271***	0.0304**	0.0006	0.0069
	(0.0088)	(0.0142)	(0.0230)	(0.0339)	(0.0087)	(0.0136)	(0.0231)	(0.0338)
ERM Year +1 * High Stock Volatility Firms	-0.0031	-0.0282*	0.0053	-0.0271	0.0082	-0.0129	0.0133	-0.0105
	(0.0092)	(0.0148)	(0.0231)	(0.0300)	(0.0090)	(0.0146)	(0.0238)	(0.0312)
ERM Year +1 * Financial Crisis Period	0.0229	-0.0653***	-0.2417***	-0.3973***	0.0185	-0.0737***	-0.2642***	-0.4140***
	(0.0143)	(0.0214)	(0.0386)	(0.0538)	(0.0142)	(0.0212)	(0.0416)	(0.0569)
ERM Year +1 * Accrual Quality (FLOS, 2005)	<-0.0000	<-0.0000	-0.0001*	-0.0002***	<-0.0000	<-0.0000	<-0.0000	-0.0001***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
ERM Year +1 * RET <= -20%	-0.0161	-0.1464***	-0.2308***	-0.2938***	-0.0376	-0.1527***	-0.2396***	-0.3129***
	(0.0300)	(0.0435)	(0.0576)	(0.0842)	(0.0302)	(0.0392)	(0.0644)	(0.0893)
ERM Year +1 * RET > 20%	-0.1458***	-0.0602	0.0628	0.4464	-0.1035***	0.0072	0.0652	0.4921
	(0.0395)	(0.0988)	(0.1110)	(0.7369)	(0.0172)	(0.1430)	(0.1128)	(0.7130)
ERM Year +1 * CEO	-0.0175	-0.0382*	-0.0740*	-0.1492***	-0.0230*	-0.0455**	-0.0896**	-0.1675***
	(0.0123)	(0.0217)	(0.0388)	(0.0498)	(0.0121)	(0.0219)	(0.0408)	(0.0525)
Insider Type								
CEO	0.0153***	0.0311***	0.0330**	0.0499***	0.0200***	0.0365***	0.0397***	0.0589***
	(0.0052)	(0.0087)	(0.0130)	(0.0162)	(0.0051)	(0.0085)	(0.0126)	(0.0158)
CFO	0.0233***	0.0394***	0.0374**	0.0211	0.0244***	0.0409***	0.0407**	0.0286
	(0.0073)	(0.0121)	(0.0170)	(0.0208)	(0.0069)	(0.0116)	(0.0162)	(0.0200)
Director	0.0085***	0.0104*	-0.0125	-0.0304***	0.0103***	0.0122**	-0.0089	-0.0225**
	(0.0032)	(0.0054)	(0.0077)	(0.0099)	(0.0032)	(0.0053)	(0.0075)	(0.0096)
Officer	0.0189***	0.0195***	0.0127	-0.0046	0.0176***	0.0183**	0.0074	-0.0061
	(0.0043)	(0.0074)	(0.0101)	(0.0129)	(0.0041)	(0.0071)	(0.0099)	(0.0125)
Large Shareholders	0.0081	0.0107	0.0622	0.1501**	0.0146	0.0082	0.0990***	0.2223***
	(0.0394)	(0.0158)	(0.0402)	(0.0646)	(0.0352)	(0.0185)	(0.0384)	(0.0571)
Past Stock Performance								
RET <= -20%	0.0627***	0.0853***	0.0944***	0.0874***	0.0699***	0.0769***	0.0667***	0.0492*
	(0.0109)	(0.0170)	(0.0228)	(0.0291)	(0.0108)	(0.0166)	(0.0224)	(0.0286)
RET > 20%	0.0122	0.0038	0.0004	0.0422	0.0086	-0.0108	-0.0159	0.0268
	(0.0117)	(0.0174)	(0.0228)	(0.0300)	(0.0113)	(0.0168)	(0.0224)	(0.0291)
Information Uncertainty								
Small Firms	0.0292***	0.0617***	0.1039***	0.1188***	0.0247***	0.0465***	0.0895***	0.0970***
	(0.0037)	(0.0062)	(0.0091)	(0.0119)	(0.0037)	(0.0062)	(0.0089)	(0.0116)
Medium Firms	0.0155***	0.0327***	0.0454***	0.0423***	0.0101***	0.0189***	0.0402***	0.0324***
	(0.0038)	(0.0062)	(0.0090)	(0.0113)	(0.0037)	(0.0063)	(0.0090)	(0.0112)
High Stock Volatility Firms	0.0200***	0.0310***	0.0657***	0.0967***	0.0175***	0.0235***	0.0431***	0.0637***
	(0.0031)	(0.0051)	(0.0077)	(0.0101)	(0.0031)	(0.0051)	(0.0077)	(0.0100)
Medium Stock Volatility Firms	0.0068***	-0.0000	0.0198***	0.0264***	0.0082***	0.0005	0.0134**	0.0194***
	(0.0024)	(0.0040)	(0.0059)	(0.0075)	(0.0023)	(0.0040)	(0.0059)	(0.0074)
Financial Crisis Period (December 2007 to June 2009)	0.0093	0.1222***	0.2495***	0.2860***	0.0004	0.0630***	0.1230***	0.1272***
	(0.0092)	(0.0177)	(0.0255)	(0.0334)	(0.0088)	(0.0161)	(0.0218)	(0.0287)
Accrual Quality (FLOS, 2005)	<0.0000	<0.0000**	<0.0001**	<0.0001***	<0.0000	<0.0000**	<0.0000	<0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)

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Appendix 3-D: Regression Results with Insider Purchase (Accrual Quality with ERM) (Table 3-D2 ERM Year +1) (cont.)

Insider Stock Purchase: ERM Year +1 (cont.)

Event Study is based on the Market Model using:	**A. CRSP Value-Weighted Index**				**B. CRSP Equal-Weighted Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Control Variables								
Number of insider shares traded at insider level	<0.0000***	<0.0000**	<0.0000	<0.0000	<0.0000***	<0.0000**	<0.0000	<0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Number of insider shares traded at company level (%)	0.0118**	-0.0031	-0.0201***	-0.0531***	0.0148**	0.0037	-0.0148**	-0.0447***
	(0.0059)	(0.0034)	(0.0070)	(0.0173)	(0.0063)	(0.0037)	(0.0059)	(0.0152)
Market to book ratio (MTB)	0.0001	-0.0001	-0.0002	-0.0003	0.0001	-0.0001	-0.0002	-0.0003
	(0.0001)	(0.0001)	(0.0002)	(0.0002)	(0.0001)	(0.0001)	(0.0002)	(0.0003)
Loss (binary variable for net income < 0)	0.0034	-0.0005	-0.0082	0.0170	0.0023	-0.0027	-0.0071	0.0076
	(0.0035)	(0.0060)	(0.0082)	(0.0104)	(0.0034)	(0.0057)	(0.0079)	(0.0100)
Return on assets (ROA)	0.0003	-0.1348**	-0.2296***	-0.1660	-0.0209	-0.1442**	-0.2432***	-0.2191**
	(0.0354)	(0.0672)	(0.0821)	(0.1066)	(0.0344)	(0.0628)	(0.0781)	(0.1025)
Leverage ratio (long-term debt/ equity)	-0.0000	0.0001	0.0003	0.0003	-0.0000	0.0001	0.0003	0.0004
	(0.0001)	(0.0001)	(0.0002)	(0.0003)	(0.0001)	(0.0002)	(0.0003)	(0.0003)
Insurance industry	-0.0151	0.0041	-0.1255	-0.1138	-0.0134	-0.0017	-0.1330	-0.1379
	(0.0285)	(0.0549)	(0.0847)	(0.0973)	(0.0257)	(0.0517)	(0.0852)	(0.0948)
January	-0.0200***	-0.0591***	-0.0548***	-0.0706***	-0.0188***	-0.0167*	0.0070	-0.0170
	(0.0059)	(0.0095)	(0.0131)	(0.0165)	(0.0055)	(0.0094)	(0.0130)	(0.0166)
Fourth Quarter	0.0099***	0.0314***	0.0407***	0.0642***	-0.0057*	-0.0188***	-0.0176**	-0.0026
	(0.0033)	(0.0055)	(0.0079)	(0.0102)	(0.0032)	(0.0054)	(0.0079)	(0.0099)
Constant	-0.0340	-0.0772	0.0031	0.0165	-0.0313	-0.0550	0.0378	0.0843
	(0.0268)	(0.0529)	(0.0817)	(0.0920)	(0.0240)	(0.0490)	(0.0820)	(0.0886)
Year Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Sector Industry Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
R-squared	10.15%	14.51%	17.77%	19.44%	9.36%	10.55%	12.89%	13.85%

1. Heteroscedasticity-consistent standard errors are in parentheses.
2. The symbols ***, **, * show the significance at the 0.01, 0.05, and 0.10 levels of the t-test, respectively.
3. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock transactions, respectively. We employ the event study method based on the Market Model using CRSP value-weighted index and CRSP equal-weighted index, respectively.
4. We employ an indicator variable (ERM Year +1) to identify whether a firm employs ERM in any given year plus one year over the sample period. For example, if a firm adopts ERM in 2004, the ERM indicator variable will be assigned with a value of one for year 2005 and the following years.
5. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares. We employ five binary variables to proxy CEO, CFO, director, officer, and large shareholders who made stock transactions of a firm from 1996 to 2013, respectively.
6. We use two binary variables to proxy significant changes in firm's stock prices (i.e., past stock performance): RET is less than -20% and RET is greater than 20%. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., 4 day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., 2 day past stock performance) to proxy RET and get similar results.
7. We employ two binary variables for firm size based on market capitalization: small firms with market capitalization less than or equal to $202,158,805 (33.33th percentile of the insider stock purchase and sale sample), medium firms with market capitalization between $202,158,805 and $1,068,003,868 (33.33th percentile to 66.66th percentile), and large firms with market capitalization greater than $1,068,003,868 (66.66th percentile).
8. We employ two binary variables for stock volatility of a firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: low stock volatility firms with stock volatility less than or equal to 0.019601 (33.33th percentile of the insider stock purchase and sale sample), medium stock volatility firms with stock volatility between 0.019601 and 0.032981 (33.33th percentile to 66.66th percentile), and high stock volatility firms with stock volatility greater than 0.032981 (66.66th percentile).
9. We employ a binary variable for the period of 2008 financial crisis (December 2007 to June 2009).
10. We use accrual quality to proxy information risk based on the model used in FLOS (2005) (Eckles, Halek, and Zhang, 2013).

Appendix 3-D: Regression Results with Insider Purchase (Accrual Quality with ERM) (Table 3-D3 ERM Date)

Insider Stock Purchase: ERM Date
Cumulative Abnormal Return (CAR) Ordinary Least Squares Regression Model with Heteroscedasticity-Consistent Standard Errors
Number of Transactions = 11,355 (Insider-Firm-Day Level Data); Sample Period = 1996 to 2013

Event Study is based on the Market Model using:	**A. CRSP Value-Weighted Index**				**B. CRSP Equal-Weighted Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Independent Variables								
ERM								
ERM Date	-0.0118**	0.0059	0.0215	0.0636***	-0.0115**	0.0049	0.0195	0.0573***
	(0.0055)	(0.0091)	(0.0141)	(0.0179)	(0.0055)	(0.0091)	(0.0141)	(0.0175)
ERM Date * Small Firms	0.0079	-0.0120	-0.0204	0.0061	0.0033	-0.0174	-0.0053	0.0260
	(0.0089)	(0.0154)	(0.0219)	(0.0317)	(0.0087)	(0.0147)	(0.0218)	(0.0311)
ERM Date * High Stock Volatility Firms	-0.0224**	-0.0763***	-0.0331	-0.0194	-0.0132	-0.0628***	-0.0234	-0.0060
	(0.0092)	(0.0161)	(0.0253)	(0.0324)	(0.0089)	(0.0156)	(0.0253)	(0.0323)
ERM Date * Financial Crisis Period	0.0326**	-0.0461**	-0.2210***	-0.4322***	0.0299**	-0.0498**	-0.2367***	-0.4358***
	(0.0139)	(0.0204)	(0.0394)	(0.0519)	(0.0140)	(0.0202)	(0.0416)	(0.0548)
ERM Date * Accrual Quality (FLOS, 2005)	<0.0000	<-0.0000	<-0.0000	-0.0001***	<0.0000	<-0.0000	<-0.0000	-0.0001**
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
ERM Date * RET <= -20%	-0.0114	-0.0923**	-0.1536**	-0.2253**	-0.0315	-0.0967**	-0.1603**	-0.2380**
	(0.0290)	(0.0445)	(0.0682)	(0.0918)	(0.0291)	(0.0408)	(0.0734)	(0.0963)
ERM Date * RET > 20%	-0.0780***	-0.0654	0.3720***	0.7414**	-0.0814***	-0.0549	0.3812***	0.7561**
	(0.0299)	(0.0559)	(0.1393)	(0.3281)	(0.0252)	(0.0727)	(0.1306)	(0.3056)
ERM Date * CEO	-0.0077	-0.0008	-0.0207	-0.0743	-0.0134	-0.0082	-0.0327	-0.0882*
	(0.0128)	(0.0252)	(0.0445)	(0.0513)	(0.0125)	(0.0254)	(0.0457)	(0.0530)
Insider Type								
CEO	0.0148***	0.0288***	0.0297**	0.0460***	0.0196***	0.0344***	0.0366***	0.0551***
	(0.0052)	(0.0087)	(0.0129)	(0.0163)	(0.0051)	(0.0085)	(0.0126)	(0.0158)
CFO	0.0234***	0.0394***	0.0373**	0.0207	0.0246***	0.0410***	0.0410**	0.0286
	(0.0073)	(0.0121)	(0.0170)	(0.0209)	(0.0069)	(0.0116)	(0.0162)	(0.0200)
Director	0.0084***	0.0102*	-0.0124	-0.0302***	0.0103***	0.0121**	-0.0087	-0.0221**
	(0.0032)	(0.0053)	(0.0077)	(0.0099)	(0.0032)	(0.0053)	(0.0075)	(0.0096)
Officer	0.0185***	0.0186**	0.0119	-0.0055	0.0173***	0.0176**	0.0068	-0.0066
	(0.0043)	(0.0074)	(0.0101)	(0.0129)	(0.0041)	(0.0071)	(0.0099)	(0.0125)
Large Shareholders	0.0083	0.0103	0.0613	0.1485**	0.0149	0.0081	0.0985**	0.2212***
	(0.0394)	(0.0160)	(0.0403)	(0.0643)	(0.0353)	(0.0185)	(0.0385)	(0.0568)
Past Stock Performance								
RET <= -20%	0.0626***	0.0823***	0.0902***	0.0838***	0.0699***	0.0740***	0.0625***	0.0455
	(0.0110)	(0.0171)	(0.0228)	(0.0292)	(0.0109)	(0.0167)	(0.0225)	(0.0287)
RET > 20%	0.0120	0.0033	-0.0062	0.0332	0.0087	-0.0110	-0.0225	0.0178
	(0.0119)	(0.0175)	(0.0228)	(0.0296)	(0.0114)	(0.0169)	(0.0224)	(0.0288)
Information Uncertainty								
Small Firms	0.0300***	0.0642***	0.1050***	0.1197***	0.0255***	0.0489***	0.0903***	0.0972***
	(0.0037)	(0.0063)	(0.0092)	(0.0120)	(0.0037)	(0.0063)	(0.0090)	(0.0117)
Medium Firms	0.0152***	0.0328***	0.0464***	0.0452***	0.0099***	0.0191***	0.0410***	0.0348***
	(0.0038)	(0.0062)	(0.0091)	(0.0114)	(0.0038)	(0.0063)	(0.0091)	(0.0113)
High Stock Volatility Firms	0.0215***	0.0351***	0.0684***	0.0961***	0.0191***	0.0275***	0.0455***	0.0630***
	(0.0032)	(0.0052)	(0.0078)	(0.0101)	(0.0031)	(0.0051)	(0.0077)	(0.0100)
Medium Stock Volatility Firms	0.0074***	0.0011	0.0202***	0.0261***	0.0087***	0.0016	0.0137**	0.0191**
	(0.0024)	(0.0041)	(0.0059)	(0.0075)	(0.0023)	(0.0040)	(0.0059)	(0.0074)
Financial Crisis Period (December 2007 to June 2009)	0.0084	0.1205***	0.2486***	0.2884***	-0.0006	0.0612***	0.1220***	0.1292***
	(0.0092)	(0.0177)	(0.0254)	(0.0334)	(0.0088)	(0.0160)	(0.0217)	(0.0288)
Accrual Quality (FLOS, 2005)	<-0.0000	<0.0000	<0.0000	0.0001**	<-0.0000	<0.0000	<0.0000	<0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)

(continued on next page)

Appendix 3-D: Regression Results with Insider Purchase (Accrual Quality with ERM) (Table 3-D3 ERM Date) (cont.)

Insider Stock Purchase: ERM Date (cont.)

Event Study is based on the Market Model using:	**A. CRSP Value-Weighted Index**				**B. CRSP Equal-Weighted Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Control Variables								
Number of insider shares traded at insider level	<0.0000***	<0.0000**	<0.0000	<0.0000	<0.0000***	<0.0000**	<0.0000	<0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Number of insider shares traded at company level (%)	0.0111*	-0.0043	-0.0203***	-0.0522***	0.0142**	0.0025	-0.0149**	-0.0437***
	(0.0058)	(0.0034)	(0.0071)	(0.0173)	(0.0063)	(0.0036)	(0.0059)	(0.0152)
Market to book ratio (MTB)	0.0001	-0.0000	-0.0002	-0.0003	0.0001	-0.0001	-0.0002	-0.0003
	(0.0001)	(0.0001)	(0.0002)	(0.0002)	(0.0001)	(0.0001)	(0.0002)	(0.0003)
Loss (binary variable for net income < 0)	0.0034	-0.0004	-0.0090	0.0158	0.0024	-0.0026	-0.0081	0.0061
	(0.0035)	(0.0060)	(0.0082)	(0.0104)	(0.0034)	(0.0057)	(0.0079)	(0.0100)
Return on assets (ROA)	0.0024	-0.1298*	-0.2301***	-0.1733	-0.0187	-0.1390**	-0.2439***	-0.2265**
	(0.0355)	(0.0673)	(0.0821)	(0.1066)	(0.0345)	(0.0628)	(0.0781)	(0.1025)
Leverage ratio (long-term debt/ equity)	-0.0000	0.0001	0.0003	0.0003	-0.0001	0.0001	0.0003	0.0004
	(0.0001)	(0.0001)	(0.0002)	(0.0003)	(0.0002)	(0.0002)	(0.0003)	(0.0003)
Insurance industry	-0.0085	0.0202	-0.1188	-0.1215	-0.0072	0.0136	-0.1288	-0.1483
	(0.0284)	(0.0554)	(0.0852)	(0.0974)	(0.0257)	(0.0522)	(0.0857)	(0.0950)
January	-0.0200***	-0.0587***	-0.0542***	-0.0703***	-0.0188***	-0.0162*	0.0078	-0.0165
	(0.0059)	(0.0095)	(0.0131)	(0.0165)	(0.0055)	(0.0094)	(0.0130)	(0.0166)
Fourth Quarter	0.0100***	0.0314***	0.0403***	0.0631***	-0.0055*	-0.0188***	-0.0181**	-0.0036
	(0.0033)	(0.0055)	(0.0079)	(0.0102)	(0.0032)	(0.0054)	(0.0079)	(0.0099)
Constant	-0.0344	-0.0789	0.0026	0.0160	-0.0318	-0.0568	0.0373	0.0840
	(0.0269)	(0.0530)	(0.0819)	(0.0921)	(0.0240)	(0.0491)	(0.0822)	(0.0887)
Year Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Sector Industry Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
R-squared	10.15%	14.61%	17.71%	19.49%	9.36%	10.63%	12.78%	13.91%

1. Heteroscedasticity-consistent standard errors are in parentheses.
2. The symbols ***, **, * show the significance at the 0.01, 0.05, and 0.10 levels of the t-test, respectively.
3. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock transactions, respectively. We employ the event study method based on the Market Model using CRSP value-weighted index and CRSP equal-weighted index, respectively.
4. We employ an indicator variable (ERM Date) to identify whether a firm employs ERM on the specific date over the sample period. For example, if a firm adopts ERM on March 1st 2004, the ERM indicator variable will be assigned with a value of one for March 1st 2014 and the following dates. If we do not find the enactment date of ERM, we use the SEC filing date/report date as the first evidence of ERM of a firm.
5. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares. We employ five binary variables to proxy CEO, CFO, director, officer, and large shareholders who made stock transactions of a firm from 1996 to 2013, respectively.
6. We use two binary variables to proxy significant changes in firm's stock prices (i.e., past stock performance): RET is less than -20% and RET is greater than 20%. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., 4 day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., 2 day past stock performance) to proxy RET and get similar results.
7. We employ two binary variables for firm size based on market capitalization: small firms with market capitalization less than or equal to $202,158,805 (33.33th percentile of the insider stock purchase and sale sample), medium firms with market capitalization between $202,158,805 and $1,068,003,868 (33.33th percentile to 66.66th percentile), and large firms with market capitalization greater than $1,068,003,868 (66.66th percentile).
8. We employ two binary variables for stock volatility of a firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: low stock volatility firms with stock volatility less than or equal to 0.019601 (33.33th percentile of the insider stock purchase and sale sample), medium stock volatility firms with stock volatility between 0.019601 and 0.032981 (33.33th percentile to 66.66th percentile), and high stock volatility firms with stock volatility greater than 0.032981 (66.66th percentile).
9. We employ a binary variable for the period of 2008 financial crisis (December 2007 to June 2009).
10. We use accrual quality to proxy information risk based on the model used in FLOS (2005) (Eckles, Halek, and Zhang, 2013).

Appendix 3-E: Regression Results with Insider Purchase (Information Quality with ERM) (Table 3-E1 ERM Year)

Insider Stock Purchase: ERM Year
Cumulative Abnormal Return (CAR) Ordinary Least Squares Regression Model with Heteroscedasticity-Consistent Standard Errors
Number of Transactions = 10,981 (Insider-Firm-Day Level Data); Sample Period = 1996 to 2013

Event Study is based on the Market Model using:	A. CRSP Value-Weighted Index				B. CRSP Equal-Weighted Index			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Independent Variables								
ERM								
ERM Year	0.0130*	-0.0095	-0.0300*	-0.0337	0.0152**	-0.0036	-0.0301*	-0.0274
	(0.0068)	(0.0107)	(0.0158)	(0.0211)	(0.0067)	(0.0104)	(0.0157)	(0.0213)
ERM Year * Small Firms	-0.0108	0.0022	-0.0030	-0.0191	-0.0121*	0.0030	0.0108	-0.0134
	(0.0070)	(0.0119)	(0.0180)	(0.0231)	(0.0070)	(0.0110)	(0.0168)	(0.0231)
ERM Year * High Stock Volatility Firms	-0.0091	-0.0466***	-0.0504**	-0.0479*	-0.0039	-0.0368***	-0.0383*	-0.0514*
	(0.0076)	(0.0132)	(0.0214)	(0.0276)	(0.0073)	(0.0131)	(0.0210)	(0.0284)
ERM Year * Financial Crisis Period	0.0001	-0.0088	-0.0603**	-0.1498***	0.0018	-0.0019	-0.0591**	-0.1451***
	(0.0087)	(0.0169)	(0.0285)	(0.0377)	(0.0083)	(0.0163)	(0.0273)	(0.0385)
ERM Year * Information Quality	0.0077	-0.0287***	-0.0803***	-0.1108***	0.0098	-0.0206*	-0.0759***	-0.1071***
	(0.0067)	(0.0108)	(0.0155)	(0.0210)	(0.0066)	(0.0106)	(0.0152)	(0.0207)
ERM Year * RET <= -20%	-0.0163	-0.0098	0.1203*	0.1266	-0.0260	-0.0026	0.0606	0.0298
	(0.0262)	(0.0413)	(0.0637)	(0.0864)	(0.0252)	(0.0363)	(0.0601)	(0.0782)
ERM Year * RET > 20%	0.0229	0.0694	0.0507	0.0654	0.0070	0.0152	-0.0224	0.0043
	(0.0651)	(0.0990)	(0.1091)	(0.3674)	(0.0369)	(0.0739)	(0.0996)	(0.3863)
ERM Year * CEO	0.0179**	0.0091	-0.0090	-0.0224	0.0211**	0.0088	-0.0150	-0.0218
	(0.0090)	(0.0164)	(0.0278)	(0.0335)	(0.0087)	(0.0167)	(0.0288)	(0.0340)
Insider Type								
CEO	0.0113**	0.0330***	0.0167	0.0223	0.0088*	0.0278***	0.0133	0.0167
	(0.0054)	(0.0094)	(0.0133)	(0.0179)	(0.0053)	(0.0092)	(0.0132)	(0.0179)
CFO	0.0216***	0.0388***	0.0189	0.0186	0.0234***	0.0356***	0.0171	0.0219
	(0.0073)	(0.0124)	(0.0176)	(0.0230)	(0.0072)	(0.0120)	(0.0176)	(0.0233)
Director	0.0132***	0.0297***	0.0013	-0.0032	0.0123***	0.0260***	-0.0008	-0.0006
	(0.0035)	(0.0062)	(0.0095)	(0.0122)	(0.0034)	(0.0060)	(0.0092)	(0.0117)
Officer	0.0134***	0.0301***	0.0088	-0.0008	0.0114***	0.0268***	0.0092	0.0038
	(0.0041)	(0.0072)	(0.0108)	(0.0142)	(0.0040)	(0.0069)	(0.0105)	(0.0137)
Past Stock Performance								
RET <= -20%	0.0516***	0.0586***	0.0884***	0.0775***	0.0582***	0.0508***	0.0589***	0.0268
	(0.0117)	(0.0184)	(0.0226)	(0.0287)	(0.0114)	(0.0175)	(0.0222)	(0.0282)
RET > 20%	0.0038	0.0058	-0.0103	0.0402	-0.0071	-0.0174	-0.0316	0.0147
	(0.0136)	(0.0216)	(0.0283)	(0.0432)	(0.0135)	(0.0205)	(0.0286)	(0.0423)
Information Uncertainty								
Small Firms	0.0178***	0.0440***	0.0778***	0.0905***	0.0148***	0.0295***	0.0643***	0.0743***
	(0.0043)	(0.0072)	(0.0113)	(0.0138)	(0.0043)	(0.0072)	(0.0114)	(0.0141)
Medium Firms	0.0049	0.0099*	0.0199**	0.0166	0.0053	0.0071	0.0233***	0.0197*
	(0.0033)	(0.0054)	(0.0084)	(0.0106)	(0.0033)	(0.0055)	(0.0085)	(0.0108)
High Stock Volatility Firms	0.0097***	0.0134**	0.0173**	0.0369***	0.0079**	0.0098*	-0.0071	0.0008
	(0.0033)	(0.0055)	(0.0084)	(0.0107)	(0.0032)	(0.0054)	(0.0084)	(0.0106)
Medium Stock Volatility Firms	0.0035*	0.0038	0.0101**	0.0219***	0.0038*	0.0043	0.0050	0.0132**
	(0.0019)	(0.0034)	(0.0050)	(0.0062)	(0.0019)	(0.0033)	(0.0049)	(0.0062)
Financial Crisis Period (December 2007 to June 2009)	-0.0022	0.0472***	0.1607***	0.1334***	-0.0218***	-0.0276*	0.0207	-0.0568**
	(0.0087)	(0.0174)	(0.0226)	(0.0280)	(0.0084)	(0.0159)	(0.0210)	(0.0266)
Information Quality (Transparency)	0.0130***	0.0418***	0.0851***	0.1280***	0.0123***	0.0419***	0.0886***	0.1326***
	(0.0047)	(0.0077)	(0.0103)	(0.0126)	(0.0047)	(0.0076)	(0.0102)	(0.0124)

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Appendix 3-E: Regression Results with Insider Purchase (Information Quality with ERM) (Table 3-E1 ERM Year) (cont.)

Insider Stock Purchase: ERM Year (cont.)

Event Study is based on the Market Model using:	**A. CRSP Value-Weighted Index**				**B. CRSP Equal-Weighted Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Control Variables								
Number of insider shares traded at insider level	<0.0000	<0.0000	<-0.0000	<0.0000	<0.0000	<0.0000	<-0.0000	<-0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Number of insider shares traded at company level (%)	0.0141**	0.0111	0.0374***	0.0188	0.0133**	0.0122	0.0374***	0.0236
	(0.0060)	(0.0080)	(0.0135)	(0.0152)	(0.0059)	(0.0076)	(0.0129)	(0.0151)
Market to book ratio (MTB)	-0.0001	-0.0005	-0.0010*	-0.0013*	-0.0000	-0.0004	-0.0009	-0.0012*
	(0.0001)	(0.0003)	(0.0006)	(0.0007)	(0.0001)	(0.0003)	(0.0005)	(0.0006)
Loss (binary variable for net income < 0)	0.0024	-0.0118**	-0.0183**	-0.0104	0.0058*	-0.0084	-0.0114	-0.0039
	(0.0037)	(0.0057)	(0.0083)	(0.0105)	(0.0035)	(0.0054)	(0.0083)	(0.0104)
Return on assets (ROA)	-0.0503	-0.2337***	-0.2104***	-0.1952***	-0.0454*	-0.1676***	-0.1356***	-0.1386***
	(0.0350)	(0.0468)	(0.0425)	(0.0540)	(0.0271)	(0.0346)	(0.0404)	(0.0491)
Leverage ratio (long-term debt/ equity)	0.0002	0.0009*	0.0017**	0.0021**	0.0001	0.0007*	0.0014*	0.0017**
	(0.0002)	(0.0005)	(0.0008)	(0.0010)	(0.0002)	(0.0004)	(0.0007)	(0.0008)
Insurance industry	0.0149	0.0279**	0.0181	0.0150	0.0136	0.0265*	0.0049	-0.0067
	(0.0104)	(0.0139)	(0.0230)	(0.0270)	(0.0104)	(0.0140)	(0.0219)	(0.0260)
Banking industry	-0.0138***	-0.0034	0.0298***	0.0380**	-0.0146***	-0.0046	0.0137	0.0141
	(0.0051)	(0.0087)	(0.0113)	(0.0150)	(0.0051)	(0.0088)	(0.0116)	(0.0156)
January	-0.0083*	-0.0467***	0.0043	-0.0067	-0.0110**	-0.0097	0.0680***	0.0397***
	(0.0049)	(0.0082)	(0.0116)	(0.0142)	(0.0048)	(0.0083)	(0.0117)	(0.0144)
Fourth Quarter	-0.0011	0.0228***	0.0041	0.0211**	-0.0079**	-0.0182***	-0.0557***	-0.0349***
	(0.0032)	(0.0054)	(0.0076)	(0.0095)	(0.0031)	(0.0053)	(0.0076)	(0.0095)
Constant	-0.0042	-0.0220	-0.0451*	-0.0586*	0.0039	-0.0023	-0.0117	-0.0047
	(0.0097)	(0.0167)	(0.0243)	(0.0312)	(0.0096)	(0.0166)	(0.0245)	(0.0315)
Year Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Sector Industry Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
R-squared	8.39%	12.37%	13.80%	13.20%	8.06%	8.06%	10.42%	10.81%

1. Heteroscedasticity-consistent standard errors are in parentheses.
2. The symbols ***, **, * show the significance at the 0.01, 0.05, and 0.10 levels of the t-test, respectively.
3. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock transactions, respectively. We employ the event study method based on the Market Model using CRSP value-weighted index and CRSP equal-weighted index, respectively.
4. We employ an indicator variable (ERM Year) to identify whether a firm employs ERM in any given year over the sample period. For example, if a firm adopts ERM in 2004, the ERM indicator variable will be assigned with a value of one for year 2004 and the following years.
5. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares. We employ five binary variables to proxy CEO, CFO, director, officer, and large shareholders who made stock transactions of a firm from 1996 to 2013, respectively.
6. We use two binary variables to proxy significant changes in firm's stock prices (i.e., past stock performance): RET is less than -20% and RET is greater than 20%. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., 4 day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., 2 day past stock performance) to proxy RET and get similar results.
7. We employ two binary variables for firm size based on market capitalization: small firms with market capitalization less than or equal to $202,158,805 (33.33th percentile of the insider stock purchase and sale sample), medium firms with market capitalization between $202,158,805 and $1,068,003,868 (33.33th percentile to 66.66th percentile), and large firms with market capitalization greater than $1,068,003,868 (66.66th percentile).
8. We employ two binary variables for stock volatility of a firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: low stock volatility firms with stock volatility less than or equal to 0.019601 (33.33th percentile of the insider stock purchase and sale sample), medium stock volatility firms with stock volatility between 0.019601 and 0.032981 (33.33th percentile to 66.66th percentile), and high stock volatility firms with stock volatility greater than 0.032981 (66.66th percentile).
9. We employ a binary variable for the period of 2008 financial crisis (December 2007 to June 2009).
10. As for information quality (transparency) variable, we follow Wade, Hoyt, and Liebenberg (2015) and calculate dispersion (DISP) based on Diether, Malloy, and Scherbina (2002).

Appendix 3-E: Regression Results with Insider Purchase (Information Quality with ERM) (Table 3-E2 ERM Year +1)

Insider Stock Purchase: ERM Year +1
Cumulative Abnormal Return (CAR) Ordinary Least Squares Regression Model with Heteroscedasticity-Consistent Standard Errors
Number of Transactions = 10,981 (Insider-Firm-Day Level Data); Sample Period = 1996 to 2013

Event Study is based on the Market Model using:	A. CRSP Value-Weighted Index				B. CRSP Equal-Weighted Index			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Independent Variables								
ERM								
ERM Year +1	0.0185***	-0.0004	-0.0235	-0.0169	0.0203***	0.0081	-0.0201	-0.0086
	(0.0070)	(0.0113)	(0.0170)	(0.0235)	(0.0069)	(0.0109)	(0.0167)	(0.0236)
ERM Year +1 * Small Firms	-0.0010	0.0190	0.0087	-0.0130	-0.0029	0.0154	0.0193	-0.0112
	(0.0079)	(0.0138)	(0.0211)	(0.0276)	(0.0079)	(0.0125)	(0.0195)	(0.0276)
ERM Year +1 * High Stock Volatility Firms	-0.0100	-0.0518***	-0.0616***	-0.0786***	-0.0030	-0.0392***	-0.0492**	-0.0807***
	(0.0076)	(0.0143)	(0.0234)	(0.0302)	(0.0073)	(0.0140)	(0.0230)	(0.0312)
ERM Year +1 * Financial Crisis Period	-0.0021	-0.0104	-0.0658**	-0.1364***	-0.0008	-0.0055	-0.0670**	-0.1355***
	(0.0089)	(0.0176)	(0.0294)	(0.0394)	(0.0084)	(0.0169)	(0.0281)	(0.0401)
ERM Year +1 * Information Quality	0.0121*	-0.0230*	-0.0754***	-0.0874***	0.0144**	-0.0135	-0.0704***	-0.0853***
	(0.0067)	(0.0118)	(0.0175)	(0.0241)	(0.0066)	(0.0114)	(0.0169)	(0.0237)
ERM Year +1 * RET <= -20%	-0.0165	-0.0122	0.1226*	0.1309	-0.0270	-0.0071	0.0591	0.0271
	(0.0271)	(0.0428)	(0.0660)	(0.0892)	(0.0260)	(0.0376)	(0.0622)	(0.0804)
ERM Year +1 * RET > 20%	0.0238	0.0769	0.0871	0.1635	0.0022	0.0070	-0.0275	0.0496
	(0.0799)	(0.1185)	(0.1277)	(0.4514)	(0.0450)	(0.0887)	(0.1197)	(0.4816)
ERM Year +1 * CEO	0.0137	0.0003	-0.0160	-0.0197	0.0177*	-0.0014	-0.0258	-0.0239
	(0.0095)	(0.0173)	(0.0302)	(0.0365)	(0.0092)	(0.0178)	(0.0311)	(0.0368)
Insider Type								
CEO	0.0118**	0.0335***	0.0169	0.0219	0.0093*	0.0284***	0.0134	0.0164
	(0.0053)	(0.0094)	(0.0132)	(0.0178)	(0.0053)	(0.0091)	(0.0131)	(0.0178)
CFO	0.0213***	0.0380***	0.0184	0.0189	0.0232***	0.0349***	0.0164	0.0219
	(0.0073)	(0.0124)	(0.0176)	(0.0230)	(0.0072)	(0.0120)	(0.0176)	(0.0233)
Director	0.0132***	0.0293***	0.0006	-0.0038	0.0123***	0.0256***	-0.0017	-0.0012
	(0.0034)	(0.0062)	(0.0095)	(0.0122)	(0.0034)	(0.0059)	(0.0092)	(0.0117)
Officer	0.0134***	0.0300***	0.0084	-0.0013	0.0114***	0.0267***	0.0089	0.0034
	(0.0041)	(0.0072)	(0.0108)	(0.0141)	(0.0040)	(0.0069)	(0.0105)	(0.0137)
Past Stock Performance								
RET <= -20%	0.0519***	0.0593***	0.0893***	0.0787***	0.0585***	0.0515***	0.0598***	0.0282
	(0.0117)	(0.0183)	(0.0224)	(0.0286)	(0.0114)	(0.0175)	(0.0221)	(0.0281)
RET > 20%	0.0043	0.0063	-0.0114	0.0371	-0.0065	-0.0168	-0.0321	0.0125
	(0.0135)	(0.0214)	(0.0281)	(0.0431)	(0.0134)	(0.0204)	(0.0285)	(0.0421)
Information Uncertainty								
Small Firms	0.0169***	0.0428***	0.0762***	0.0886***	0.0141***	0.0288***	0.0634***	0.0729***
	(0.0042)	(0.0071)	(0.0111)	(0.0136)	(0.0042)	(0.0071)	(0.0112)	(0.0139)
Medium Firms	0.0048	0.0096*	0.0188**	0.0147	0.0052	0.0069	0.0223***	0.0177
	(0.0033)	(0.0054)	(0.0084)	(0.0106)	(0.0033)	(0.0055)	(0.0085)	(0.0108)
High Stock Volatility Firms	0.0097***	0.0138**	0.0192**	0.0412***	0.0078**	0.0098*	-0.0053	0.0046
	(0.0032)	(0.0054)	(0.0083)	(0.0106)	(0.0032)	(0.0054)	(0.0083)	(0.0105)
Medium Stock Volatility Firms	0.0033*	0.0034	0.0101**	0.0223***	0.0036*	0.0040	0.0049	0.0135**
	(0.0019)	(0.0033)	(0.0050)	(0.0062)	(0.0019)	(0.0033)	(0.0049)	(0.0062)
Financial Crisis Period (December 2007 to June 2009)	-0.0020	0.0473***	0.1613***	0.1307***	-0.0215**	-0.0271*	0.0220	-0.0583**
	(0.0088)	(0.0175)	(0.0227)	(0.0281)	(0.0084)	(0.0159)	(0.0210)	(0.0267)
Information Quality (Transparency)	0.0125***	0.0398***	0.0811***	0.1193***	0.0118**	0.0399***	0.0846***	0.1241***
	(0.0046)	(0.0075)	(0.0100)	(0.0124)	(0.0046)	(0.0074)	(0.0100)	(0.0122)

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Appendix 3-E: Regression Results with Insider Purchase (Information Quality with ERM) (Table 3-E2 ERM Year +1) (cont.)

Insider Stock Purchase: ERM Year +1 (cont.)

Event Study is based on the Market Model using:	**A. CRSP Value-Weighted Index**				**B. CRSP Equal-Weighted Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Control Variables								
Number of insider shares traded at insider level	<0.0000	<0.0000	<-0.0000	<0.0000	<0.0000	<0.0000	<-0.0000	<-0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Number of insider shares traded at company level (%)	0.0142**	0.0115	0.0377***	0.0194	0.0134**	0.0125*	0.0378***	0.0241
	(0.0060)	(0.0080)	(0.0135)	(0.0153)	(0.0058)	(0.0076)	(0.0129)	(0.0151)
Market to book ratio (MTB)	-0.0001	-0.0005	-0.0010*	-0.0013*	-0.0000	-0.0004	-0.0009	-0.0011*
	(0.0001)	(0.0003)	(0.0006)	(0.0007)	(0.0001)	(0.0003)	(0.0005)	(0.0006)
Loss (binary variable for net income < 0)	0.0024	-0.0116**	-0.0181**	-0.0098	0.0059*	-0.0082	-0.0112	-0.0031
	(0.0037)	(0.0057)	(0.0083)	(0.0105)	(0.0035)	(0.0054)	(0.0083)	(0.0104)
Return on assets (ROA)	-0.0497	-0.2315***	-0.2071***	-0.1895***	-0.0449*	-0.1655***	-0.1319***	-0.1328***
	(0.0350)	(0.0467)	(0.0425)	(0.0542)	(0.0270)	(0.0345)	(0.0404)	(0.0493)
Leverage ratio (long-term debt/ equity)	0.0002	0.0009*	0.0017**	0.0021**	0.0001	0.0007*	0.0014*	0.0017**
	(0.0002)	(0.0005)	(0.0008)	(0.0010)	(0.0002)	(0.0004)	(0.0007)	(0.0008)
Insurance industry	0.0152	0.0271*	0.0166	0.0133	0.0143	0.0265*	0.0050	-0.0078
	(0.0105)	(0.0141)	(0.0231)	(0.0269)	(0.0104)	(0.0142)	(0.0220)	(0.0260)
Banking industry	-0.0136***	-0.0027	0.0321***	0.0412***	-0.0143***	-0.0046	0.0156	0.0172
	(0.0051)	(0.0087)	(0.0113)	(0.0149)	(0.0051)	(0.0088)	(0.0116)	(0.0157)
January	-0.0082*	-0.0466***	0.0049	-0.0054	-0.0109**	-0.0098	0.0682***	0.0407***
	(0.0049)	(0.0082)	(0.0116)	(0.0141)	(0.0048)	(0.0083)	(0.0117)	(0.0143)
Fourth Quarter	-0.0012	0.0229***	0.0039	0.0204**	-0.0079**	-0.0181***	-0.0556***	-0.0354***
	(0.0032)	(0.0054)	(0.0076)	(0.0095)	(0.0031)	(0.0053)	(0.0076)	(0.0095)
Constant	-0.0048	-0.0238	-0.0477**	-0.0644**	0.0032	-0.0040	-0.0142	-0.0102
	(0.0097)	(0.0167)	(0.0243)	(0.0311)	(0.0096)	(0.0166)	(0.0245)	(0.0315)
Year Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Sector Industry Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
R-squared	8.40%	12.37%	13.77%	13.09%	8.07%	8.08%	10.42%	10.73%

1. Heteroscedasticity-consistent standard errors are in parentheses.

2. The symbols ***, **, * show the significance at the 0.01, 0.05, and 0.10 levels of the t-test, respectively.

3. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock transactions, respectively. We employ the event study method based on the Market Model using CRSP value-weighted index and CRSP equal-weighted index, respectively.

4. We employ an indicator variable (ERM Year +1) to identify whether a firm employs ERM in any given year plus one year over the sample period. For example, if a firm adopts ERM in 2004, the ERM indicator variable will be assigned with a value of one for year 2005 and the following years.

5. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares. We employ five binary variables to proxy CEO, CFO, director, officer, and large shareholders who made stock transactions of a firm from 1996 to 2013, respectively.

6. We use two binary variables to proxy significant changes in firm's stock prices (i.e., past stock performance): RET is less than -20% and RET is greater than 20%. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., 4 day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., 2 day past stock performance) to proxy RET and get similar results.

7. We employ two binary variables for firm size based on market capitalization: small firms with market capitalization less than or equal to $202,158,805 (33.33th percentile of the insider stock purchase and sale sample), medium firms with market capitalization between $202,158,805 and $1,068,003,868 (33.33th percentile to 66.66th percentile), and large firms with market capitalization greater than $1,068,003,868 (66.66th percentile).

8. We employ two binary variables for stock volatility of a firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: low stock volatility firms with stock volatility less than or equal to 0.019601 (33.33th percentile of the insider stock purchase and sale sample), medium stock volatility firms with stock volatility between 0.019601 and 0.032981 (33.33th percentile to 66.66th percentile), and high stock volatility firms with stock volatility greater than 0.032981 (66.66th percentile).

9. We employ a binary variable for the period of 2008 financial crisis (December 2007 to June 2009).

10. As for information quality (transparency) variable, we follow Wade, Hoyt, and Liebenberg (2015) and calculate dispersion (DISP) based on Diether, Malloy, and Scherbina (2002).

Appendix 3-E: Regression Results with Insider Purchase (Information Quality with ERM) (Table 3-E3 ERM Date)

Insider Stock Purchase: ERM Date
Cumulative Abnormal Return (CAR) Ordinary Least Squares Regression Model with Heteroscedasticity-Consistent Standard Errors
Number of Transactions = 10,981 (Insider-Firm-Day Level Data); Sample Period = 1996 to 2013

Event Study is based on the Market Model using:	A. CRSP Value-Weighted Index				B. CRSP Equal-Weighted Index			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Independent Variables								
ERM								
ERM Date	0.0120*	-0.0080	-0.0280*	-0.0395*	0.0144**	-0.0010	-0.0262*	-0.0316
	(0.0069)	(0.0107)	(0.0158)	(0.0212)	(0.0068)	(0.0104)	(0.0157)	(0.0214)
ERM Date * Small Firms	-0.0100	0.0042	0.0003	-0.0105	-0.0115	0.0046	0.0144	-0.0046
	(0.0072)	(0.0121)	(0.0184)	(0.0237)	(0.0071)	(0.0112)	(0.0171)	(0.0237)
ERM Date * High Stock Volatility Firms	-0.0090	-0.0475***	-0.0521**	-0.0462*	-0.0037	-0.0375***	-0.0403*	-0.0502*
	(0.0076)	(0.0134)	(0.0216)	(0.0279)	(0.0074)	(0.0133)	(0.0213)	(0.0287)
ERM Date * Financial Crisis Period	0.0006	-0.0096	-0.0613**	-0.1490***	0.0023	-0.0028	-0.0602**	-0.1435***
	(0.0088)	(0.0170)	(0.0285)	(0.0378)	(0.0083)	(0.0163)	(0.0273)	(0.0385)
ERM Date * Information Quality	0.0075	-0.0281**	-0.0790***	-0.1112***	0.0102	-0.0185*	-0.0725***	-0.1041***
	(0.0068)	(0.0109)	(0.0157)	(0.0213)	(0.0067)	(0.0107)	(0.0153)	(0.0210)
ERM Date * RET <= -20%	-0.0161	-0.0095	0.1210*	0.1270	-0.0258	-0.0024	0.0614	0.0307
	(0.0262)	(0.0414)	(0.0637)	(0.0863)	(0.0252)	(0.0363)	(0.0602)	(0.0781)
ERM Date * RET > 20%	0.0230	0.0694	0.0510	0.0651	0.0073	0.0153	-0.0218	0.0049
	(0.0650)	(0.0987)	(0.1087)	(0.3680)	(0.0369)	(0.0737)	(0.0994)	(0.3871)
ERM Date * CEO	0.0182**	0.0084	-0.0099	-0.0215	0.0216**	0.0083	-0.0159	-0.0202
	(0.0090)	(0.0164)	(0.0278)	(0.0336)	(0.0087)	(0.0167)	(0.0288)	(0.0341)
Insider Type								
CEO	0.0113**	0.0329***	0.0166	0.0223	0.0088*	0.0278***	0.0131	0.0167
	(0.0054)	(0.0094)	(0.0133)	(0.0179)	(0.0053)	(0.0092)	(0.0132)	(0.0179)
CFO	0.0217***	0.0386***	0.0187	0.0188	0.0235***	0.0355***	0.0169	0.0222
	(0.0073)	(0.0124)	(0.0176)	(0.0230)	(0.0072)	(0.0120)	(0.0176)	(0.0233)
Director	0.0133***	0.0297***	0.0013	-0.0027	0.0123***	0.0260***	-0.0008	0.0001
	(0.0035)	(0.0062)	(0.0095)	(0.0122)	(0.0034)	(0.0059)	(0.0092)	(0.0117)
Officer	0.0134***	0.0301***	0.0087	-0.0007	0.0114***	0.0267***	0.0092	0.0039
	(0.0041)	(0.0072)	(0.0108)	(0.0142)	(0.0040)	(0.0069)	(0.0105)	(0.0137)
Past Stock Performance								
RET <= -20%	0.0517***	0.0586***	0.0885***	0.0777***	0.0582***	0.0508***	0.0590***	0.0270
	(0.0117)	(0.0184)	(0.0226)	(0.0287)	(0.0114)	(0.0175)	(0.0223)	(0.0282)
RET > 20%	0.0039	0.0059	-0.0101	0.0406	-0.0071	-0.0173	-0.0313	0.0150
	(0.0135)	(0.0216)	(0.0283)	(0.0433)	(0.0135)	(0.0205)	(0.0287)	(0.0423)
Information Uncertainty								
Small Firms	0.0176***	0.0439***	0.0773***	0.0893***	0.0147***	0.0294***	0.0639***	0.0730***
	(0.0043)	(0.0072)	(0.0113)	(0.0138)	(0.0043)	(0.0072)	(0.0113)	(0.0140)
Medium Firms	0.0049	0.0098*	0.0197**	0.0160	0.0053	0.0070	0.0231***	0.0190*
	(0.0033)	(0.0054)	(0.0084)	(0.0106)	(0.0033)	(0.0055)	(0.0085)	(0.0108)
High Stock Volatility Firms	0.0096***	0.0134**	0.0174**	0.0367***	0.0079**	0.0098*	-0.0070	0.0006
	(0.0032)	(0.0055)	(0.0084)	(0.0107)	(0.0032)	(0.0054)	(0.0084)	(0.0106)
Medium Stock Volatility Firms	0.0035*	0.0037	0.0099**	0.0214***	0.0037*	0.0042	0.0048	0.0126**
	(0.0019)	(0.0034)	(0.0050)	(0.0062)	(0.0019)	(0.0033)	(0.0049)	(0.0062)
Financial Crisis Period (December 2007 to June 2009)	-0.0023	0.0473***	0.1607***	0.1326***	-0.0219***	-0.0275*	0.0207	-0.0577**
	(0.0087)	(0.0174)	(0.0226)	(0.0280)	(0.0084)	(0.0159)	(0.0210)	(0.0267)
Information Quality (Transparency)	0.0130***	0.0415***	0.0844***	0.1272***	0.0122***	0.0414***	0.0874***	0.1310***
	(0.0047)	(0.0076)	(0.0102)	(0.0125)	(0.0047)	(0.0076)	(0.0102)	(0.0123)

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Appendix 3-E: Regression Results with Insider Purchase (Information Quality with ERM) (Table 3-E3 ERM Date) (cont.)

Insider Stock Purchase: ERM Date (cont.)

Event Study is based on the Market Model using:	**A. CRSP Value-Weighted Index**				**B. CRSP Equal-Weighted Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Control Variables								
Number of insider shares traded at insider level	<0.0000	<0.0000	<-0.0000	<0.0000	<0.0000	<0.0000	<-0.0000	<-0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Number of insider shares traded at company level (%)	0.0140**	0.0111	0.0374***	0.0187	0.0132**	0.0122	0.0375***	0.0235
	(0.0060)	(0.0080)	(0.0135)	(0.0152)	(0.0059)	(0.0076)	(0.0129)	(0.0151)
Market to book ratio (MTB)	-0.0001	-0.0005	-0.0010*	-0.0013*	-0.0000	-0.0004	-0.0009	-0.0012*
	(0.0001)	(0.0003)	(0.0006)	(0.0007)	(0.0001)	(0.0003)	(0.0005)	(0.0006)
Loss (binary variable for net income < 0)	0.0024	-0.0118**	-0.0183**	-0.0104	0.0058*	-0.0084	-0.0114	-0.0038
	(0.0037)	(0.0057)	(0.0083)	(0.0105)	(0.0035)	(0.0054)	(0.0083)	(0.0104)
Return on assets (ROA)	-0.0504	-0.2337***	-0.2105***	-0.1960***	-0.0455*	-0.1674***	-0.1353***	-0.1390***
	(0.0350)	(0.0468)	(0.0425)	(0.0540)	(0.0271)	(0.0346)	(0.0404)	(0.0491)
Leverage ratio (long-term debt/ equity)	0.0002	0.0009*	0.0017**	0.0021**	0.0001	0.0007*	0.0014*	0.0017**
	(0.0002)	(0.0005)	(0.0008)	(0.0010)	(0.0002)	(0.0004)	(0.0007)	(0.0008)
Insurance industry	0.0149	0.0278**	0.0179	0.0148	0.0137	0.0265*	0.0048	-0.0069
	(0.0104)	(0.0138)	(0.0230)	(0.0270)	(0.0104)	(0.0140)	(0.0219)	(0.0260)
Banking industry	-0.0134***	-0.0033	0.0302***	0.0403***	-0.0142***	-0.0046	0.0140	0.0167
	(0.0051)	(0.0087)	(0.0113)	(0.0149)	(0.0051)	(0.0088)	(0.0116)	(0.0156)
January	-0.0081*	-0.0463***	0.0054	-0.0046	-0.0108**	-0.0093	0.0690***	0.0419***
	(0.0049)	(0.0082)	(0.0116)	(0.0141)	(0.0048)	(0.0083)	(0.0117)	(0.0143)
Fourth Quarter	-0.0012	0.0228***	0.0039	0.0206**	-0.0079**	-0.0183***	-0.0559***	-0.0354***
	(0.0032)	(0.0054)	(0.0076)	(0.0095)	(0.0031)	(0.0053)	(0.0076)	(0.0095)
Constant	-0.0042	-0.0220	-0.0453*	-0.0590*	0.0038	-0.0026	-0.0122	-0.0056
	(0.0097)	(0.0167)	(0.0243)	(0.0312)	(0.0096)	(0.0166)	(0.0245)	(0.0315)
Year Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Sector Industry Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
R-squared	8.38%	12.36%	13.79%	13.16%	8.05%	8.06%	10.41%	10.75%

1. Heteroscedasticity-consistent standard errors are in parentheses.
2. The symbols ***, **, * show the significance at the 0.01, 0.05, and 0.10 levels of the t-test, respectively.
3. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock transactions, respectively. We employ the event study method based on the Market Model using CRSP value-weighted index and CRSP equal-weighted index, respectively.
4. We employ an indicator variable (ERM Date) to identify whether a firm employs ERM on the specific date over the sample period. For example, if a firm adopts ERM on March 1st 2004, the ERM indicator variable will be assigned with a value of one for March 1st 2014 and the following dates. If we do not find the enactment date of ERM, we use the SEC filing date/report date as the first evidence of ERM of a firm.
5. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares. We employ five binary variables to proxy CEO, CFO, director, officer, and large shareholders who made stock transactions of a firm from 1996 to 2013, respectively.
6. We use two binary variables to proxy significant changes in firm's stock prices (i.e., past stock performance): RET is less than -20% and RET is greater than 20%. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., 4 day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., 2 day past stock performance) to proxy RET and get similar results.
7. We employ two binary variables for firm size based on market capitalization: small firms with market capitalization less than or equal to $202,158,805 (33.33th percentile of the insider stock purchase and sale sample), medium firms with market capitalization between $202,158,805 and $1,068,003,868 (33.33th percentile to 66.66th percentile), and large firms with market capitalization greater than $1,068,003,868 (66.66th percentile).
8. We employ two binary variables for stock volatility of a firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: low stock volatility firms with stock volatility less than or equal to 0.019601 (33.33th percentile of the insider stock purchase and sale sample), medium stock volatility firms with stock volatility between 0.019601 and 0.032981 (33.33th percentile to 66.66th percentile), and high stock volatility firms with stock volatility greater than 0.032981 (66.66th percentile).
9. We employ a binary variable for the period of 2008 financial crisis (December 2007 to June 2009).
10. As for information quality (transparency) variable, we follow Wade, Hoyt, and Liebenberg (2015) and calculate dispersion (DISP) based on Diether, Malloy, and Scherbina (2002).

Appendix 3-F: Regression Results with Insider Purchase (90-Day Holding Period Return) (Table 3-F)

Insider Stock Purchase
90-Day Holding Period Return (HPR) Ordinary Least Squares Regression Model with Heteroscedasticity-Consistent Standard Errors
Number of Transactions = 22,220 (Insider-Firm-Day Level Data); Sample Period = 1996 to 2013

	Dependent Variable: 90-Day Holding Period Return					
	(1)	(2)	(3)	(4)	(5)	(6)
ERM Independent Variable	**ERM Year**	**ERM Year**	**ERM Year +1**	**ERM Year +1**	**ERM Date**	**ERM Date**
Independent Variables						
ERM	0.0601	0.1645***	0.0764*	0.1693***	0.0586	0.1543***
	(0.0400)	(0.0304)	(0.0450)	(0.0319)	(0.0411)	(0.0311)
ERM * Small Firms		0.2447**		0.3235***		0.2820***
		(0.0972)		(0.1118)		(0.1002)
ERM * High Stock Volatility Firms		-0.4679***		-0.4342***		-0.4557***
		(0.0784)		(0.0836)		(0.0792)
ERM * Financial Crisis Period		-0.3916***		-0.4274***		-0.4018***
		(0.1263)		(0.1245)		(0.1260)
ERM * RET <= -20%		0.4911		0.4737		0.4881
		(0.5021)		(0.5205)		(0.5022)
ERM * RET > 20%		0.3560		-0.3215		0.3426
		(0.4871)		(0.5615)		(0.4889)
ERM * CEO		-0.0653		-0.1123		-0.0716
		(0.0851)		(0.0871)		(0.0858)
Insider Type						
CEO	0.0003	-0.0053	0.0002	-0.0015	0.0003	-0.0049
	(0.0422)	(0.0442)	(0.0421)	(0.0439)	(0.0422)	(0.0442)
CFO	0.1128	0.1020	0.1124	0.1023	0.1128	0.1018
	(0.0728)	(0.0726)	(0.0727)	(0.0726)	(0.0728)	(0.0726)
Director	0.0778*	0.0699	0.0777*	0.0709*	0.0780*	0.0704*
	(0.0429)	(0.0427)	(0.0429)	(0.0427)	(0.0429)	(0.0427)
Officer	0.0991**	0.0890**	0.0991**	0.0920**	0.0991**	0.0892**
	(0.0453)	(0.0451)	(0.0453)	(0.0451)	(0.0453)	(0.0451)
Large Shareholders	0.1133	0.0982	0.1127	0.0987	0.1138	0.1000
	(0.1047)	(0.1067)	(0.1049)	(0.1058)	(0.1047)	(0.1063)
Past Stock Performance						
RET <= -20%	0.2479	0.2224	0.2475	0.2265	0.2480	0.2235
	(0.1827)	(0.1955)	(0.1826)	(0.1946)	(0.1827)	(0.1955)
RET > 20%	0.0033	-0.0166	0.0040	-0.0013	0.0032	-0.0151
	(0.1659)	(0.1705)	(0.1659)	(0.1692)	(0.1659)	(0.1705)
Information Uncertainty						
Small Firms	0.4345***	0.4027***	0.4351***	0.3985***	0.4341***	0.3990***
	(0.0476)	(0.0483)	(0.0474)	(0.0474)	(0.0475)	(0.0480)
Medium Firms	0.2245***	0.2103***	0.2245***	0.2077***	0.2242***	0.2090***
	(0.0336)	(0.0331)	(0.0336)	(0.0328)	(0.0336)	(0.0331)
High Stock Volatility Firms	0.1027***	0.1582***	0.1020***	0.1498***	0.1024***	0.1556***
	(0.0213)	(0.0232)	(0.0214)	(0.0233)	(0.0214)	(0.0233)
Medium Stock Volatility Firms	-0.0123	-0.0002	-0.0130	-0.0043	-0.0128	-0.0022
	(0.0136)	(0.0132)	(0.0134)	(0.0131)	(0.0135)	(0.0131)
Financial Crisis Period (December 2007 to June 2009)	1.2784***	1.3313***	1.2784***	1.3361***	1.2783***	1.3324***
	(0.3415)	(0.3551)	(0.3415)	(0.3546)	(0.3415)	(0.3550)

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Appendix 3-F: Regression Results with Insider Purchase (90-Day Holding Period Return) (Table 3-F) (cont.)

Insider Stock Purchase (cont.)

	Dependent Variable: 90-Day Holding Period Return					
	(1)	(2)	(3)	(4)	(5)	(6)
ERM Independent Variable	**ERM Year**	**ERM Year**	**ERM Year +1**	**ERM Year +1**	**ERM Date**	**ERM Date**
Control Variables						
Number of insider shares traded at insider level	<0.0000	<0.0000	<0.0000	<0.0000	<0.0000	<0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Number of insider shares traded at company level (%)	0.0030	0.0034	0.0030	0.0036	0.0030	0.0037
	(0.0332)	(0.0333)	(0.0333)	(0.0332)	(0.0332)	(0.0333)
Market to book ratio (MTB)	-0.0022*	-0.0022*	-0.0022*	-0.0020	-0.0022*	-0.0021*
	(0.0013)	(0.0013)	(0.0013)	(0.0013)	(0.0013)	(0.0013)
Loss (binary variable for net income < 0)	-0.0123	-0.0138	-0.0121	-0.0128	-0.0123	-0.0143
	(0.0300)	(0.0300)	(0.0300)	(0.0299)	(0.0300)	(0.0300)
Return on assets (ROA)	-0.9244*	-0.9020*	-0.9240*	-0.9035*	-0.9246*	-0.9042*
	(0.5285)	(0.5245)	(0.5286)	(0.5247)	(0.5285)	(0.5246)
Leverage ratio (long-term debt/ equity)	0.0038**	0.0036*	0.0037**	0.0034*	0.0038**	0.0035*
	(0.0018)	(0.0019)	(0.0018)	(0.0019)	(0.0018)	(0.0019)
Insurance industry	0.2966***	0.3194***	0.2972***	0.3260***	0.2962***	0.3189***
	(0.0423)	(0.0436)	(0.0422)	(0.0438)	(0.0423)	(0.0436)
Banking industry	0.0798***	0.1148***	0.0783***	0.1258***	0.0805***	0.1194***
	(0.0237)	(0.0243)	(0.0239)	(0.0247)	(0.0238)	(0.0244)
January	-0.2066***	-0.1995***	-0.2071***	-0.2006***	-0.2057***	-0.1967***
	(0.0460)	(0.0463)	(0.0460)	(0.0461)	(0.0460)	(0.0461)
Fourth Quarter	0.0540	0.0485	0.0542	0.0507	0.0538	0.0482
	(0.0399)	(0.0402)	(0.0400)	(0.0401)	(0.0399)	(0.0402)
Constant	-0.5119***	-0.5129***	-0.5114***	-0.5139***	-0.5113***	-0.5112***
	(0.0707)	(0.0719)	(0.0707)	(0.0717)	(0.0707)	(0.0717)
Year Fixed Effects	YES	YES	YES	YES	YES	YES
Sector Industry Fixed Effects	YES	YES	YES	YES	YES	YES
R-squared	4.83%	4.97%	4.83%	4.97%	4.83%	4.97%

1. Heteroscedasticity-consistent standard errors are in parentheses.
2. The symbols ***, **, * show the significance at the 0.01, 0.05, and 0.10 levels of the t-test, respectively.
3. The 500 firms in the sample are firms randomly chosen from the insider stock purchase and sale sample over the period 1996 to 2013.
4. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.
5. The 90-Day Holding Period Return refers to a holding period return from the insider stock transaction date to ninety days after the insider stock transaction.
6. We employ three indicator variables to proxy ERM enactment (ERM Year, ERM Year +1, and ERM Date) and run the models, respectively.
7. We employ an indicator variable (ERM Year) to identify whether a firm employs ERM in any given year over the sample period. For example, if a firm adopts ERM in 2004, the ERM indicator variable will be assigned with a value of one for year 2004 and the following years.
8. We employ an indicator variable (ERM Year +1) to identify whether a firm employs ERM in any given year plus one year over the sample period. For example, if a firm adopts ERM in 2004, the ERM indicator variable will be assigned with a value of one for year 2005 and the following years.
9. We employ an indicator variable (ERM Date) to identify whether a firm employs ERM on the specific date over the sample period. For example, if a firm adopts ERM on March 1st 2004, the ERM indicator variable will be assigned with a value of one for March 1st 2014 and the following dates. If we do not find the enactment date of ERM, we use the SEC filing date/report date as the first evidence of ERM of a firm.
10. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares. We employ five binary variables to proxy CEO, CFO, director, officer, and large shareholders who made stock transactions of a firm from 1996 to 2013, respectively.
11. We use two binary variables to proxy significant changes in firm's stock prices (i.e., past stock performance): RET is less than -20% and RET is greater than 20%. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., 4 day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., 2 day past stock performance) to proxy RET and get similar results.
12. We employ two binary variables for firm size based on market capitalization: small firms with market capitalization less than or equal to $202,158,805 (33.33th percentile of the insider stock purchase and sale sample), medium firms with market capitalization between $202,158,805 and $1,068,003,868 (33.33th percentile to 66.66th percentile), and large firms with market capitalization greater than $1,068,003,868 (66.66th percentile).
13. We employ two binary variables for stock volatility of a firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: low stock volatility firms with stock volatility less than or equal to 0.019601 (33.33th percentile of the insider stock purchase and sale sample), medium stock volatility firms with stock volatility between 0.019601 and 0.032981 (33.33th percentile to 66.66th percentile), and high stock volatility firms with stock volatility greater than 0.032981(66.66th percentile).
14. We employ a binary variable for the period of 2008 financial crisis (December 2007 to June 2009).

Appendix 3-G: Regression Results with Insider Sale (Accrual Quality) (Table 3-G1 ERM Year)

Insider Stock Sale: ERM Year
Cumulative Abnormal Return (CAR) Ordinary Least Squares Regression Model with Heteroscedasticity-Consistent Standard Errors
Number of Transactions = 31,421 (Insider-Firm-Day Level Data); Sample Period = 1996 to 2013

Event Study is based on the Market Model using:	**A. CRSP Value-Weighted Index**				**B. CRSP Equal-Weighted Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Independent Variables								
ERM Year	0.0029**	0.0080***	0.0172***	0.0180***	0.0033**	0.0087***	0.0174***	0.0221***
	(0.0014)	(0.0026)	(0.0041)	(0.0052)	(0.0014)	(0.0026)	(0.0041)	(0.0052)
Insider Type								
CEO	-0.0075***	-0.0266***	-0.0480***	-0.0725***	-0.0070***	-0.0269***	-0.0459***	-0.0696***
	(0.0023)	(0.0042)	(0.0059)	(0.0072)	(0.0023)	(0.0041)	(0.0058)	(0.0073)
CFO	-0.0056**	-0.0206***	-0.0366***	-0.0674***	-0.0054**	-0.0214***	-0.0345***	-0.0634***
	(0.0026)	(0.0046)	(0.0069)	(0.0087)	(0.0026)	(0.0046)	(0.0070)	(0.0087)
Director	-0.0018	-0.0159***	-0.0278***	-0.0530***	-0.0012	-0.0158***	-0.0267***	-0.0509***
	(0.0020)	(0.0037)	(0.0053)	(0.0065)	(0.0020)	(0.0036)	(0.0053)	(0.0066)
Officer	0.0002	-0.0125***	-0.0240***	-0.0458***	-0.0000	-0.0132***	-0.0251***	-0.0470***
	(0.0019)	(0.0035)	(0.0051)	(0.0063)	(0.0019)	(0.0035)	(0.0051)	(0.0064)
Large Shareholders	0.0159	0.0228	0.0232	0.0571	0.0190	0.0281	0.0391	0.0822
	(0.0236)	(0.0370)	(0.0487)	(0.0560)	(0.0232)	(0.0360)	(0.0431)	(0.0545)
Past Stock Performance								
RET <= -20%	-0.0017	0.0492	0.1140**	0.0932	-0.0007	0.0501	0.0855*	0.0598
	(0.0216)	(0.0405)	(0.0548)	(0.0622)	(0.0216)	(0.0393)	(0.0519)	(0.0601)
RET > 20%	-0.0278***	-0.0345**	-0.0756***	-0.1097***	-0.0352***	-0.0375**	-0.0738***	-0.1053***
	(0.0087)	(0.0154)	(0.0202)	(0.0252)	(0.0087)	(0.0147)	(0.0193)	(0.0240)
Information Uncertainty								
Large Firms	-0.0181***	-0.0403***	-0.0584***	-0.0745***	-0.0198***	-0.0432***	-0.0633***	-0.0769***
	(0.0021)	(0.0037)	(0.0055)	(0.0071)	(0.0021)	(0.0036)	(0.0054)	(0.0070)
Medium Firms	-0.0120***	-0.0308***	-0.0451***	-0.0531***	-0.0119***	-0.0314***	-0.0459***	-0.0511***
	(0.0021)	(0.0038)	(0.0055)	(0.0070)	(0.0021)	(0.0036)	(0.0054)	(0.0068)
High Stock Volatility Firms	-0.0146***	-0.0366***	-0.0664***	-0.0940***	-0.0168***	-0.0424***	-0.0799***	-0.1151***
	(0.0016)	(0.0029)	(0.0044)	(0.0057)	(0.0016)	(0.0029)	(0.0044)	(0.0056)
Medium Stock Volatility Firms	-0.0062***	-0.0147***	-0.0339***	-0.0510***	-0.0063***	-0.0139***	-0.0344***	-0.0523***
	(0.0009)	(0.0017)	(0.0026)	(0.0034)	(0.0009)	(0.0017)	(0.0027)	(0.0035)
Financial Crisis Period (December 2007 to June 2009)	-0.0098**	-0.0403***	-0.0486***	-0.0322*	-0.0261***	-0.1084***	-0.2082***	-0.2518***
	(0.0050)	(0.0087)	(0.0129)	(0.0170)	(0.0052)	(0.0090)	(0.0135)	(0.0175)
Accrual Quality (FLOS, 2005)	<0.0000***	<0.0000***	<0.0000***	0.0001***	<0.0000***	<0.0000***	<0.0000***	0.0001***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)

(continued on next page)

Appendix 3-G: Regression Results with Insider Sale (Accrual Quality) (Table 3-G1 ERM Year) (cont.)

Insider Stock Sale: ERM Year (cont.)

Event Study is based on the Market Model using:	**A. CRSP Value-Weighted Index**				**B. CRSP Equal-Weighted Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Control Variables								
Number of insider shares traded at insider level	<0.0000	<0.0000	<0.0000	<0.0000***	<0.0000	<0.0000	<0.0000	<0.0000***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Number of insider shares traded at company level (%)	-0.0007	-0.0012	-0.0028**	-0.0039**	-0.0007	-0.0011	-0.0022*	-0.0038***
	(0.0006)	(0.0008)	(0.0013)	(0.0016)	(0.0006)	(0.0007)	(0.0011)	(0.0014)
Market to book ratio (MTB)	0.0000	0.0000*	0.0000	0.0000	0.0000**	0.0000***	0.0001***	0.0000*
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Loss (binary variable for net income < 0)	0.0026	0.0006	0.0054	0.0001	0.0020	-0.0013	-0.0028	-0.0129*
	(0.0021)	(0.0039)	(0.0055)	(0.0067)	(0.0021)	(0.0038)	(0.0053)	(0.0067)
Return on assets (ROA)	-0.0487**	-0.0233	0.0865*	-0.0279	-0.0432**	-0.0185	0.0656	-0.0910*
	(0.0214)	(0.0366)	(0.0464)	(0.0474)	(0.0212)	(0.0352)	(0.0435)	(0.0511)
Leverage ratio (long-term debt/ equity)	-0.0001	-0.0001	-0.0000	-0.0000	-0.0001*	-0.0001	-0.0002	-0.0002
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0002)
January	0.0077***	-0.0047	-0.0065	-0.0149*	0.0029	0.0119***	0.0241***	0.0066
	(0.0024)	(0.0047)	(0.0065)	(0.0082)	(0.0024)	(0.0046)	(0.0063)	(0.0081)
Fourth Quarter	0.0036**	0.0220***	0.0347***	0.0453***	-0.0012	-0.0037	-0.0094***	0.0074*
	(0.0014)	(0.0025)	(0.0036)	(0.0045)	(0.0014)	(0.0025)	(0.0036)	(0.0045)
Constant	0.0404***	-0.0149	0.0011	0.0180	0.0372***	-0.0101	0.0324	0.1028***
	(0.0155)	(0.0196)	(0.0305)	(0.0219)	(0.0126)	(0.0173)	(0.0236)	(0.0291)
Year Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Sector Industry Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
R-squared	3.19%	5.48%	8.00%	9.25%	3.74%	6.70%	9.37%	10.64%

1. Heteroscedasticity-consistent standard errors are in parentheses.
2. The symbols ***, **, * show the significance at the 0.01, 0.05, and 0.10 levels of the t-test, respectively.
3. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock transactions, respectively. We employ the event study method based on the Market Model using CRSP value-weighted index and CRSP equal-weighted index, respectively.
4. We employ an indicator variable (ERM Year) to identify whether a firm employs ERM in any given year over the sample period. For example, if a firm adopts ERM in 2004, the ERM indicator variable will be assigned with a value of one for year 2004 and the following years.
5. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares. We employ five binary variables to proxy CEO, CFO, director, officer, and large shareholders who made stock transactions of a firm from 1996 to 2013, respectively.
6. We use two binary variables to proxy significant changes in firm's stock prices (i.e., past stock performance): RET is less than -20% and RET is greater than 20%. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., 4 day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., 2 day past stock performance) to proxy RET and get similar results.
7. We employ two binary variables for firm size based on market capitalization: small firms with market capitalization less than or equal to $202,158,805 (33.33th percentile of the insider stock purchase and sale sample), medium firms with market capitalization between $202,158,805 and $1,068,003,868 (33.33th percentile to 66.66th percentile), and large firms with market capitalization greater than $1,068,003,868 (66.66th percentile).
8. We employ two binary variables for stock volatility of a firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: low stock volatility firms with stock volatility less than or equal to 0.019601 (33.33th percentile of the insider stock purchase and sale sample), medium stock volatility firms with stock volatility between 0.019601 and 0.032981 (33.33th percentile to 66.66th percentile), and high stock volatility firms with stock volatility greater than 0.032981 (66.66th percentile).
9. We employ a binary variable for the period of 2008 financial crisis (December 2007 to June 2009).
10. We use accrual quality to proxy information risk based on the model used in FLOS (2005) (Eckles, Halek, and Zhang, 2013).

Appendix 3-G: Regression Results with Insider Sale (Accrual Quality) (Table 3-G2 ERM Year +1)

Insider Stock Sale: ERM Year +1
Cumulative Abnormal Return (CAR) Ordinary Least Squares Regression Model with Heteroscedasticity-Consistent Standard Errors
Number of Transactions = 31,421 (Insider-Firm-Day Level Data); Sample Period = 1996 to 2013

Event Study is based on the Market Model using:	**A. CRSP Value-Weighted Index**				**B. CRSP Equal-Weighted Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Independent Variables								
ERM Year +1	0.0046***	0.0100***	0.0095**	0.0044	0.0048***	0.0110***	0.0122***	0.0097*
	(0.0015)	(0.0028)	(0.0044)	(0.0057)	(0.0015)	(0.0029)	(0.0045)	(0.0058)
Insider Type								
CEO	-0.0076***	-0.0268***	-0.0481***	-0.0724***	-0.0071***	-0.0272***	-0.0461***	-0.0696***
	(0.0023)	(0.0042)	(0.0059)	(0.0072)	(0.0023)	(0.0041)	(0.0058)	(0.0073)
CFO	-0.0057**	-0.0208***	-0.0370***	-0.0677***	-0.0055**	-0.0216***	-0.0349***	-0.0639***
	(0.0026)	(0.0046)	(0.0069)	(0.0087)	(0.0026)	(0.0046)	(0.0070)	(0.0087)
Director	-0.0019	-0.0160***	-0.0278***	-0.0529***	-0.0012	-0.0159***	-0.0268***	-0.0508***
	(0.0020)	(0.0037)	(0.0053)	(0.0065)	(0.0020)	(0.0036)	(0.0053)	(0.0066)
Officer	0.0001	-0.0127***	-0.0242***	-0.0460***	-0.0001	-0.0134***	-0.0254***	-0.0473***
	(0.0019)	(0.0035)	(0.0051)	(0.0063)	(0.0019)	(0.0035)	(0.0051)	(0.0064)
Large Shareholders	0.0159	0.0227	0.0228	0.0565	0.0190	0.0279	0.0386	0.0816
	(0.0236)	(0.0370)	(0.0487)	(0.0561)	(0.0232)	(0.0360)	(0.0431)	(0.0545)
Past Stock Performance								
RET <= -20%	-0.0017	0.0491	0.1140**	0.0932	-0.0008	0.0500	0.0854*	0.0597
	(0.0216)	(0.0405)	(0.0548)	(0.0622)	(0.0216)	(0.0393)	(0.0519)	(0.0601)
RET > 20%	-0.0279***	-0.0346**	-0.0755***	-0.1094***	-0.0353***	-0.0376**	-0.0738***	-0.1051***
	(0.0088)	(0.0154)	(0.0202)	(0.0252)	(0.0087)	(0.0147)	(0.0193)	(0.0240)
Information Uncertainty								
Large Firms	-0.0181***	-0.0403***	-0.0580***	-0.0740***	-0.0198***	-0.0432***	-0.0630***	-0.0764***
	(0.0021)	(0.0037)	(0.0055)	(0.0071)	(0.0021)	(0.0036)	(0.0054)	(0.0070)
Medium Firms	-0.0118***	-0.0305***	-0.0452***	-0.0535***	-0.0117***	-0.0311***	-0.0458***	-0.0513***
	(0.0021)	(0.0038)	(0.0055)	(0.0070)	(0.0021)	(0.0036)	(0.0054)	(0.0068)
High Stock Volatility Firms	-0.0147***	-0.0367***	-0.0666***	-0.0941***	-0.0169***	-0.0426***	-0.0802***	-0.1153***
	(0.0016)	(0.0029)	(0.0044)	(0.0057)	(0.0016)	(0.0029)	(0.0044)	(0.0056)
Medium Stock Volatility Firms	-0.0062***	-0.0148***	-0.0341***	-0.0511***	-0.0063***	-0.0139***	-0.0345***	-0.0525***
	(0.0009)	(0.0017)	(0.0026)	(0.0034)	(0.0009)	(0.0017)	(0.0027)	(0.0035)
Financial Crisis Period (December 2007 to June 2009)	-0.0098**	-0.0403***	-0.0489***	-0.0327*	-0.0262***	-0.1085***	-0.2085***	-0.2523***
	(0.0050)	(0.0087)	(0.0129)	(0.0170)	(0.0052)	(0.0090)	(0.0135)	(0.0175)
Accrual Quality (FLOS, 2005)	<0.0000***	<0.0000***	<0.0000***	0.0001***	<0.0000***	<0.0000***	<0.0000***	0.0001***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)

(continued on next page)

Appendix 3-G: Regression Results with Insider Sale (Accrual Quality) (Table 3-G2 ERM Year +1) (cont.)

Insider Stock Sale: ERM Year +1 (cont.)

Event Study is based on the Market Model using:	**A. CRSP Value-Weighted Index**				**B. CRSP Equal-Weighted Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Control Variables								
Number of insider shares traded at insider level	<0.0000	<0.0000	<0.0000	<0.0000***	<0.0000	<0.0000	<0.0000	<0.0000***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Number of insider shares traded at company level (%)	-0.0005	-0.0012	-0.0027**	-0.0038**	-0.0007	-0.0011	-0.0022*	-0.0038***
	(0.0005)	(0.0008)	(0.0013)	(0.0016)	(0.0006)	(0.0007)	(0.0011)	(0.0014)
Market to book ratio (MTB)	0.0000	0.0000*	0.0000	0.0000	0.0000**	0.0000***	0.0001***	0.0000*
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Loss (binary variable for net income < 0)	0.0026	0.0006	0.0055	0.0001	0.0020	-0.0013	-0.0027	-0.0128*
	(0.0021)	(0.0039)	(0.0055)	(0.0067)	(0.0021)	(0.0038)	(0.0053)	(0.0067)
Return on assets (ROA)	-0.0485**	-0.0229	0.0862*	-0.0287	-0.0430**	-0.0181	0.0656	-0.0916*
	(0.0214)	(0.0367)	(0.0464)	(0.0475)	(0.0213)	(0.0353)	(0.0436)	(0.0512)
Leverage ratio (long-term debt/ equity)	-0.0001	-0.0001	-0.0000	-0.0000	-0.0002*	-0.0001	-0.0002	-0.0002
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0002)
Insurance industry	-0.0337**	0.0523**	0.0332	0.0073	-0.0257*	0.0552***	0.0240	-0.0297
	(0.0163)	(0.0223)	(0.0366)	(0.0351)	(0.0140)	(0.0208)	(0.0322)	(0.0414)
January	0.0077***	-0.0046	-0.0063	-0.0147*	0.0030	0.0120***	0.0243***	0.0068
	(0.0024)	(0.0047)	(0.0065)	(0.0082)	(0.0024)	(0.0046)	(0.0063)	(0.0081)
Fourth Quarter	0.0036**	0.0220***	0.0348***	0.0455***	-0.0012	-0.0037	-0.0094***	0.0076*
	(0.0014)	(0.0025)	(0.0036)	(0.0045)	(0.0014)	(0.0025)	(0.0036)	(0.0045)
Constant	0.0404***	-0.0148	0.0016	0.0187	0.0372***	-0.0100	0.0329	0.1035***
	(0.0155)	(0.0196)	(0.0305)	(0.0219)	(0.0126)	(0.0173)	(0.0236)	(0.0291)
Year Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Sector Industry Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
R-squared	3.19%	5.49%	7.98%	9.23%	3.74%	6.70%	9.35%	10.61%

1. Heteroscedasticity-consistent standard errors are in parentheses.
2. The symbols ***, **, * show the significance at the 0.01, 0.05, and 0.10 levels of the t-test, respectively.
3. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock transactions, respectively. We employ the event study method based on the Market Model using CRSP value-weighted index and CRSP equal-weighted index, respectively.
4. We employ an indicator variable (ERM Year +1) to identify whether a firm employs ERM in any given year plus one year over the sample period. For example, if a firm adopts ERM in 2004, the ERM indicator variable will be assigned with a value of one for year 2005 and the following years.
5. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares. We employ five binary variables to proxy CEO, CFO, director, officer, and large shareholders who made stock transactions of a firm from 1996 to 2013, respectively.
6. We use two binary variables to proxy significant changes in firm's stock prices (i.e., past stock performance): RET is less than -20% and RET is greater than 20%. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., 4 day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., 2 day past stock performance) to proxy RET and get similar results.
7. We employ two binary variables for firm size based on market capitalization: small firms with market capitalization less than or equal to $202,158,805 (33.33th percentile of the insider stock purchase and sale sample), medium firms with market capitalization between $202,158,805 and $1,068,003,868 (33.33th percentile to 66.66th percentile), and large firms with market capitalization greater than $1,068,003,868 (66.66th percentile).
8. We employ two binary variables for stock volatility of a firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: low stock volatility firms with stock volatility less than or equal to 0.019601 (33.33th percentile of the insider stock purchase and sale sample), medium stock volatility firms with stock volatility between 0.019601 and 0.032981 (33.33th percentile to 66.66th percentile), and high stock volatility firms with stock volatility greater than 0.032981 (66.66th percentile).
9. We employ a binary variable for the period of 2008 financial crisis (December 2007 to June 2009).
10. We use accrual quality to proxy information risk based on the model used in FLOS (2005) (Eckles, Halek, and Zhang, 2013).

Appendix 3-G: Regression Results with Insider Sale (Accrual Quality) (Table 3-G3 ERM Date)

Insider Stock Sale: ERM Date
Cumulative Abnormal Return (CAR) Ordinary Least Squares Regression Model with Heteroscedasticity-Consistent Standard Errors
Number of Transactions = 31,421 (Insider-Firm-Day Level Data); Sample Period = 1996 to 2013

Event Study is based on the Market Model using:	**A. CRSP Value-Weighted Index**				**B. CRSP Equal-Weighted Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Independent Variables								
ERM Date	0.0032**	0.0079***	0.0107**	0.0033	0.0035**	0.0089***	0.0123***	0.0067
	(0.0014)	(0.0027)	(0.0043)	(0.0054)	(0.0014)	(0.0027)	(0.0043)	(0.0055)
Insider Type								
CEO	-0.0075***	-0.0267***	-0.0481***	-0.0723***	-0.0071***	-0.0271***	-0.0461***	-0.0695***
	(0.0023)	(0.0042)	(0.0059)	(0.0072)	(0.0023)	(0.0041)	(0.0058)	(0.0073)
CFO	-0.0057**	-0.0208***	-0.0370***	-0.0677***	-0.0054**	-0.0216***	-0.0348***	-0.0638***
	(0.0026)	(0.0046)	(0.0069)	(0.0087)	(0.0026)	(0.0046)	(0.0070)	(0.0087)
Director	-0.0018	-0.0160***	-0.0278***	-0.0528***	-0.0012	-0.0159***	-0.0268***	-0.0507***
	(0.0020)	(0.0037)	(0.0053)	(0.0065)	(0.0020)	(0.0036)	(0.0053)	(0.0066)
Officer	0.0002	-0.0126***	-0.0242***	-0.0460***	-0.0001	-0.0133***	-0.0254***	-0.0472***
	(0.0019)	(0.0035)	(0.0051)	(0.0063)	(0.0019)	(0.0035)	(0.0051)	(0.0064)
Large Shareholders	0.0159	0.0227	0.0229	0.0565	0.0190	0.0280	0.0387	0.0816
	(0.0236)	(0.0370)	(0.0487)	(0.0561)	(0.0232)	(0.0360)	(0.0431)	(0.0545)
Past Stock Performance								
RET <= -20%	-0.0018	0.0491	0.1139**	0.0932	-0.0008	0.0500	0.0854*	0.0597
	(0.0216)	(0.0405)	(0.0548)	(0.0622)	(0.0216)	(0.0393)	(0.0519)	(0.0601)
RET > 20%	-0.0278***	-0.0346**	-0.0755***	-0.1094***	-0.0352***	-0.0375**	-0.0738***	-0.1050***
	(0.0087)	(0.0154)	(0.0202)	(0.0252)	(0.0087)	(0.0147)	(0.0193)	(0.0240)
Information Uncertainty								
Large Firms	-0.0181***	-0.0403***	-0.0581***	-0.0740***	-0.0198***	-0.0432***	-0.0631***	-0.0764***
	(0.0021)	(0.0037)	(0.0055)	(0.0071)	(0.0021)	(0.0036)	(0.0054)	(0.0070)
Medium Firms	-0.0119***	-0.0306***	-0.0452***	-0.0535***	-0.0118***	-0.0312***	-0.0458***	-0.0515***
	(0.0021)	(0.0038)	(0.0055)	(0.0070)	(0.0021)	(0.0036)	(0.0054)	(0.0068)
High Stock Volatility Firms	-0.0147***	-0.0366***	-0.0665***	-0.0941***	-0.0169***	-0.0425***	-0.0801***	-0.1153***
	(0.0016)	(0.0029)	(0.0044)	(0.0057)	(0.0016)	(0.0029)	(0.0044)	(0.0056)
Medium Stock Volatility Firms	-0.0062***	-0.0147***	-0.0340***	-0.0511***	-0.0063***	-0.0139***	-0.0345***	-0.0525***
	(0.0009)	(0.0017)	(0.0026)	(0.0034)	(0.0009)	(0.0017)	(0.0027)	(0.0035)
Financial Crisis Period (December 2007 to June 2009)	-0.0098**	-0.0403***	-0.0489***	-0.0327*	-0.0262***	-0.1085***	-0.2085***	-0.2524***
	(0.0050)	(0.0087)	(0.0129)	(0.0170)	(0.0052)	(0.0090)	(0.0135)	(0.0175)
Accrual Quality (FLOS, 2005)	<0.0000***	<0.0000***	<0.0000***	0.0001***	<0.0000***	<0.0000***	<0.0000***	0.0001***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)

(continued on next page)

Appendix 3-G: Regression Results with Insider Sale (Accrual Quality) (Table 3-G3 ERM Date) (cont.)

Insider Stock Sale: ERM Date (cont.)

Event Study is based on the Market Model using:	**A. CRSP Value-Weighted Index**				**B. CRSP Equal-Weighted Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Control Variables								
Number of insider shares traded at insider level	<0.0000	<0.0000	<0.0000	<0.0000***	<0.0000	<0.0000	<0.0000	<0.0000***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Number of insider shares traded at company level (%)	-0.0007	-0.0012	-0.0027**	-0.0038**	-0.0007	-0.0011	-0.0022*	-0.0038***
	(0.0006)	(0.0008)	(0.0013)	(0.0016)	(0.0006)	(0.0007)	(0.0011)	(0.0014)
Market to book ratio (MTB)	0.0000	0.0000*	0.0000	0.0000	0.0000**	0.0000***	0.0001***	0.0000*
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Loss (binary variable for net income < 0)	0.0026	0.0007	0.0055	0.0001	0.0020	-0.0012	-0.0027	-0.0128*
	(0.0021)	(0.0039)	(0.0055)	(0.0067)	(0.0021)	(0.0038)	(0.0053)	(0.0067)
Return on assets (ROA)	-0.0485**	-0.0229	0.0865*	-0.0287	-0.0430**	-0.0181	0.0658	-0.0918*
	(0.0214)	(0.0367)	(0.0464)	(0.0475)	(0.0213)	(0.0353)	(0.0436)	(0.0512)
Leverage ratio (long-term debt/ equity)	-0.0001	-0.0001	-0.0000	-0.0000	-0.0002*	-0.0001	-0.0002	-0.0002
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0002)
Insurance industry	-0.0338**	0.0523**	0.0338	0.0072	-0.0258*	0.0551***	0.0245	-0.0300
	(0.0163)	(0.0223)	(0.0367)	(0.0351)	(0.0140)	(0.0208)	(0.0323)	(0.0415)
January	0.0078***	-0.0044	-0.0061	-0.0147*	0.0031	0.0122***	0.0245***	0.0069
	(0.0024)	(0.0047)	(0.0065)	(0.0082)	(0.0024)	(0.0046)	(0.0063)	(0.0081)
Fourth Quarter	0.0035**	0.0219***	0.0347***	0.0455***	-0.0013	-0.0038	-0.0095***	0.0075*
	(0.0014)	(0.0025)	(0.0036)	(0.0045)	(0.0014)	(0.0025)	(0.0036)	(0.0045)
Constant	0.0404***	-0.0148	0.0015	0.0187	0.0372***	-0.0100	0.0328	0.1035***
	(0.0155)	(0.0196)	(0.0305)	(0.0219)	(0.0126)	(0.0173)	(0.0236)	(0.0291)
Year Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Sector Industry Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
R-squared	3.19%	5.48%	7.98%	9.23%	3.74%	6.70%	9.35%	10.61%

1. Heteroscedasticity-consistent standard errors are in parentheses.
2. The symbols ***, **, * show the significance at the 0.01, 0.05, and 0.10 levels of the t-test, respectively.
3. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock transactions, respectively. We employ the event study method based on the Market Model using CRSP value-weighted index and CRSP equal-weighted index, respectively.
4. We employ an indicator variable (ERM Date) to identify whether a firm employs ERM on the specific date over the sample period. For example, if a firm adopts ERM on March 1st 2004, the ERM indicator variable will be assigned with a value of one for March 1st 2014 and the following dates. If we do not find the enactment date of ERM, we use the SEC filing date/report date as the first evidence of ERM of a firm.
5. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares. We employ five binary variables to proxy CEO, CFO, director, officer, and large shareholders who made stock transactions of a firm from 1996 to 2013, respectively.
6. We use two binary variables to proxy significant changes in firm's stock prices (i.e., past stock performance): RET is less than -20% and RET is greater than 20%. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., 4 day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., 2 day past stock performance) to proxy RET and get similar results.
7. We employ two binary variables for firm size based on market capitalization: small firms with market capitalization less than or equal to $202,158,805 (33.33th percentile of the insider stock purchase and sale sample), medium firms with market capitalization between $202,158,805 and $1,068,003,868 (33.33th percentile to 66.66th percentile), and large firms with market capitalization greater than $1,068,003,868 (66.66th percentile).
8. We employ two binary variables for stock volatility of a firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: low stock volatility firms with stock volatility less than or equal to 0.019601 (33.33th percentile of the insider stock purchase and sale sample), medium stock volatility firms with stock volatility between 0.019601 and 0.032981 (33.33th percentile to 66.66th percentile), and high stock volatility firms with stock volatility greater than 0.032981 (66.66th percentile).
9. We employ a binary variable for the period of 2008 financial crisis (December 2007 to June 2009).
10. We use accrual quality to proxy information risk based on the model used in FLOS (2005) (Eckles, Halek, and Zhang, 2013).

Appendix 3-H: Regression Results with Insider Sale (Information Quality) (Table 3-H1 ERM Year)

Insider Stock Sale: ERM Year
Cumulative Abnormal Return (CAR) Ordinary Least Squares Regression Model with Heteroscedasticity-Consistent Standard Errors
Number of Transactions = 35,431 (Insider-Firm-Day Level Data); Sample Period = 1996 to 2013

Event Study is based on the Market Model using:	**A. CRSP Value-Weighted Index**				**B. CRSP Equal-Weighted Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Independent Variables								
ERM Year	0.0010	0.0036*	0.0040	0.0029	0.0003	0.0025	0.0019	0.0010
	(0.0011)	(0.0020)	(0.0032)	(0.0040)	(0.0011)	(0.0021)	(0.0033)	(0.0041)
Insider Type								
CEO	-0.0072***	-0.0196***	-0.0395***	-0.0755***	-0.0054***	-0.0194***	-0.0346***	-0.0637***
	(0.0019)	(0.0033)	(0.0049)	(0.0063)	(0.0019)	(0.0033)	(0.0048)	(0.0063)
CFO	-0.0084***	-0.0192***	-0.0420***	-0.0796***	-0.0083***	-0.0241***	-0.0457***	-0.0744***
	(0.0022)	(0.0039)	(0.0056)	(0.0072)	(0.0022)	(0.0040)	(0.0057)	(0.0073)
Director	-0.0058***	-0.0191***	-0.0381***	-0.0697***	-0.0044**	-0.0215***	-0.0400***	-0.0641***
	(0.0017)	(0.0030)	(0.0044)	(0.0057)	(0.0017)	(0.0030)	(0.0044)	(0.0057)
Officer	-0.0047***	-0.0156***	-0.0339***	-0.0676***	-0.0039**	-0.0188***	-0.0361***	-0.0632***
	(0.0016)	(0.0029)	(0.0043)	(0.0056)	(0.0016)	(0.0029)	(0.0042)	(0.0056)
Large Shareholders	0.0405**	0.0927***	0.0549	0.0406	0.0441***	0.1212***	0.1283***	0.1492***
	(0.0168)	(0.0323)	(0.0386)	(0.0474)	(0.0160)	(0.0330)	(0.0371)	(0.0522)
Past Stock Performance								
RET <= -20%	-0.0037	-0.0496	-0.0318	-0.0347	0.0108	-0.0088	-0.0351	0.0059
	(0.0176)	(0.0308)	(0.0521)	(0.0643)	(0.0164)	(0.0303)	(0.0536)	(0.0594)
RET > 20%	-0.0091	-0.0039	-0.0352**	-0.0341	-0.0117	-0.0038	-0.0459***	-0.0544***
	(0.0082)	(0.0137)	(0.0171)	(0.0220)	(0.0080)	(0.0122)	(0.0155)	(0.0207)
Information Uncertainty								
Large Firms	-0.0181***	-0.0481***	-0.1113***	-0.1403***	-0.0190***	-0.0477***	-0.1076***	-0.1370***
	(0.0022)	(0.0039)	(0.0060)	(0.0081)	(0.0022)	(0.0038)	(0.0059)	(0.0080)
Medium Firms	-0.0133***	-0.0352***	-0.0939***	-0.1240***	-0.0129***	-0.0350***	-0.0891***	-0.1164***
	(0.0022)	(0.0038)	(0.0059)	(0.0079)	(0.0022)	(0.0037)	(0.0058)	(0.0077)
High Stock Volatility Firms	-0.0083***	-0.0232***	-0.0402***	-0.0637***	-0.0117***	-0.0323***	-0.0594***	-0.0891***
	(0.0014)	(0.0026)	(0.0039)	(0.0052)	(0.0015)	(0.0026)	(0.0040)	(0.0052)
Medium Stock Volatility Firms	-0.0027***	-0.0082***	-0.0192***	-0.0319***	-0.0037***	-0.0096***	-0.0221***	-0.0357***
	(0.0008)	(0.0016)	(0.0024)	(0.0032)	(0.0009)	(0.0016)	(0.0024)	(0.0032)
Financial Crisis Period (December 2007 to June 2009)	-0.0085*	-0.0303***	-0.0296***	-0.0344**	-0.0270***	-0.0986***	-0.1904***	-0.2574***
	(0.0044)	(0.0072)	(0.0110)	(0.0149)	(0.0047)	(0.0076)	(0.0117)	(0.0158)
Information Quality (Transparency)	0.0014	0.0072***	0.0249***	0.0482***	0.0027**	0.0116***	0.0329***	0.0538***
	(0.0013)	(0.0023)	(0.0035)	(0.0045)	(0.0013)	(0.0023)	(0.0035)	(0.0046)

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Appendix 3-H: Regression Results with Insider Sale (Information Quality) (Table 3-H1 ERM Year) (cont.)

Insider Stock Sale: ERM Year (cont.)

Event Study is based on the Market Model using:	**A. CRSP Value-Weighted Index**				**B. CRSP Equal-Weighted Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Control Variables								
Number of insider shares traded at insider level	<0.0000	<0.0000	<0.0000***	<0.0000***	<0.0000	<0.0000	<0.0000*	<0.0000**
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Number of insider shares traded at company level (%)	-0.0016*	-0.0032***	-0.0051***	-0.0074***	-0.0011	-0.0022**	-0.0031**	-0.0047***
	(0.0008)	(0.0010)	(0.0015)	(0.0018)	(0.0008)	(0.0009)	(0.0013)	(0.0015)
Market to book ratio (MTB)	0.0000	-0.0000	-0.0000	-0.0000	0.0000	0.0000	0.0000	0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Loss (binary variable for net income < 0)	0.0042**	0.0041	-0.0006	0.0094	0.0027	0.0079**	0.0005	0.0032
	(0.0018)	(0.0034)	(0.0050)	(0.0063)	(0.0019)	(0.0034)	(0.0050)	(0.0064)
Return on assets (ROA)	-0.0043	0.0269	0.0240	-0.2370***	0.0029	0.0600	0.1081*	-0.1458**
	(0.0212)	(0.0384)	(0.0564)	(0.0696)	(0.0206)	(0.0394)	(0.0601)	(0.0694)
Leverage ratio (long-term debt/ equity)	0.0000	0.0001***	0.0002	0.0004**	0.0000	0.0001	0.0000	0.0001
	(0.0000)	(0.0000)	(0.0001)	(0.0002)	(0.0000)	(0.0001)	(0.0001)	(0.0002)
Insurance industry	0.0139***	0.0397***	0.0853***	0.1125***	0.0149***	0.0332***	0.0692***	0.1086***
	(0.0049)	(0.0100)	(0.0146)	(0.0204)	(0.0055)	(0.0103)	(0.0144)	(0.0207)
Banking industry	0.0114***	0.0359***	0.0835***	0.1318***	0.0127***	0.0313***	0.0753***	0.1316***
	(0.0039)	(0.0083)	(0.0117)	(0.0159)	(0.0042)	(0.0085)	(0.0118)	(0.0165)
January	-0.0023	-0.0159***	0.0003	-0.0099	-0.0067***	0.0029	0.0373***	0.0140**
	(0.0019)	(0.0035)	(0.0048)	(0.0065)	(0.0019)	(0.0036)	(0.0049)	(0.0066)
Fourth Quarter	0.0026**	0.0130***	0.0167***	0.0224***	-0.0017	-0.0125***	-0.0310***	-0.0166***
	(0.0012)	(0.0021)	(0.0031)	(0.0042)	(0.0012)	(0.0021)	(0.0031)	(0.0042)
Constant	0.0188***	0.0387***	0.0632***	0.0920***	0.0190***	0.0510***	0.0905***	0.1177***
	(0.0051)	(0.0103)	(0.0147)	(0.0199)	(0.0054)	(0.0104)	(0.0148)	(0.0203)
Year Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Sector Industry Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
R-squared	2.94%	5.06%	7.84%	8.42%	3.80%	6.89%	11.13%	11.95%

1. Heteroscedasticity-consistent standard errors are in parentheses.
2. The symbols ***, **, * show the significance at the 0.01, 0.05, and 0.10 levels of the t-test, respectively.
3. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock transactions, respectively. We employ the event study method based on the Market Model using CRSP value-weighted index and CRSP equal-weighted index, respectively.
4. We employ an indicator variable (ERM Year) to identify whether a firm employs ERM in any given year over the sample period. For example, if a firm adopts ERM in 2004, the ERM indicator variable will be assigned with a value of one for year 2004 and the following years.
5. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares. We employ five binary variables to proxy CEO, CFO, director, officer, and large shareholders who made stock transactions of a firm from 1996 to 2013, respectively.
6. We use two binary variables to proxy significant changes in firm's stock prices (i.e., past stock performance): RET is less than -20% and RET is greater than 20%. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., 4 day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., 2 day past stock performance) to proxy RET and get similar results.
7. We employ two binary variables for firm size based on market capitalization: small firms with market capitalization less than or equal to $202,158,805 (33.33th percentile of the insider stock purchase and sale sample), medium firms with market capitalization between $202,158,805 and $1,068,003,868 (33.33th percentile to 66.66th percentile), and large firms with market capitalization greater than $1,068,003,868 (66.66th percentile).
8. We employ two binary variables for stock volatility of a firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: low stock volatility firms with stock volatility less than or equal to 0.019601 (33.33th percentile of the insider stock purchase and sale sample), medium stock volatility firms with stock volatility between 0.019601 and 0.032981 (33.33th percentile to 66.66th percentile), and high stock volatility firms with stock volatility greater than 0.032981 (66.66th percentile).
9. We employ a binary variable for the period of 2008 financial crisis (December 2007 to June 2009).
10. As for information quality (transparency) variable, we follow Wade, Hoyt, and Liebenberg (2015) and calculate dispersion (DISP) based on Diether, Malloy, and Scherbina (2002).

Appendix 3-H: Regression Results with Insider Sale (Information Quality) (Table 3-H2 ERM Year +1)

Insider Stock Sale: ERM Year +1
Cumulative Abnormal Return (CAR) Ordinary Least Squares Regression Model with Heteroscedasticity-Consistent Standard Errors
Number of Transactions = 35,431 (Insider-Firm-Day Level Data); Sample Period = 1996 to 2013

Event Study is based on the Market Model using:	**A. CRSP Value-Weighted Index**				**B. CRSP Equal-Weighted Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Independent Variables								
ERM Year +1	0.0038***	0.0086***	0.0049	0.0043	0.0031**	0.0079***	0.0047	0.0032
	(0.0012)	(0.0022)	(0.0034)	(0.0044)	(0.0012)	(0.0023)	(0.0035)	(0.0045)
Insider Type								
CEO	-0.0072***	-0.0197***	-0.0396***	-0.0756***	-0.0054***	-0.0196***	-0.0347***	-0.0638***
	(0.0019)	(0.0033)	(0.0049)	(0.0063)	(0.0019)	(0.0033)	(0.0048)	(0.0063)
CFO	-0.0084***	-0.0191***	-0.0420***	-0.0797***	-0.0082***	-0.0239***	-0.0456***	-0.0743***
	(0.0022)	(0.0039)	(0.0056)	(0.0072)	(0.0022)	(0.0040)	(0.0057)	(0.0073)
Director	-0.0058***	-0.0190***	-0.0381***	-0.0697***	-0.0044**	-0.0214***	-0.0399***	-0.0641***
	(0.0017)	(0.0030)	(0.0044)	(0.0057)	(0.0017)	(0.0030)	(0.0044)	(0.0057)
Officer	-0.0047***	-0.0156***	-0.0339***	-0.0677***	-0.0038**	-0.0188***	-0.0361***	-0.0632***
	(0.0016)	(0.0029)	(0.0043)	(0.0056)	(0.0016)	(0.0029)	(0.0042)	(0.0056)
Large Shareholders	0.0405**	0.0926***	0.0547	0.0405	0.0442***	0.1212***	0.1283***	0.1492***
	(0.0168)	(0.0323)	(0.0386)	(0.0474)	(0.0160)	(0.0330)	(0.0371)	(0.0521)
Past Stock Performance								
RET <= -20%	-0.0038	-0.0498	-0.0319	-0.0347	0.0107	-0.0089	-0.0351	0.0059
	(0.0176)	(0.0308)	(0.0521)	(0.0643)	(0.0164)	(0.0303)	(0.0536)	(0.0594)
RET > 20%	-0.0092	-0.0040	-0.0353**	-0.0341	-0.0118	-0.0040	-0.0460***	-0.0545***
	(0.0082)	(0.0136)	(0.0171)	(0.0220)	(0.0080)	(0.0121)	(0.0155)	(0.0207)
Information Uncertainty								
Large Firms	-0.0181***	-0.0482***	-0.1113***	-0.1403***	-0.0191***	-0.0478***	-0.1077***	-0.1370***
	(0.0022)	(0.0039)	(0.0060)	(0.0081)	(0.0022)	(0.0038)	(0.0059)	(0.0080)
Medium Firms	-0.0131***	-0.0348***	-0.0937***	-0.1239***	-0.0127***	-0.0346***	-0.0888***	-0.1162***
	(0.0022)	(0.0038)	(0.0059)	(0.0080)	(0.0022)	(0.0037)	(0.0058)	(0.0078)
High Stock Volatility Firms	-0.0083***	-0.0233***	-0.0403***	-0.0637***	-0.0117***	-0.0323***	-0.0594***	-0.0892***
	(0.0014)	(0.0026)	(0.0039)	(0.0052)	(0.0015)	(0.0026)	(0.0040)	(0.0052)
Medium Stock Volatility Firms	-0.0027***	-0.0082***	-0.0193***	-0.0319***	-0.0037***	-0.0096***	-0.0220***	-0.0357***
	(0.0008)	(0.0016)	(0.0024)	(0.0032)	(0.0009)	(0.0016)	(0.0024)	(0.0032)
Financial Crisis Period (December 2007 to June 2009)	-0.0086*	-0.0304***	-0.0297***	-0.0345**	-0.0270***	-0.0987***	-0.1905***	-0.2574***
	(0.0044)	(0.0072)	(0.0110)	(0.0149)	(0.0047)	(0.0076)	(0.0117)	(0.0158)
Information Quality (Transparency)	0.0015	0.0074***	0.0250***	0.0483***	0.0029**	0.0118***	0.0331***	0.0539***
	(0.0013)	(0.0023)	(0.0035)	(0.0045)	(0.0013)	(0.0023)	(0.0035)	(0.0046)

(continued on next page)

Appendix 3-H: Regression Results with Insider Sale (Information Quality) (Table 3-H2 ERM Year +1) (cont.)

Insider Stock Sale: ERM Year +1 (cont.)

Event Study is based on the Market Model using:	**A. CRSP Value-Weighted Index**				**B. CRSP Equal-Weighted Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Control Variables								
Number of insider shares traded at insider level	<0.0000	<0.0000	<0.0000***	<0.0000***	<0.0000	<0.0000	<0.0000*	<0.0000**
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Number of insider shares traded at company level (%)	-0.0016*	-0.0032***	-0.0051***	-0.0074***	-0.0011	-0.0023**	-0.0031**	-0.0047***
	(0.0008)	(0.0010)	(0.0015)	(0.0018)	(0.0008)	(0.0009)	(0.0013)	(0.0015)
Market to book ratio (MTB)	0.0000	-0.0000	-0.0000	-0.0000	0.0000	0.0000	0.0000	0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Loss (binary variable for net income < 0)	0.0042**	0.0041	-0.0006	0.0094	0.0027	0.0079**	0.0005	0.0032
	(0.0018)	(0.0034)	(0.0050)	(0.0063)	(0.0019)	(0.0034)	(0.0050)	(0.0064)
Return on assets (ROA)	-0.0041	0.0272	0.0242	-0.2369***	0.0030	0.0603	0.1083*	-0.1457**
	(0.0212)	(0.0384)	(0.0564)	(0.0696)	(0.0206)	(0.0394)	(0.0601)	(0.0694)
Leverage ratio (long-term debt/ equity)	0.0000	0.0001***	0.0002	0.0004**	0.0000	0.0001	0.0000	0.0001
	(0.0000)	(0.0000)	(0.0001)	(0.0002)	(0.0000)	(0.0001)	(0.0001)	(0.0002)
Insurance industry	0.0141***	0.0400***	0.0853***	0.1126***	0.0151***	0.0335***	0.0693***	0.1087***
	(0.0049)	(0.0100)	(0.0146)	(0.0204)	(0.0055)	(0.0104)	(0.0144)	(0.0207)
Banking industry	0.0110***	0.0353***	0.0836***	0.1317***	0.0123***	0.0307***	0.0750***	0.1313***
	(0.0039)	(0.0083)	(0.0117)	(0.0159)	(0.0042)	(0.0085)	(0.0118)	(0.0165)
January	-0.0023	-0.0158***	0.0004	-0.0099	-0.0067***	0.0029	0.0374***	0.0140**
	(0.0019)	(0.0035)	(0.0048)	(0.0065)	(0.0019)	(0.0036)	(0.0049)	(0.0066)
Fourth Quarter	0.0026**	0.0130***	0.0167***	0.0223***	-0.0017	-0.0125***	-0.0310***	-0.0166***
	(0.0012)	(0.0021)	(0.0031)	(0.0042)	(0.0012)	(0.0021)	(0.0031)	(0.0042)
Constant	0.0188***	0.0386***	0.0631***	0.0920***	0.0190***	0.0509***	0.0904***	0.1176***
	(0.0051)	(0.0103)	(0.0147)	(0.0199)	(0.0054)	(0.0104)	(0.0148)	(0.0203)
Year Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Sector Industry Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
R-squared	2.96%	5.08%	7.84%	8.42%	3.81%	6.91%	11.14%	11.95%

1. Heteroscedasticity-consistent standard errors are in parentheses.
2. The symbols ***, **, * show the significance at the 0.01, 0.05, and 0.10 levels of the t-test, respectively.
3. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock transactions, respectively. We employ the event study method based on the Market Model using CRSP value-weighted index and CRSP equal-weighted index, respectively.
4. We employ an indicator variable (ERM Year +1) to identify whether a firm employs ERM in any given year plus one year over the sample period. For example, if a firm adopts ERM in 2004, the ERM indicator variable will be assigned with a value of one for year 2005 and the following years.
5. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares. We employ five binary variables to proxy CEO, CFO, director, officer, and large shareholders who made stock transactions of a firm from 1996 to 2013, respectively.
6. We use two binary variables to proxy significant changes in firm's stock prices (i.e., past stock performance): RET is less than -20% and RET is greater than 20%. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., 4 day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., 2 day past stock performance) to proxy RET and get similar results.
7. We employ two binary variables for firm size based on market capitalization: small firms with market capitalization less than or equal to $202,158,805 (33.33th percentile of the insider stock purchase and sale sample), medium firms with market capitalization between $202,158,805 and $1,068,003,868 (33.33th percentile to 66.66th percentile), and large firms with market capitalization greater than $1,068,003,868 (66.66th percentile).
8. We employ two binary variables for stock volatility of a firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: low stock volatility firms with stock volatility less than or equal to 0.019601 (33.33th percentile of the insider stock purchase and sale sample), medium stock volatility firms with stock volatility between 0.019601 and 0.032981 (33.33th percentile to 66.66th percentile), and high stock volatility firms with stock volatility greater than 0.032981 (66.66th percentile).
9. We employ a binary variable for the period of 2008 financial crisis (December 2007 to June 2009).
10. As for information quality (transparency) variable, we follow Wade, Hoyt, and Liebenberg (2015) and calculate dispersion (DISP) based on Diether, Malloy, and Scherbina (2002).

Appendix 3-H: Regression Results with Insider Sale (Information Quality) (Table 3-H3 ERM Date)

Insider Stock Sale: ERM Date
Cumulative Abnormal Return (CAR) Ordinary Least Squares Regression Model with Heteroscedasticity-Consistent Standard Errors
Number of Transactions = 35,431 (Insider-Firm-Day Level Data); Sample Period = 1996 to 2013

Event Study is based on the Market Model using:	**A. CRSP Value-Weighted Index**				**B. CRSP Equal-Weighted Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Independent Variables								
ERM Date	0.0023**	0.0066***	0.0052	0.0018	0.0016	0.0056**	0.0045	-0.0003
	(0.0011)	(0.0021)	(0.0033)	(0.0041)	(0.0011)	(0.0022)	(0.0034)	(0.0043)
Insider Type								
CEO	-0.0072***	-0.0197***	-0.0396***	-0.0755***	-0.0054***	-0.0195***	-0.0347***	-0.0637***
	(0.0019)	(0.0033)	(0.0049)	(0.0063)	(0.0019)	(0.0033)	(0.0048)	(0.0063)
CFO	-0.0084***	-0.0192***	-0.0421***	-0.0797***	-0.0083***	-0.0240***	-0.0456***	-0.0744***
	(0.0022)	(0.0039)	(0.0056)	(0.0072)	(0.0022)	(0.0040)	(0.0057)	(0.0073)
Director	-0.0058***	-0.0191***	-0.0381***	-0.0697***	-0.0044**	-0.0215***	-0.0400***	-0.0641***
	(0.0017)	(0.0030)	(0.0044)	(0.0057)	(0.0017)	(0.0030)	(0.0044)	(0.0057)
Officer	-0.0047***	-0.0156***	-0.0339***	-0.0677***	-0.0039**	-0.0188***	-0.0361***	-0.0632***
	(0.0016)	(0.0029)	(0.0043)	(0.0056)	(0.0016)	(0.0029)	(0.0042)	(0.0056)
Large Shareholders	0.0405**	0.0926***	0.0548	0.0405	0.0442***	0.1212***	0.1283***	0.1491***
	(0.0168)	(0.0323)	(0.0386)	(0.0474)	(0.0160)	(0.0330)	(0.0371)	(0.0522)
Past Stock Performance								
RET <= -20%	-0.0037	-0.0497	-0.0319	-0.0347	0.0107	-0.0088	-0.0351	0.0059
	(0.0176)	(0.0308)	(0.0521)	(0.0643)	(0.0164)	(0.0303)	(0.0536)	(0.0594)
RET > 20%	-0.0092	-0.0040	-0.0353**	-0.0341	-0.0118	-0.0039	-0.0460***	-0.0544***
	(0.0082)	(0.0137)	(0.0171)	(0.0220)	(0.0080)	(0.0121)	(0.0155)	(0.0207)
Information Uncertainty								
Large Firms	-0.0181***	-0.0482***	-0.1113***	-0.1402***	-0.0191***	-0.0478***	-0.1077***	-0.1369***
	(0.0022)	(0.0039)	(0.0060)	(0.0081)	(0.0022)	(0.0038)	(0.0059)	(0.0080)
Medium Firms	-0.0132***	-0.0350***	-0.0937***	-0.1241***	-0.0128***	-0.0348***	-0.0889***	-0.1164***
	(0.0022)	(0.0038)	(0.0059)	(0.0080)	(0.0022)	(0.0037)	(0.0058)	(0.0078)
High Stock Volatility Firms	-0.0083***	-0.0232***	-0.0402***	-0.0637***	-0.0117***	-0.0323***	-0.0594***	-0.0892***
	(0.0014)	(0.0026)	(0.0039)	(0.0052)	(0.0015)	(0.0026)	(0.0040)	(0.0052)
Medium Stock Volatility Firms	-0.0027***	-0.0082***	-0.0192***	-0.0319***	-0.0037***	-0.0096***	-0.0220***	-0.0358***
	(0.0008)	(0.0016)	(0.0024)	(0.0032)	(0.0009)	(0.0016)	(0.0024)	(0.0032)
Financial Crisis Period (December 2007 to June 2009)	-0.0085*	-0.0303***	-0.0297***	-0.0345**	-0.0270***	-0.0987***	-0.1905***	-0.2574***
	(0.0044)	(0.0072)	(0.0110)	(0.0149)	(0.0047)	(0.0076)	(0.0118)	(0.0158)
Information Quality (Transparency)	0.0014	0.0073***	0.0250***	0.0482***	0.0028**	0.0117***	0.0331***	0.0537***
	(0.0013)	(0.0023)	(0.0035)	(0.0045)	(0.0013)	(0.0023)	(0.0035)	(0.0046)

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Appendix 3-H: Regression Results with Insider Sale (Information Quality) (Table 3-H3 ERM Date) (cont.)

Insider Stock Sale: ERM Date (cont.)

Event Study is based on the Market Model using:	**A. CRSP Value-Weighted Index**				**B. CRSP Equal-Weighted Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Control Variables								
Number of insider shares traded at insider level	<0.0000	<0.0000	<0.0000***	<0.0000***	<0.0000	<0.0000	<0.0000*	<0.0000**
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Number of insider shares traded at company level (%)	-0.0016*	-0.0032***	-0.0051***	-0.0074***	-0.0011	-0.0022**	-0.0031**	-0.0046***
	(0.0008)	(0.0010)	(0.0015)	(0.0018)	(0.0008)	(0.0009)	(0.0013)	(0.0015)
Market to book ratio (MTB)	0.0000	-0.0000	-0.0000	-0.0000	0.0000	0.0000	0.0000	0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Loss (binary variable for net income < 0)	0.0042**	0.0041	-0.0006	0.0094	0.0027	0.0079**	0.0005	0.0032
	(0.0018)	(0.0034)	(0.0050)	(0.0063)	(0.0019)	(0.0034)	(0.0050)	(0.0064)
Return on assets (ROA)	-0.0041	0.0272	0.0243	-0.2369***	0.0030	0.0603	0.1083*	-0.1458**
	(0.0212)	(0.0384)	(0.0564)	(0.0696)	(0.0206)	(0.0394)	(0.0601)	(0.0694)
Leverage ratio (long-term debt/ equity)	0.0000	0.0001***	0.0002	0.0004**	0.0000	0.0001	0.0000	0.0001
	(0.0000)	(0.0000)	(0.0001)	(0.0002)	(0.0000)	(0.0001)	(0.0001)	(0.0002)
Insurance industry	0.0140***	0.0399***	0.0853***	0.1124***	0.0150***	0.0334***	0.0693***	0.1085***
	(0.0049)	(0.0100)	(0.0146)	(0.0204)	(0.0055)	(0.0104)	(0.0144)	(0.0207)
Banking industry	0.0111***	0.0354***	0.0834***	0.1321***	0.0125***	0.0308***	0.0749***	0.1318***
	(0.0039)	(0.0083)	(0.0117)	(0.0159)	(0.0042)	(0.0085)	(0.0118)	(0.0165)
January	-0.0022	-0.0157***	0.0005	-0.0098	-0.0066***	0.0031	0.0375***	0.0140**
	(0.0019)	(0.0035)	(0.0048)	(0.0065)	(0.0019)	(0.0036)	(0.0049)	(0.0066)
Fourth Quarter	0.0026**	0.0129***	0.0166***	0.0223***	-0.0017	-0.0126***	-0.0310***	-0.0165***
	(0.0012)	(0.0021)	(0.0031)	(0.0042)	(0.0012)	(0.0021)	(0.0031)	(0.0042)
Constant	0.0188***	0.0386***	0.0632***	0.0920***	0.0190***	0.0510***	0.0904***	0.1177***
	(0.0051)	(0.0103)	(0.0147)	(0.0199)	(0.0054)	(0.0104)	(0.0148)	(0.0203)
Year Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Sector Industry Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
R-squared	2.95%	5.07%	7.84%	8.42%	3.80%	6.90%	11.14%	11.95%

1. Heteroscedasticity-consistent standard errors are in parentheses.
2. The symbols ***, **, * show the significance at the 0.01, 0.05, and 0.10 levels of the t-test, respectively.
3. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock transactions, respectively. We employ the event study method based on the Market Model using CRSP value-weighted index and CRSP equal-weighted index, respectively.
4. We employ an indicator variable (ERM Date) to identify whether a firm employs ERM on the specific date over the sample period. For example, if a firm adopts ERM on March 1st 2004, the ERM indicator variable will be assigned with a value of one for March 1st 2014 and the following dates. If we do not find the enactment date of ERM, we use the SEC filing date/report date as the first evidence of ERM of a firm.
5. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares. We employ five binary variables to proxy CEO, CFO, director, officer, and large shareholders who made stock transactions of a firm from 1996 to 2013, respectively.
6. We use two binary variables to proxy significant changes in firm's stock prices (i.e., past stock performance): RET is less than -20% and RET is greater than 20%. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., 4 day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., 2 day past stock performance) to proxy RET and get similar results.
7. We employ two binary variables for firm size based on market capitalization: small firms with market capitalization less than or equal to $202,158,805 (33.33th percentile of the insider stock purchase and sale sample), medium firms with market capitalization between $202,158,805 and $1,068,003,868 (33.33th percentile to 66.66th percentile), and large firms with market capitalization greater than $1,068,003,868 (66.66th percentile).
8. We employ two binary variables for stock volatility of a firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: low stock volatility firms with stock volatility less than or equal to 0.019601 (33.33th percentile of the insider stock purchase and sale sample), medium stock volatility firms with stock volatility between 0.019601 and 0.032981 (33.33th percentile to 66.66th percentile), and high stock volatility firms with stock volatility greater than 0.032981 (66.66th percentile).
9. We employ a binary variable for the period of 2008 financial crisis (December 2007 to June 2009).
10. As for information quality (transparency) variable, we follow Wade, Hoyt, and Liebenberg (2015) and calculate dispersion (DISP) based on Diether, Malloy, and Scherbina (2002).

Appendix 3-I: Regression Results with Insider Sale (Accrual Quality with ERM) (Table 3-I1 ERM Year)

Insider Stock Sale: ERM Year
Cumulative Abnormal Return (CAR) Ordinary Least Squares Regression Model with Heteroscedasticity-Consistent Standard Errors
Number of Transactions = 31,421 (Insider-Firm-Day Level Data); Sample Period = 1996 to 2013

Event Study is based on the Market Model using:	A. CRSP Value-Weighted Index				B. CRSP Equal-Weighted Index			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Independent Variables								
ERM								
ERM Year	0.0007	0.0121***	0.0199***	0.0269***	0.0015	0.0114***	0.0196***	0.0313***
	(0.0017)	(0.0031)	(0.0049)	(0.0061)	(0.0017)	(0.0031)	(0.0049)	(0.0061)
ERM Year * Small Firms	-0.0281***	-0.0867***	-0.1007***	-0.1363***	-0.0301***	-0.0877***	-0.1026***	-0.1406***
	(0.0055)	(0.0096)	(0.0150)	(0.0212)	(0.0056)	(0.0095)	(0.0151)	(0.0218)
ERM Year * High Stock Volatility Firms	0.0108**	0.0119	-0.0108	0.0321**	0.0154***	0.0306***	0.0030	0.0296*
	(0.0046)	(0.0084)	(0.0126)	(0.0163)	(0.0047)	(0.0085)	(0.0131)	(0.0170)
ERM Year * Financial Crisis Period	0.0059	-0.0101	0.0153	0.0157	0.0030	-0.0114	0.0090	0.0260
	(0.0048)	(0.0087)	(0.0140)	(0.0185)	(0.0051)	(0.0093)	(0.0140)	(0.0184)
ERM Year * Accrual Quality (FLOS, 2005)	<0.0000	<-0.0000*	<-0.0000	-0.0001***	<-0.0000	<-0.0000**	<-0.0000	-0.0001***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
ERM Year * RET <= -20%	0.1324***	0.1600**	0.2374	0.3349	0.1294***	0.1942**	0.2542**	0.3909*
	(0.0365)	(0.0686)	(0.1655)	(0.2476)	(0.0357)	(0.0877)	(0.1210)	(0.2118)
ERM Year * RET > 20%	0.0465**	0.1132	0.2109**	0.1784*	0.0573***	0.1204*	0.2195**	0.2037**
	(0.0192)	(0.0733)	(0.1028)	(0.1014)	(0.0189)	(0.0707)	(0.1013)	(0.1013)
ERM Year * CEO	0.0073**	0.0160***	0.0245***	0.0287**	0.0061**	0.0138***	0.0235***	0.0227**
	(0.0029)	(0.0053)	(0.0081)	(0.0111)	(0.0029)	(0.0052)	(0.0082)	(0.0110)
Insider Type								
CEO	-0.0082***	-0.0285***	-0.0506***	-0.0756***	-0.0076***	-0.0285***	-0.0484***	-0.0717***
	(0.0025)	(0.0044)	(0.0062)	(0.0076)	(0.0024)	(0.0043)	(0.0062)	(0.0077)
CFO	-0.0055**	-0.0210***	-0.0365***	-0.0679***	-0.0054**	-0.0218***	-0.0345***	-0.0638***
	(0.0026)	(0.0046)	(0.0069)	(0.0087)	(0.0026)	(0.0046)	(0.0070)	(0.0087)
Director	-0.0015	-0.0152***	-0.0268***	-0.0521***	-0.0009	-0.0151***	-0.0257***	-0.0499***
	(0.0020)	(0.0037)	(0.0053)	(0.0065)	(0.0020)	(0.0036)	(0.0053)	(0.0066)
Officer	0.0004	-0.0126***	-0.0238***	-0.0463***	0.0000	-0.0134***	-0.0250***	-0.0474***
	(0.0019)	(0.0035)	(0.0051)	(0.0063)	(0.0019)	(0.0035)	(0.0051)	(0.0064)
Large Shareholders	0.0163	0.0237	0.0242	0.0581	0.0195	0.0291	0.0401	0.0832
	(0.0237)	(0.0372)	(0.0489)	(0.0561)	(0.0233)	(0.0362)	(0.0433)	(0.0544)
Past Stock Performance								
RET <= -20%	-0.0062	0.0440	0.1065*	0.0817	-0.0051	0.0436	0.0772	0.0463
	(0.0222)	(0.0418)	(0.0563)	(0.0635)	(0.0223)	(0.0405)	(0.0534)	(0.0613)
RET > 20%	-0.0295***	-0.0390**	-0.0834***	-0.1166***	-0.0373***	-0.0422***	-0.0820***	-0.1131***
	(0.0090)	(0.0157)	(0.0205)	(0.0258)	(0.0090)	(0.0150)	(0.0196)	(0.0245)
Information Uncertainty								
Large Firms	-0.0195***	-0.0451***	-0.0641***	-0.0846***	-0.0214***	-0.0482***	-0.0691***	-0.0873***
	(0.0022)	(0.0038)	(0.0057)	(0.0073)	(0.0022)	(0.0038)	(0.0056)	(0.0072)
Medium Firms	-0.0131***	-0.0340***	-0.0490***	-0.0596***	-0.0132***	-0.0349***	-0.0499***	-0.0580***
	(0.0021)	(0.0038)	(0.0056)	(0.0071)	(0.0021)	(0.0037)	(0.0055)	(0.0070)
High Stock Volatility Firms	-0.0156***	-0.0377***	-0.0664***	-0.0964***	-0.0181***	-0.0448***	-0.0809***	-0.1175***
	(0.0017)	(0.0031)	(0.0046)	(0.0059)	(0.0017)	(0.0030)	(0.0046)	(0.0058)
Medium Stock Volatility Firms	-0.0062***	-0.0143***	-0.0336***	-0.0504***	-0.0063***	-0.0136***	-0.0341***	-0.0518***
	(0.0009)	(0.0017)	(0.0027)	(0.0034)	(0.0009)	(0.0017)	(0.0027)	(0.0034)
Financial Crisis Period (December 2007 to June 2009)	-0.0101**	-0.0389***	-0.0492***	-0.0331*	-0.0262***	-0.1070***	-0.2082***	-0.2538***
	(0.0050)	(0.0088)	(0.0129)	(0.0169)	(0.0052)	(0.0090)	(0.0135)	(0.0174)
Accrual Quality (FLOS, 2005)	<0.0000***	<0.0000***	0.0001***	0.0001***	<0.0000***	<0.0000***	0.0001***	0.0001***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)

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Appendix 3-I: Regression Results with Insider Sale (Accrual Quality with ERM) (Table 3-I1 ERM Year) (cont.)

Insider Stock Sale: ERM Year (cont.)

Event Study is based on the Market Model using:	**A. CRSP Value-Weighted Index**				**B. CRSP Equal-Weighted Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Control Variables								
Number of insider shares traded at insider level	<0.0000	<0.0000	<0.0000	<0.0000*	<0.0000	<0.0000	<0.0000	<0.0000*
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Number of insider shares traded at company level (%)	-0.0007	-0.0010	-0.0025*	-0.0031**	-0.0006	-0.0009	-0.0019*	-0.0030**
	(0.0006)	(0.0008)	(0.0013)	(0.0015)	(0.0006)	(0.0007)	(0.0011)	(0.0013)
Market to book ratio (MTB)	0.0000	0.0000	0.0000	0.0000	0.0000**	0.0000**	0.0001***	0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Loss (binary variable for net income < 0)	0.0026	0.0006	0.0056	0.0008	0.0020	-0.0013	-0.0026	-0.0121*
	(0.0021)	(0.0039)	(0.0055)	(0.0067)	(0.0021)	(0.0038)	(0.0053)	(0.0067)
Return on assets (ROA)	-0.0509**	-0.0245	0.0844*	-0.0267	-0.0454**	-0.0205	0.0630	-0.0902*
	(0.0213)	(0.0366)	(0.0463)	(0.0475)	(0.0212)	(0.0352)	(0.0435)	(0.0512)
Leverage ratio (long-term debt/ equity)	-0.0001	-0.0001	-0.0000	0.0001	-0.0001	-0.0001	-0.0002	-0.0000
	(0.0001)	(0.0001)	(0.0001)	(0.0002)	(0.0001)	(0.0001)	(0.0001)	(0.0002)
Insurance industry	-0.0317*	0.0561**	0.0397	0.0155	-0.0236*	0.0597***	0.0307	-0.0212
	(0.0163)	(0.0223)	(0.0368)	(0.0353)	(0.0140)	(0.0208)	(0.0324)	(0.0417)
January	0.0074***	-0.0057	-0.0080	-0.0169**	0.0027	0.0110**	0.0227***	0.0045
	(0.0024)	(0.0047)	(0.0065)	(0.0083)	(0.0024)	(0.0046)	(0.0064)	(0.0081)
Fourth Quarter	0.0039***	0.0230***	0.0359***	0.0470***	-0.0009	-0.0026	-0.0081**	0.0092**
	(0.0014)	(0.0025)	(0.0036)	(0.0046)	(0.0014)	(0.0025)	(0.0036)	(0.0045)
Constant	0.0398**	-0.0161	-0.0003	0.0162	0.0366***	-0.0114	0.0310	0.1010***
	(0.0155)	(0.0196)	(0.0306)	(0.0221)	(0.0126)	(0.0172)	(0.0238)	(0.0294)
Year Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Sector Industry Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
R-squared	3.31%	5.67%	8.14%	9.43%	3.88%	6.92%	9.52%	10.84%

1. Heteroscedasticity-consistent standard errors are in parentheses.
2. The symbols ***, **, * show the significance at the 0.01, 0.05, and 0.10 levels of the t-test, respectively.
3. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock transactions, respectively. We employ the event study method based on the Market Model using CRSP value-weighted index and CRSP equal-weighted index, respectively.
4. We employ an indicator variable (ERM Year) to identify whether a firm employs ERM in any given year over the sample period. For example, if a firm adopts ERM in 2004, the ERM indicator variable will be assigned with a value of one for year 2004 and the following years.
5. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares. We employ five binary variables to proxy CEO, CFO, director, officer, and large shareholders who made stock transactions of a firm from 1996 to 2013, respectively.
6. We use two binary variables to proxy significant changes in firm's stock prices (i.e., past stock performance): RET is less than -20% and RET is greater than 20%. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., 4 day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., 2 day past stock performance) to proxy RET and get similar results.
7. We employ two binary variables for firm size based on market capitalization: small firms with market capitalization less than or equal to $202,158,805 (33.33th percentile of the insider stock purchase and sale sample), medium firms with market capitalization between $202,158,805 and $1,068,003,868 (33.33th percentile to 66.66th percentile), and large firms with market capitalization greater than $1,068,003,868 (66.66th percentile).
8. We employ two binary variables for stock volatility of a firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: low stock volatility firms with stock volatility less than or equal to 0.019601 (33.33th percentile of the insider stock purchase and sale sample), medium stock volatility firms with stock volatility between 0.019601 and 0.032981 (33.33th percentile to 66.66th percentile), and high stock volatility firms with stock volatility greater than 0.032981 (66.66th percentile).
9. We employ a binary variable for the period of 2008 financial crisis (December 2007 to June 2009).
10. We use accrual quality to proxy information risk based on the model used in FLOS (2005) (Eckles, Halek, and Zhang, 2013).

Appendix 3-I: Regression Results with Insider Sale (Accrual Quality with ERM) (Table 3-I2 ERM Year +1)

Insider Stock Sale: ERM Year +1
Cumulative Abnormal Return (CAR) Ordinary Least Squares Regression Model with Heteroscedasticity-Consistent Standard Errors
Number of Transactions = 31,421 (Insider-Firm-Day Level Data); Sample Period = 1996 to 2013

Event Study is based on the Market Model using:	A. CRSP Value-Weighted Index				B. CRSP Equal-Weighted Index			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Independent Variables								
ERM								
ERM Year +1	0.0036**	0.0130***	0.0114**	0.0147**	0.0040**	0.0128***	0.0134**	0.0215***
	(0.0018)	(0.0033)	(0.0052)	(0.0066)	(0.0018)	(0.0033)	(0.0053)	(0.0067)
ERM Year +1 * Small Firms	-0.0345***	-0.1038***	-0.1164***	-0.1679***	-0.0359***	-0.1058***	-0.1196***	-0.1724***
	(0.0059)	(0.0090)	(0.0139)	(0.0188)	(0.0059)	(0.0089)	(0.0142)	(0.0198)
ERM Year +1 * High Stock Volatility Firms	0.0075	0.0336***	0.0321**	0.0955***	0.0093	0.0495***	0.0359**	0.0773***
	(0.0057)	(0.0105)	(0.0160)	(0.0211)	(0.0058)	(0.0105)	(0.0168)	(0.0223)
ERM Year +1 * Financial Crisis Period	0.0066	-0.0189	-0.0490***	-0.0965***	0.0079	-0.0090	-0.0306*	-0.0670***
	(0.0061)	(0.0116)	(0.0171)	(0.0238)	(0.0064)	(0.0124)	(0.0181)	(0.0246)
ERM Year +1 * Accrual Quality (FLOS, 2005)	<0.0000	<-0.0000	<-0.0000	-0.0001***	<-0.0000	<-0.0000*	<-0.0000	-0.0001***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
ERM Year +1 * RET <= -20%	0.1383***	0.1528**	0.2270	0.3282	0.1370***	0.1877**	0.2473**	0.3938*
	(0.0355)	(0.0671)	(0.1716)	(0.2574)	(0.0343)	(0.0841)	(0.1230)	(0.2181)
ERM Year +1 * RET > 20%	0.0472**	0.0939	0.1806*	0.1328	0.0606***	0.1030	0.1958*	0.1697*
	(0.0195)	(0.0728)	(0.1021)	(0.1003)	(0.0192)	(0.0703)	(0.1008)	(0.1008)
ERM Year +1 * CEO	0.0062**	0.0164***	0.0304***	0.0407***	0.0049	0.0134**	0.0283***	0.0335***
	(0.0030)	(0.0055)	(0.0087)	(0.0119)	(0.0030)	(0.0054)	(0.0087)	(0.0117)
Insider Type								
CEO	-0.0082***	-0.0281***	-0.0505***	-0.0759***	-0.0075***	-0.0282***	-0.0484***	-0.0725***
	(0.0024)	(0.0044)	(0.0061)	(0.0076)	(0.0024)	(0.0043)	(0.0061)	(0.0076)
CFO	-0.0057**	-0.0209***	-0.0367***	-0.0681***	-0.0055**	-0.0219***	-0.0348***	-0.0644***
	(0.0026)	(0.0046)	(0.0069)	(0.0087)	(0.0026)	(0.0046)	(0.0070)	(0.0087)
Director	-0.0015	-0.0148***	-0.0261***	-0.0508***	-0.0009	-0.0148***	-0.0252***	-0.0490***
	(0.0020)	(0.0037)	(0.0053)	(0.0065)	(0.0020)	(0.0036)	(0.0053)	(0.0066)
Officer	0.0001	-0.0126***	-0.0237***	-0.0459***	-0.0002	-0.0136***	-0.0251***	-0.0476***
	(0.0020)	(0.0035)	(0.0051)	(0.0064)	(0.0019)	(0.0035)	(0.0051)	(0.0064)
Large Shareholders	0.0163	0.0239	0.0244	0.0585	0.0193	0.0292	0.0402	0.0833
	(0.0237)	(0.0372)	(0.0489)	(0.0562)	(0.0233)	(0.0362)	(0.0433)	(0.0546)
Past Stock Performance								
RET <= -20%	-0.0064	0.0442	0.1066*	0.0812	-0.0055	0.0436	0.0772	0.0456
	(0.0222)	(0.0418)	(0.0563)	(0.0634)	(0.0223)	(0.0405)	(0.0534)	(0.0613)
RET > 20%	-0.0298***	-0.0388**	-0.0827***	-0.1161***	-0.0376***	-0.0421***	-0.0815***	-0.1128***
	(0.0090)	(0.0157)	(0.0205)	(0.0258)	(0.0089)	(0.0150)	(0.0195)	(0.0245)
Information Uncertainty								
Large Firms	-0.0194***	-0.0449***	-0.0629***	-0.0829***	-0.0213***	-0.0480***	-0.0682***	-0.0857***
	(0.0022)	(0.0038)	(0.0057)	(0.0073)	(0.0022)	(0.0037)	(0.0056)	(0.0072)
Medium Firms	-0.0128***	-0.0337***	-0.0488***	-0.0593***	-0.0128***	-0.0345***	-0.0496***	-0.0572***
	(0.0021)	(0.0038)	(0.0056)	(0.0071)	(0.0021)	(0.0037)	(0.0055)	(0.0069)
High Stock Volatility Firms	-0.0153***	-0.0384***	-0.0682***	-0.0981***	-0.0176***	-0.0452***	-0.0822***	-0.1188***
	(0.0017)	(0.0030)	(0.0045)	(0.0058)	(0.0017)	(0.0030)	(0.0045)	(0.0058)
Medium Stock Volatility Firms	-0.0062***	-0.0145***	-0.0336***	-0.0503***	-0.0063***	-0.0138***	-0.0342***	-0.0518***
	(0.0009)	(0.0017)	(0.0026)	(0.0034)	(0.0009)	(0.0017)	(0.0027)	(0.0034)
Financial Crisis Period (December 2007 to June 2009)	-0.0103**	-0.0384***	-0.0437***	-0.0235	-0.0268***	-0.1078***	-0.2051***	-0.2459***
	(0.0050)	(0.0088)	(0.0130)	(0.0169)	(0.0052)	(0.0091)	(0.0136)	(0.0174)
Accrual Quality (FLOS, 2005)	<0.0000***	<0.0000***	<0.0000***	0.0001***	<0.0000***	<0.0000***	0.0001***	0.0001***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)

(continued on next page)

Appendix 3-I: Regression Results with Insider Sale (Accrual Quality with ERM) (Table 3-I2 ERM Year +1) (cont.)

Insider Stock Sale: ERM Year +1 (cont.)

Event Study is based on the Market Model using:	**A. CRSP Value-Weighted Index**				**B. CRSP Equal-Weighted Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Control Variables								
Number of insider shares traded at insider level	<0.0000	<0.0000	<0.0000	<0.0000**	<0.0000	<0.0000	<0.0000	<0.0000**
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Number of insider shares traded at company level (%)	-0.0005	-0.0010	-0.0026**	-0.0034**	-0.0006	-0.0009	-0.0020*	-0.0032**
	(0.0005)	(0.0008)	(0.0013)	(0.0015)	(0.0006)	(0.0007)	(0.0011)	(0.0013)
Market to book ratio (MTB)	0.0000	0.0000*	0.0000	0.0000	0.0000**	0.0000**	0.0001***	0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Loss (binary variable for net income < 0)	0.0025	0.0006	0.0054	0.0005	0.0019	-0.0012	-0.0027	-0.0124*
	(0.0021)	(0.0039)	(0.0055)	(0.0067)	(0.0021)	(0.0038)	(0.0053)	(0.0067)
Return on assets (ROA)	-0.0504**	-0.0256	0.0821*	-0.0298	-0.0449**	-0.0213	0.0613	-0.0922*
	(0.0213)	(0.0366)	(0.0463)	(0.0476)	(0.0212)	(0.0351)	(0.0435)	(0.0513)
Leverage ratio (long-term debt/ equity)	-0.0001	-0.0001	-0.0000	0.0000	-0.0001	-0.0001	-0.0002	-0.0001
	(0.0001)	(0.0001)	(0.0001)	(0.0002)	(0.0001)	(0.0001)	(0.0001)	(0.0002)
Insurance industry	-0.0320**	0.0563**	0.0378	0.0126	-0.0240*	0.0597***	0.0290	-0.0246
	(0.0163)	(0.0223)	(0.0368)	(0.0352)	(0.0140)	(0.0207)	(0.0324)	(0.0416)
January	0.0075***	-0.0057	-0.0079	-0.0171**	0.0028	0.0110**	0.0229***	0.0046
	(0.0024)	(0.0047)	(0.0065)	(0.0082)	(0.0024)	(0.0046)	(0.0063)	(0.0081)
Fourth Quarter	0.0038***	0.0230***	0.0360***	0.0471***	-0.0009	-0.0027	-0.0081**	0.0092**
	(0.0014)	(0.0025)	(0.0036)	(0.0046)	(0.0014)	(0.0025)	(0.0036)	(0.0045)
Constant	0.0400***	-0.0162	-0.0006	0.0158	0.0369***	-0.0112	0.0310	0.1011***
	(0.0155)	(0.0196)	(0.0307)	(0.0221)	(0.0126)	(0.0172)	(0.0238)	(0.0294)
Year Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Sector Industry Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
R-squared	3.31%	5.71%	8.15%	9.47%	3.88%	6.97%	9.52%	10.84%

1. Heteroscedasticity-consistent standard errors are in parentheses.
2. The symbols ***, **, * show the significance at the 0.01, 0.05, and 0.10 levels of the t-test, respectively.
3. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock transactions, respectively. We employ the event study method based on the Market Model using CRSP value-weighted index and CRSP equal-weighted index, respectively.
4. We employ an indicator variable (ERM Year +1) to identify whether a firm employs ERM in any given year plus one year over the sample period. For example, if a firm adopts ERM in 2004, the ERM indicator variable will be assigned with a value of one for year 2005 and the following years.
5. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares. We employ five binary variables to proxy CEO, CFO, director, officer, and large shareholders who made stock transactions of a firm from 1996 to 2013, respectively.
6. We use two binary variables to proxy significant changes in firm's stock prices (i.e., past stock performance): RET is less than -20% and RET is greater than 20%. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., 4 day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., 2 day past stock performance) to proxy RET and get similar results.
7. We employ two binary variables for firm size based on market capitalization: small firms with market capitalization less than or equal to $202,158,805 (33.33th percentile of the insider stock purchase and sale sample), medium firms with market capitalization between $202,158,805 and $1,068,003,868 (33.33th percentile to 66.66th percentile), and large firms with market capitalization greater than $1,068,003,868 (66.66th percentile).
8. We employ two binary variables for stock volatility of a firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: low stock volatility firms with stock volatility less than or equal to 0.019601 (33.33th percentile of the insider stock purchase and sale sample), medium stock volatility firms with stock volatility between 0.019601 and 0.032981 (33.33th percentile to 66.66th percentile), and high stock volatility firms with stock volatility greater than 0.032981 (66.66th percentile).
9. We employ a binary variable for the period of 2008 financial crisis (December 2007 to June 2009).
10. We use accrual quality to proxy information risk based on the model used in FLOS (2005) (Eckles, Halek, and Zhang, 2013).

Appendix 3-I: Regression Results with Insider Sale (Accrual Quality with ERM) (Table 3-I3 ERM Date)

Insider Stock Sale: ERM Date
Cumulative Abnormal Return (CAR) Ordinary Least Squares Regression Model with Heteroscedasticity-Consistent Standard Errors
Number of Transactions = 31,421 (Insider-Firm-Day Level Data); Sample Period = 1996 to 2013

Event Study is based on the Market Model using:	A. CRSP Value-Weighted Index				B. CRSP Equal-Weighted Index			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Independent Variables								
ERM								
ERM Date	0.0014	0.0113***	0.0121**	0.0153**	0.0019	0.0106***	0.0122**	0.0185***
	(0.0018)	(0.0032)	(0.0051)	(0.0063)	(0.0018)	(0.0032)	(0.0051)	(0.0064)
ERM Date * Small Firms	-0.0288***	-0.0939***	-0.1083***	-0.1446***	-0.0306***	-0.0952***	-0.1100***	-0.1469***
	(0.0058)	(0.0095)	(0.0152)	(0.0219)	(0.0059)	(0.0095)	(0.0154)	(0.0225)
ERM Date * High Stock Volatility Firms	0.0062	0.0210**	0.0099	0.0506**	0.0095*	0.0424***	0.0243	0.0430**
	(0.0051)	(0.0095)	(0.0147)	(0.0197)	(0.0052)	(0.0094)	(0.0153)	(0.0206)
ERM Date * Financial Crisis Period	0.0126**	-0.0014	0.0061	-0.0496**	0.0148**	0.0043	0.0163	-0.0212
	(0.0056)	(0.0107)	(0.0173)	(0.0222)	(0.0058)	(0.0112)	(0.0176)	(0.0228)
ERM Date * Accrual Quality (FLOS, 2005)	<0.0000	<-0.0000**	<-0.0000	-0.0001***	<-0.0000	<-0.0000**	<-0.0000	-0.0001***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
ERM Date * RET <= -20%	0.1356***	0.1552**	0.2305	0.3448	0.1326***	0.1855**	0.2426**	0.4011*
	(0.0354)	(0.0665)	(0.1647)	(0.2545)	(0.0341)	(0.0841)	(0.1181)	(0.2158)
ERM Date * RET > 20%	0.0499**	0.1059	0.1991*	0.1708*	0.0619***	0.1108	0.2068**	0.2014**
	(0.0194)	(0.0731)	(0.1024)	(0.1015)	(0.0191)	(0.0704)	(0.1009)	(0.1016)
ERM Date * CEO	0.0068**	0.0145***	0.0258***	0.0354***	0.0055*	0.0122**	0.0241***	0.0294***
	(0.0029)	(0.0053)	(0.0083)	(0.0114)	(0.0029)	(0.0052)	(0.0083)	(0.0113)
Insider Type								
CEO	-0.0083***	-0.0283***	-0.0510***	-0.0765***	-0.0077***	-0.0284***	-0.0487***	-0.0731***
	(0.0025)	(0.0044)	(0.0062)	(0.0076)	(0.0024)	(0.0043)	(0.0061)	(0.0077)
CFO	-0.0058**	-0.0213***	-0.0373***	-0.0689***	-0.0056**	-0.0222***	-0.0353***	-0.0651***
	(0.0026)	(0.0046)	(0.0069)	(0.0087)	(0.0026)	(0.0046)	(0.0070)	(0.0087)
Director	-0.0016	-0.0152***	-0.0269***	-0.0518***	-0.0010	-0.0152***	-0.0259***	-0.0499***
	(0.0020)	(0.0037)	(0.0053)	(0.0065)	(0.0020)	(0.0036)	(0.0053)	(0.0066)
Officer	0.0001	-0.0129***	-0.0244***	-0.0468***	-0.0002	-0.0139***	-0.0257***	-0.0483***
	(0.0019)	(0.0035)	(0.0051)	(0.0063)	(0.0019)	(0.0035)	(0.0051)	(0.0064)
Large Shareholders	0.0161	0.0236	0.0239	0.0576	0.0192	0.0289	0.0397	0.0825
	(0.0237)	(0.0372)	(0.0489)	(0.0562)	(0.0233)	(0.0362)	(0.0433)	(0.0546)
Past Stock Performance								
RET <= -20%	-0.0064	0.0441	0.1065*	0.0808	-0.0053	0.0436	0.0774	0.0454
	(0.0222)	(0.0418)	(0.0563)	(0.0635)	(0.0223)	(0.0405)	(0.0535)	(0.0613)
RET > 20%	-0.0297***	-0.0389**	-0.0830***	-0.1166***	-0.0375***	-0.0421***	-0.0816***	-0.1132***
	(0.0090)	(0.0157)	(0.0205)	(0.0258)	(0.0089)	(0.0150)	(0.0196)	(0.0245)
Information Uncertainty								
Large Firms	-0.0194***	-0.0452***	-0.0636***	-0.0832***	-0.0213***	-0.0484***	-0.0688***	-0.0859***
	(0.0022)	(0.0038)	(0.0057)	(0.0073)	(0.0022)	(0.0038)	(0.0056)	(0.0072)
Medium Firms	-0.0129***	-0.0339***	-0.0489***	-0.0591***	-0.0129***	-0.0348***	-0.0498***	-0.0572***
	(0.0021)	(0.0038)	(0.0056)	(0.0071)	(0.0021)	(0.0037)	(0.0055)	(0.0069)
High Stock Volatility Firms	-0.0153***	-0.0381***	-0.0677***	-0.0969***	-0.0177***	-0.0452***	-0.0822***	-0.1179***
	(0.0017)	(0.0030)	(0.0045)	(0.0058)	(0.0017)	(0.0030)	(0.0045)	(0.0058)
Medium Stock Volatility Firms	-0.0062***	-0.0144***	-0.0337***	-0.0503***	-0.0064***	-0.0138***	-0.0344***	-0.0519***
	(0.0009)	(0.0017)	(0.0027)	(0.0034)	(0.0009)	(0.0017)	(0.0027)	(0.0034)
Financial Crisis Period (December 2007 to June 2009)	-0.0108**	-0.0400***	-0.0488***	-0.0275	-0.0275***	-0.1089***	-0.2095***	-0.2500***
	(0.0050)	(0.0088)	(0.0130)	(0.0169)	(0.0052)	(0.0091)	(0.0136)	(0.0174)
Accrual Quality (FLOS, 2005)	<0.0000***	<0.0000***	<0.0000***	0.0001***	<0.0000***	<0.0000***	0.0001***	0.0001***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)

(continued on next page)

Appendix 3-I: Regression Results with Insider Sale (Accrual Quality with ERM) (Table 3-I3 ERM Date) (cont.)

Insider Stock Sale: ERM Date (cont.)

Event Study is based on the Market Model using:	**A. CRSP Value-Weighted Index**				**B. CRSP Equal-Weighted Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Control Variables								
Number of insider shares traded at insider level	<0.0000	<0.0000	<0.0000	<0.0000**	<0.0000	<0.0000	<0.0000	<0.0000**
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Number of insider shares traded at company level (%)	-0.0007	-0.0010	-0.0025**	-0.0033**	-0.0006	-0.0009	-0.0019*	-0.0032**
	(0.0006)	(0.0007)	(0.0013)	(0.0015)	(0.0006)	(0.0007)	(0.0011)	(0.0013)
Market to book ratio (MTB)	0.0000	0.0000	0.0000	0.0000	0.0000*	0.0000**	0.0001***	0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Loss (binary variable for net income < 0)	0.0025	0.0006	0.0054	0.0005	0.0020	-0.0012	-0.0027	-0.0124*
	(0.0021)	(0.0039)	(0.0055)	(0.0067)	(0.0021)	(0.0038)	(0.0053)	(0.0067)
Return on assets (ROA)	-0.0506**	-0.0249	0.0831*	-0.0275	-0.0450**	-0.0209	0.0618	-0.0907*
	(0.0213)	(0.0366)	(0.0463)	(0.0475)	(0.0212)	(0.0352)	(0.0435)	(0.0512)
Leverage ratio (long-term debt/ equity)	-0.0001	-0.0000	-0.0000	0.0001	-0.0001	-0.0001	-0.0002	-0.0001
	(0.0001)	(0.0001)	(0.0001)	(0.0002)	(0.0001)	(0.0001)	(0.0001)	(0.0002)
Insurance industry	-0.0321**	0.0560**	0.0384	0.0116	-0.0240*	0.0596***	0.0296	-0.0256
	(0.0163)	(0.0223)	(0.0368)	(0.0352)	(0.0140)	(0.0208)	(0.0324)	(0.0417)
January	0.0075***	-0.0055	-0.0074	-0.0168**	0.0028	0.0112**	0.0233***	0.0051
	(0.0024)	(0.0047)	(0.0065)	(0.0082)	(0.0024)	(0.0046)	(0.0063)	(0.0081)
Fourth Quarter	0.0039***	0.0230***	0.0360***	0.0470***	-0.0009	-0.0027	-0.0082**	0.0092**
	(0.0014)	(0.0025)	(0.0036)	(0.0046)	(0.0014)	(0.0025)	(0.0036)	(0.0045)
Constant	0.0401***	-0.0158	0.0002	0.0168	0.0370***	-0.0109	0.0316	0.1020***
	(0.0155)	(0.0196)	(0.0307)	(0.0221)	(0.0126)	(0.0172)	(0.0238)	(0.0294)
Year Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Sector Industry Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
R-squared	3.30%	5.68%	8.12%	9.41%	3.88%	6.95%	9.51%	10.79%

1. Heteroscedasticity-consistent standard errors are in parentheses.
2. The symbols ***, **, * show the significance at the 0.01, 0.05, and 0.10 levels of the t-test, respectively.
3. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock transactions, respectively. We employ the event study method based on the Market Model using CRSP value-weighted index and CRSP equal-weighted index, respectively.
4. We employ an indicator variable (ERM Date) to identify whether a firm employs ERM on the specific date over the sample period. For example, if a firm adopts ERM on March 1st 2004, the ERM indicator variable will be assigned with a value of one for March 1st 2014 and the following dates. If we do not find the enactment date of ERM, we use the SEC filing date/report date as the first evidence of ERM of a firm.
5. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares. We employ five binary variables to proxy CEO, CFO, director, officer, and large shareholders who made stock transactions of a firm from 1996 to 2013, respectively.
6. We use two binary variables to proxy significant changes in firm's stock prices (i.e., past stock performance): RET is less than -20% and RET is greater than 20%. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., 4 day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., 2 day past stock performance) to proxy RET and get similar results.
7. We employ two binary variables for firm size based on market capitalization: small firms with market capitalization less than or equal to $202,158,805 (33.33th percentile of the insider stock purchase and sale sample), medium firms with market capitalization between $202,158,805 and $1,068,003,868 (33.33th percentile to 66.66th percentile), and large firms with market capitalization greater than $1,068,003,868 (66.66th percentile).
8. We employ two binary variables for stock volatility of a firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: low stock volatility firms with stock volatility less than or equal to 0.019601 (33.33th percentile of the insider stock purchase and sale sample), medium stock volatility firms with stock volatility between 0.019601 and 0.032981 (33.33th percentile to 66.66th percentile), and high stock volatility firms with stock volatility greater than 0.032981 (66.66th percentile).
9. We employ a binary variable for the period of 2008 financial crisis (December 2007 to June 2009).
10. We use accrual quality to proxy information risk based on the model used in FLOS (2005) (Eckles, Halek, and Zhang, 2013).

Appendix 3-J: Regression Results with Insider Sale (Information Quality with ERM) (Table 3-J1 ERM Year)

Insider Stock Sale: ERM Year
Cumulative Abnormal Return (CAR) Ordinary Least Squares Regression Model with Heteroscedasticity-Consistent Standard Errors
Number of Transactions = 35,431 (Insider-Firm-Day Level Data); Sample Period = 1996 to 2013

Event Study is based on the Market Model using:	A. CRSP Value-Weighted Index				B. CRSP Equal-Weighted Index			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Independent Variables								
ERM								
ERM Year	0.0008	0.0126***	0.0096	-0.0228***	0.0006	0.0086*	-0.0014	-0.0284***
	(0.0024)	(0.0044)	(0.0067)	(0.0084)	(0.0025)	(0.0045)	(0.0069)	(0.0087)
ERM Year * Small Firms	-0.0287***	-0.0849***	-0.1554***	-0.1939***	-0.0311***	-0.0838***	-0.1529***	-0.1988***
	(0.0047)	(0.0088)	(0.0130)	(0.0175)	(0.0048)	(0.0089)	(0.0132)	(0.0180)
ERM Year * High Stock Volatility Firms	0.0121***	0.0066	-0.0268**	0.0056	0.0130***	0.0121	-0.0242*	-0.0095
	(0.0042)	(0.0080)	(0.0118)	(0.0147)	(0.0047)	(0.0088)	(0.0127)	(0.0161)
ERM Year * Financial Crisis Period	-0.0004	-0.0145*	0.0000	-0.0020	-0.0040	-0.0196**	-0.0119	-0.0091
	(0.0042)	(0.0077)	(0.0118)	(0.0152)	(0.0045)	(0.0085)	(0.0124)	(0.0159)
ERM Year * Information Quality	0.0007	0.0067*	-0.0022	-0.0345***	0.0004	0.0026	-0.0147**	-0.0436***
	(0.0022)	(0.0039)	(0.0060)	(0.0077)	(0.0022)	(0.0041)	(0.0062)	(0.0081)
ERM Year * RET <= -20%	0.0801**	0.1601**	0.2604**	0.2732	0.0293	0.0777	0.1800	0.1872
	(0.0337)	(0.0667)	(0.1162)	(0.1752)	(0.0383)	(0.0846)	(0.1346)	(0.1945)
ERM Year * RET > 20%	0.0371**	0.1302**	0.1644**	0.0568	0.0382**	0.1238*	0.1554**	0.0235
	(0.0186)	(0.0588)	(0.0717)	(0.0736)	(0.0195)	(0.0661)	(0.0760)	(0.0883)
ERM Year * CEO	0.0044*	0.0092**	0.0067	0.0179*	0.0028	0.0047	-0.0006	0.0064
	(0.0024)	(0.0043)	(0.0068)	(0.0092)	(0.0025)	(0.0043)	(0.0069)	(0.0092)
Insider Type								
CEO	-0.0075***	-0.0205***	-0.0400***	-0.0778***	-0.0055***	-0.0198***	-0.0343***	-0.0647***
	(0.0020)	(0.0035)	(0.0052)	(0.0067)	(0.0020)	(0.0036)	(0.0052)	(0.0067)
CFO	-0.0083***	-0.0191***	-0.0418***	-0.0797***	-0.0082***	-0.0242***	-0.0459***	-0.0747***
	(0.0022)	(0.0039)	(0.0056)	(0.0072)	(0.0022)	(0.0040)	(0.0057)	(0.0073)
Director	-0.0054***	-0.0181***	-0.0367***	-0.0676***	-0.0040**	-0.0206***	-0.0386***	-0.0622***
	(0.0017)	(0.0030)	(0.0044)	(0.0057)	(0.0017)	(0.0030)	(0.0044)	(0.0057)
Officer	-0.0045***	-0.0153***	-0.0337***	-0.0678***	-0.0037**	-0.0187***	-0.0364***	-0.0638***
	(0.0016)	(0.0029)	(0.0043)	(0.0056)	(0.0016)	(0.0029)	(0.0042)	(0.0056)
Large Shareholders	0.0409**	0.0934***	0.0556	0.0411	0.0446***	0.1218***	0.1286***	0.1492***
	(0.0170)	(0.0325)	(0.0392)	(0.0487)	(0.0161)	(0.0331)	(0.0377)	(0.0532)
Past Stock Performance								
RET <= -20%	-0.0098	-0.0611*	-0.0494	-0.0536	0.0085	-0.0142	-0.0466	-0.0059
	(0.0187)	(0.0327)	(0.0553)	(0.0676)	(0.0175)	(0.0320)	(0.0568)	(0.0620)
RET > 20%	-0.0115	-0.0118	-0.0453***	-0.0383*	-0.0141*	-0.0115	-0.0557***	-0.0567***
	(0.0086)	(0.0139)	(0.0176)	(0.0230)	(0.0084)	(0.0121)	(0.0157)	(0.0214)
Information Uncertainty								
Large Firms	-0.0211***	-0.0565***	-0.1262***	-0.1585***	-0.0222***	-0.0559***	-0.1218***	-0.1552***
	(0.0024)	(0.0042)	(0.0065)	(0.0088)	(0.0024)	(0.0041)	(0.0064)	(0.0086)
Medium Firms	-0.0158***	-0.0421***	-0.1059***	-0.1388***	-0.0156***	-0.0417***	-0.1005***	-0.1310***
	(0.0023)	(0.0040)	(0.0063)	(0.0085)	(0.0023)	(0.0040)	(0.0061)	(0.0082)
High Stock Volatility Firms	-0.0097***	-0.0244***	-0.0399***	-0.0677***	-0.0131***	-0.0340***	-0.0598***	-0.0923***
	(0.0015)	(0.0027)	(0.0041)	(0.0054)	(0.0015)	(0.0028)	(0.0041)	(0.0054)
Medium Stock Volatility Firms	-0.0030***	-0.0084***	-0.0196***	-0.0335***	-0.0039***	-0.0099***	-0.0226***	-0.0373***
	(0.0008)	(0.0016)	(0.0024)	(0.0032)	(0.0009)	(0.0016)	(0.0024)	(0.0032)
Financial Crisis Period (December 2007 to June 2009)	-0.0087*	-0.0274***	-0.0272**	-0.0326**	-0.0266***	-0.0951***	-0.1861***	-0.2537***
	(0.0045)	(0.0073)	(0.0112)	(0.0151)	(0.0048)	(0.0077)	(0.0118)	(0.0158)
Information Quality (Transparency)	0.0014	0.0064**	0.0267***	0.0580***	0.0029**	0.0118***	0.0379***	0.0660***
	(0.0014)	(0.0026)	(0.0039)	(0.0051)	(0.0014)	(0.0026)	(0.0039)	(0.0051)

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Appendix 3-J: Regression Results with Insider Sale (Information Quality with ERM) (Table 3-J1 ERM Year) (cont.)

Insider Stock Sale: ERM Year (cont.)

Event Study is based on the Market Model using:	**A. CRSP Value-Weighted Index**				**B. CRSP Equal-Weighted Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Control Variables								
Number of insider shares traded at insider level	<0.0000	<0.0000	<0.0000***	<0.0000***	<0.0000	<0.0000	<0.0000*	<0.0000**
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Number of insider shares traded at company level (%)	-0.0015*	-0.0032***	-0.0051***	-0.0072***	-0.0011	-0.0022**	-0.0031**	-0.0046***
	(0.0008)	(0.0010)	(0.0015)	(0.0018)	(0.0008)	(0.0009)	(0.0013)	(0.0015)
Market to book ratio (MTB)	0.0000	0.0000	-0.0000	-0.0000	0.0000	0.0000	0.0000	0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Loss (binary variable for net income < 0)	0.0042**	0.0038	-0.0012	0.0089	0.0027	0.0076**	-0.0001	0.0024
	(0.0018)	(0.0033)	(0.0050)	(0.0063)	(0.0019)	(0.0034)	(0.0050)	(0.0064)
Return on assets (ROA)	-0.0045	0.0289	0.0279	-0.2317***	0.0033	0.0626	0.1135*	-0.1383**
	(0.0212)	(0.0383)	(0.0562)	(0.0688)	(0.0206)	(0.0394)	(0.0599)	(0.0687)
Leverage ratio (long-term debt/ equity)	0.0000	0.0001***	0.0002	0.0004**	0.0000	0.0001	0.0000	0.0001
	(0.0000)	(0.0000)	(0.0001)	(0.0002)	(0.0000)	(0.0001)	(0.0001)	(0.0002)
Insurance industry	0.0147***	0.0416***	0.0868***	0.1125***	0.0157***	0.0347***	0.0694***	0.1073***
	(0.0049)	(0.0102)	(0.0147)	(0.0205)	(0.0055)	(0.0105)	(0.0146)	(0.0209)
Banking industry	0.0118***	0.0372***	0.0851***	0.1335***	0.0133***	0.0326***	0.0765***	0.1329***
	(0.0039)	(0.0084)	(0.0118)	(0.0160)	(0.0042)	(0.0086)	(0.0119)	(0.0167)
January	-0.0024	-0.0163***	-0.0004	-0.0106	-0.0068***	0.0025	0.0366***	0.0134**
	(0.0019)	(0.0035)	(0.0048)	(0.0065)	(0.0019)	(0.0036)	(0.0049)	(0.0066)
Fourth Quarter	0.0028**	0.0136***	0.0176***	0.0232***	-0.0015	-0.0119***	-0.0301***	-0.0157***
	(0.0012)	(0.0021)	(0.0031)	(0.0042)	(0.0012)	(0.0021)	(0.0031)	(0.0042)
Constant	0.0205***	0.0424***	0.0723***	0.1093***	0.0209***	0.0555***	0.1017***	0.1366***
	(0.0052)	(0.0104)	(0.0149)	(0.0202)	(0.0054)	(0.0106)	(0.0150)	(0.0206)
Year Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Sector Industry Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
R-squared	3.09%	5.33%	8.19%	8.76%	3.93%	7.14%	11.48%	12.31%

1. Heteroscedasticity-consistent standard errors are in parentheses.
2. The symbols ***, **, * show the significance at the 0.01, 0.05, and 0.10 levels of the t-test, respectively.
3. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock transactions, respectively. We employ the event study method based on the Market Model using CRSP value-weighted index and CRSP equal-weighted index, respectively.
4. We employ an indicator variable (ERM Year) to identify whether a firm employs ERM in any given year over the sample period. For example, if a firm adopts ERM in 2004, the ERM indicator variable will be assigned with a value of one for year 2004 and the following years.
5. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares. We employ five binary variables to proxy CEO, CFO, director, officer, and large shareholders who made stock transactions of a firm from 1996 to 2013, respectively.
6. We use two binary variables to proxy significant changes in firm's stock prices (i.e., past stock performance): RET is less than -20% and RET is greater than 20%. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., 4 day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., 2 day past stock performance) to proxy RET and get similar results.
7. We employ two binary variables for firm size based on market capitalization: small firms with market capitalization less than or equal to $202,158,805 (33.33th percentile of the insider stock purchase and sale sample), medium firms with market capitalization between $202,158,805 and $1,068,003,868 (33.33th percentile to 66.66th percentile), and large firms with market capitalization greater than $1,068,003,868 (66.66th percentile).
8. We employ two binary variables for stock volatility of a firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: low stock volatility firms with stock volatility less than or equal to 0.019601 (33.33th percentile of the insider stock purchase and sale sample), medium stock volatility firms with stock volatility between 0.019601 and 0.032981 (33.33th percentile to 66.66th percentile), and high stock volatility firms with stock volatility greater than 0.032981 (66.66th percentile).
9. We employ a binary variable for the period of 2008 financial crisis (December 2007 to June 2009).
10. As for information quality (transparency) variable, we follow Wade, Hoyt, and Liebenberg (2015) and calculate dispersion (DISP) based on Diether, Malloy, and Scherbina (2002).

Appendix 3-J: Regression Results with Insider Sale (Information Quality with ERM) (Table 3-J2 ERM Year +1)

Insider Stock Sale: ERM Year +1
Cumulative Abnormal Return (CAR) Ordinary Least Squares Regression Model with Heteroscedasticity-Consistent Standard Errors
Number of Transactions = 35,431 (Insider-Firm-Day Level Data); Sample Period = 1996 to 2013

Event Study is based on the Market Model using:	**A. CRSP Value-Weighted Index**				**B. CRSP Equal-Weighted Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Independent Variables								
ERM								
ERM Year +1	0.0067***	0.0138***	-0.0097	-0.0481***	0.0063**	0.0094*	-0.0196**	-0.0558***
	(0.0026)	(0.0049)	(0.0076)	(0.0097)	(0.0027)	(0.0050)	(0.0079)	(0.0102)
ERM Year +1 * Small Firms	-0.0320***	-0.0856***	-0.1439***	-0.1785***	-0.0338***	-0.0823***	-0.1389***	-0.1798***
	(0.0050)	(0.0093)	(0.0137)	(0.0185)	(0.0051)	(0.0094)	(0.0140)	(0.0191)
ERM Year +1 * High Stock Volatility Firms	0.0106**	0.0243**	0.0085	0.0524***	0.0076	0.0220**	-0.0024	0.0193
	(0.0052)	(0.0098)	(0.0141)	(0.0176)	(0.0058)	(0.0109)	(0.0155)	(0.0200)
ERM Year +1 * Financial Crisis Period	0.0034	-0.0135	-0.0284**	-0.0578***	0.0018	-0.0125	-0.0259*	-0.0573***
	(0.0049)	(0.0095)	(0.0139)	(0.0187)	(0.0053)	(0.0107)	(0.0153)	(0.0202)
ERM Year +1 * Information Quality	0.0036	0.0038	-0.0227***	-0.0615***	0.0030	-0.0007	-0.0346***	-0.0736***
	(0.0023)	(0.0043)	(0.0066)	(0.0089)	(0.0024)	(0.0045)	(0.0070)	(0.0094)
ERM Year +1 * RET <= -20%	0.0773**	0.1420**	0.2455**	0.2606	0.0293	0.0636	0.1700	0.1880
	(0.0338)	(0.0671)	(0.1174)	(0.1773)	(0.0385)	(0.0852)	(0.1348)	(0.1950)
ERM Year +1 * RET > 20%	0.0348*	0.1141*	0.1464**	0.0359	0.0387**	0.1127*	0.1446*	0.0156
	(0.0187)	(0.0590)	(0.0722)	(0.0738)	(0.0196)	(0.0664)	(0.0764)	(0.0877)
ERM Year +1 * CEO	0.0031	0.0074*	0.0063	0.0203**	0.0016	0.0034	-0.0000	0.0097
	(0.0024)	(0.0044)	(0.0070)	(0.0096)	(0.0025)	(0.0045)	(0.0072)	(0.0096)
Insider Type								
CEO	-0.0074***	-0.0200***	-0.0395***	-0.0769***	-0.0054***	-0.0193***	-0.0339***	-0.0640***
	(0.0020)	(0.0035)	(0.0052)	(0.0067)	(0.0020)	(0.0035)	(0.0051)	(0.0066)
CFO	-0.0083***	-0.0188***	-0.0415***	-0.0787***	-0.0082***	-0.0237***	-0.0451***	-0.0734***
	(0.0022)	(0.0039)	(0.0056)	(0.0072)	(0.0022)	(0.0040)	(0.0057)	(0.0072)
Director	-0.0055***	-0.0179***	-0.0362***	-0.0665***	-0.0040**	-0.0204***	-0.0381***	-0.0611***
	(0.0017)	(0.0030)	(0.0044)	(0.0057)	(0.0017)	(0.0030)	(0.0044)	(0.0057)
Officer	-0.0046***	-0.0153***	-0.0336***	-0.0670***	-0.0038**	-0.0186***	-0.0360***	-0.0628***
	(0.0016)	(0.0029)	(0.0043)	(0.0056)	(0.0016)	(0.0029)	(0.0042)	(0.0055)
Large Shareholders	0.0408**	0.0937***	0.0565	0.0434	0.0445***	0.1222***	0.1301***	0.1519***
	(0.0170)	(0.0325)	(0.0390)	(0.0483)	(0.0161)	(0.0331)	(0.0375)	(0.0529)
Past Stock Performance								
RET <= -20%	-0.0098	-0.0604*	-0.0484	-0.0525	0.0085	-0.0135	-0.0455	-0.0049
	(0.0187)	(0.0327)	(0.0552)	(0.0675)	(0.0175)	(0.0321)	(0.0568)	(0.0620)
RET > 20%	-0.0115	-0.0114	-0.0446**	-0.0377	-0.0143*	-0.0114	-0.0552***	-0.0564***
	(0.0086)	(0.0139)	(0.0176)	(0.0230)	(0.0084)	(0.0121)	(0.0157)	(0.0214)
Information Uncertainty								
Large Firms	-0.0211***	-0.0560***	-0.1238***	-0.1555***	-0.0222***	-0.0553***	-0.1195***	-0.1520***
	(0.0024)	(0.0042)	(0.0065)	(0.0087)	(0.0024)	(0.0041)	(0.0063)	(0.0086)
Medium Firms	-0.0155***	-0.0412***	-0.1042***	-0.1371***	-0.0152***	-0.0408***	-0.0989***	-0.1293***
	(0.0023)	(0.0040)	(0.0062)	(0.0084)	(0.0023)	(0.0039)	(0.0061)	(0.0082)
High Stock Volatility Firms	-0.0093***	-0.0255***	-0.0428***	-0.0699***	-0.0125***	-0.0345***	-0.0616***	-0.0936***
	(0.0015)	(0.0027)	(0.0040)	(0.0053)	(0.0015)	(0.0027)	(0.0041)	(0.0053)
Medium Stock Volatility Firms	-0.0029***	-0.0086***	-0.0201***	-0.0337***	-0.0038***	-0.0100***	-0.0230***	-0.0374***
	(0.0008)	(0.0016)	(0.0024)	(0.0032)	(0.0009)	(0.0016)	(0.0024)	(0.0032)
Financial Crisis Period (December 2007 to June 2009)	-0.0094**	-0.0285***	-0.0240**	-0.0254*	-0.0274***	-0.0969***	-0.1846***	-0.2469***
	(0.0046)	(0.0074)	(0.0113)	(0.0152)	(0.0048)	(0.0078)	(0.0119)	(0.0159)
Information Quality (Transparency)	0.0010	0.0073***	0.0305***	0.0617***	0.0026*	0.0127***	0.0410***	0.0698***
	(0.0014)	(0.0026)	(0.0039)	(0.0050)	(0.0014)	(0.0026)	(0.0039)	(0.0051)

(continued on next page)

Appendix 3-J: Regression Results with Insider Sale (Information Quality with ERM) (Table 3-J2 ERM Year +1) (cont.)

Insider Stock Sale: ERM Year +1 (cont.)

Event Study is based on the Market Model using:	**A. CRSP Value-Weighted Index**				**B. CRSP Equal-Weighted Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Control Variables								
Number of insider shares traded at insider level	<0.0000	<0.0000	<0.0000***	<0.0000***	<0.0000	<0.0000	<0.0000*	<0.0000**
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Number of insider shares traded at company level (%)	-0.0015*	-0.0032***	-0.0050***	-0.0071***	-0.0011	-0.0022**	-0.0030**	-0.0044***
	(0.0008)	(0.0010)	(0.0015)	(0.0018)	(0.0008)	(0.0009)	(0.0013)	(0.0015)
Market to book ratio (MTB)	0.0000	0.0000	-0.0000	-0.0000	0.0000	0.0000	0.0000	0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Loss (binary variable for net income < 0)	0.0042**	0.0040	-0.0010	0.0094	0.0027	0.0078**	0.0002	0.0028
	(0.0018)	(0.0033)	(0.0050)	(0.0063)	(0.0019)	(0.0034)	(0.0050)	(0.0064)
Return on assets (ROA)	-0.0045	0.0279	0.0279	-0.2301***	0.0031	0.0614	0.1129*	-0.1370**
	(0.0212)	(0.0383)	(0.0562)	(0.0689)	(0.0206)	(0.0394)	(0.0599)	(0.0687)
Leverage ratio (long-term debt/ equity)	0.0000	0.0001***	0.0002	0.0004**	0.0000	0.0000	0.0000	0.0001
	(0.0000)	(0.0000)	(0.0001)	(0.0002)	(0.0000)	(0.0001)	(0.0001)	(0.0002)
Insurance industry	0.0151***	0.0421***	0.0862***	0.1117***	0.0161***	0.0351***	0.0691***	0.1065***
	(0.0049)	(0.0102)	(0.0147)	(0.0205)	(0.0055)	(0.0105)	(0.0146)	(0.0208)
Banking industry	0.0113***	0.0365***	0.0856***	0.1346***	0.0127***	0.0318***	0.0767***	0.1341***
	(0.0039)	(0.0084)	(0.0118)	(0.0160)	(0.0042)	(0.0086)	(0.0119)	(0.0166)
January	-0.0024	-0.0164***	-0.0007	-0.0116*	-0.0068***	0.0024	0.0362***	0.0122*
	(0.0019)	(0.0035)	(0.0048)	(0.0065)	(0.0019)	(0.0036)	(0.0049)	(0.0066)
Fourth Quarter	0.0028**	0.0135***	0.0176***	0.0231***	-0.0015	-0.0120***	-0.0302***	-0.0158***
	(0.0012)	(0.0021)	(0.0031)	(0.0042)	(0.0012)	(0.0021)	(0.0031)	(0.0042)
Constant	0.0200***	0.0423***	0.0731***	0.1092***	0.0204***	0.0552***	0.1020***	0.1363***
	(0.0052)	(0.0104)	(0.0149)	(0.0201)	(0.0054)	(0.0106)	(0.0150)	(0.0205)
Year Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Sector Industry Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
R-squared	3.10%	5.35%	8.17%	8.81%	3.93%	7.14%	11.47%	12.37%

1. Heteroscedasticity-consistent standard errors are in parentheses.
2. The symbols ***, **, * show the significance at the 0.01, 0.05, and 0.10 levels of the t-test, respectively.
3. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock transactions, respectively. We employ the event study method based on the Market Model using CRSP value-weighted index and CRSP equal-weighted index, respectively.
4. We employ an indicator variable (ERM Year +1) to identify whether a firm employs ERM in any given year plus one year over the sample period. For example, if a firm adopts ERM in 2004, the ERM indicator variable will be assigned with a value of one for year 2005 and the following years.
5. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares. We employ five binary variables to proxy CEO, CFO, director, officer, and large shareholders who made stock transactions of a firm from 1996 to 2013, respectively.
6. We use two binary variables to proxy significant changes in firm's stock prices (i.e., past stock performance): RET is less than -20% and RET is greater than 20%. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., 4 day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., 2 day past stock performance) to proxy RET and get similar results.
7. We employ two binary variables for firm size based on market capitalization: small firms with market capitalization less than or equal to $202,158,805 (33.33th percentile of the insider stock purchase and sale sample), medium firms with market capitalization between $202,158,805 and $1,068,003,868 (33.33th percentile to 66.66th percentile), and large firms with market capitalization greater than $1,068,003,868 (66.66th percentile).
8. We employ two binary variables for stock volatility of a firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: low stock volatility firms with stock volatility less than or equal to 0.019601 (33.33th percentile of the insider stock purchase and sale sample), medium stock volatility firms with stock volatility between 0.019601 and 0.032981 (33.33th percentile to 66.66th percentile), and high stock volatility firms with stock volatility greater than 0.032981 (66.66th percentile).
9. We employ a binary variable for the period of 2008 financial crisis (December 2007 to June 2009).
10. As for information quality (transparency) variable, we follow Wade, Hoyt, and Liebenberg (2015) and calculate dispersion (DISP) based on Diether, Malloy, and Scherbina (2002).

Appendix 3-J: Regression Results with Insider Sale (Information Quality with ERM) (Table 3-J3 ERM Date)

Insider Stock Sale: ERM Date
Cumulative Abnormal Return (CAR) Ordinary Least Squares Regression Model with Heteroscedasticity-Consistent Standard Errors
Number of Transactions = 35,431 (Insider-Firm-Day Level Data); Sample Period = 1996 to 2013

Event Study is based on the Market Model using:	A. CRSP Value-Weighted Index				B. CRSP Equal-Weighted Index			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Independent Variables								
ERM								
ERM Date	0.0032	0.0138***	0.0007	-0.0412***	0.0031	0.0098**	-0.0090	-0.0480***
	(0.0024)	(0.0046)	(0.0072)	(0.0090)	(0.0025)	(0.0047)	(0.0074)	(0.0094)
ERM Date * Small Firms	-0.0301***	-0.0848***	-0.1489***	-0.1778***	-0.0324***	-0.0825***	-0.1448***	-0.1795***
	(0.0049)	(0.0091)	(0.0135)	(0.0183)	(0.0050)	(0.0092)	(0.0137)	(0.0188)
ERM Date * High Stock Volatility Firms	0.0096**	0.0152*	-0.0099	0.0223	0.0082	0.0187*	-0.0117	-0.0027
	(0.0047)	(0.0091)	(0.0133)	(0.0168)	(0.0053)	(0.0099)	(0.0144)	(0.0187)
ERM Date * Financial Crisis Period	0.0070	-0.0025	0.0076	-0.0289	0.0063	-0.0041	0.0051	-0.0272
	(0.0046)	(0.0089)	(0.0138)	(0.0176)	(0.0050)	(0.0099)	(0.0147)	(0.0189)
ERM Date * Information Quality	0.0020	0.0067	-0.0103	-0.0518***	0.0021	0.0029	-0.0212***	-0.0611***
	(0.0022)	(0.0041)	(0.0064)	(0.0083)	(0.0023)	(0.0042)	(0.0067)	(0.0088)
ERM Date * RET <= -20%	0.0783**	0.1462**	0.2442**	0.2736	0.0284	0.0639	0.1627	0.1929
	(0.0338)	(0.0671)	(0.1166)	(0.1764)	(0.0385)	(0.0853)	(0.1354)	(0.1948)
ERM Date * RET > 20%	0.0365*	0.1203**	0.1523**	0.0539	0.0390**	0.1150*	0.1447*	0.0276
	(0.0186)	(0.0589)	(0.0719)	(0.0739)	(0.0196)	(0.0663)	(0.0765)	(0.0883)
ERM Date * CEO	0.0038	0.0073*	0.0057	0.0197**	0.0022	0.0031	-0.0015	0.0085
	(0.0024)	(0.0043)	(0.0068)	(0.0093)	(0.0025)	(0.0043)	(0.0069)	(0.0093)
Insider Type								
CEO	-0.0075***	-0.0201***	-0.0398***	-0.0776***	-0.0055***	-0.0193***	-0.0338***	-0.0644***
	(0.0020)	(0.0035)	(0.0052)	(0.0067)	(0.0020)	(0.0035)	(0.0051)	(0.0067)
CFO	-0.0083***	-0.0190***	-0.0418***	-0.0793***	-0.0082***	-0.0239***	-0.0454***	-0.0740***
	(0.0022)	(0.0039)	(0.0056)	(0.0072)	(0.0022)	(0.0040)	(0.0057)	(0.0072)
Director	-0.0055***	-0.0181***	-0.0367***	-0.0673***	-0.0041**	-0.0205***	-0.0385***	-0.0619***
	(0.0017)	(0.0030)	(0.0044)	(0.0057)	(0.0017)	(0.0030)	(0.0044)	(0.0057)
Officer	-0.0047***	-0.0154***	-0.0339***	-0.0675***	-0.0038**	-0.0187***	-0.0362***	-0.0633***
	(0.0016)	(0.0029)	(0.0043)	(0.0056)	(0.0016)	(0.0029)	(0.0042)	(0.0055)
Large Shareholders	0.0407**	0.0934***	0.0557	0.0420	0.0444***	0.1220***	0.1293***	0.1504***
	(0.0170)	(0.0325)	(0.0391)	(0.0484)	(0.0161)	(0.0331)	(0.0376)	(0.0530)
Past Stock Performance								
RET <= -20%	-0.0098	-0.0606*	-0.0485	-0.0533	0.0085	-0.0136	-0.0454	-0.0055
	(0.0187)	(0.0327)	(0.0553)	(0.0676)	(0.0175)	(0.0321)	(0.0569)	(0.0620)
RET > 20%	-0.0116	-0.0115	-0.0448**	-0.0384*	-0.0143*	-0.0113	-0.0551***	-0.0569***
	(0.0086)	(0.0139)	(0.0176)	(0.0230)	(0.0084)	(0.0121)	(0.0157)	(0.0214)
Information Uncertainty								
Large Firms	-0.0210***	-0.0561***	-0.1247***	-0.1555***	-0.0222***	-0.0555***	-0.1205***	-0.1520***
	(0.0024)	(0.0042)	(0.0065)	(0.0087)	(0.0024)	(0.0041)	(0.0064)	(0.0086)
Medium Firms	-0.0155***	-0.0415***	-0.1047***	-0.1369***	-0.0153***	-0.0411***	-0.0994***	-0.1291***
	(0.0023)	(0.0040)	(0.0063)	(0.0084)	(0.0023)	(0.0039)	(0.0061)	(0.0082)
High Stock Volatility Firms	-0.0094***	-0.0250***	-0.0416***	-0.0686***	-0.0126***	-0.0343***	-0.0610***	-0.0927***
	(0.0015)	(0.0027)	(0.0041)	(0.0054)	(0.0015)	(0.0027)	(0.0041)	(0.0054)
Medium Stock Volatility Firms	-0.0029***	-0.0085***	-0.0199***	-0.0337***	-0.0039***	-0.0100***	-0.0229***	-0.0374***
	(0.0008)	(0.0016)	(0.0024)	(0.0032)	(0.0009)	(0.0016)	(0.0024)	(0.0032)
Financial Crisis Period (December 2007 to June 2009)	-0.0099**	-0.0299***	-0.0292***	-0.0285*	-0.0281***	-0.0981***	-0.1894***	-0.2506***
	(0.0045)	(0.0074)	(0.0113)	(0.0152)	(0.0048)	(0.0077)	(0.0119)	(0.0159)
Information Quality (Transparency)	0.0012	0.0065**	0.0284***	0.0609***	0.0026*	0.0118***	0.0389***	0.0686***
	(0.0014)	(0.0026)	(0.0039)	(0.0051)	(0.0014)	(0.0026)	(0.0039)	(0.0051)

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Appendix 3-J: Regression Results with Insider Sale (Information Quality with ERM) (Table 3-J3 ERM Date) (cont.)

Insider Stock Sale: ERM Date (cont.)

Event Study is based on the Market Model using:	**A. CRSP Value-Weighted Index**				**B. CRSP Equal-Weighted Index**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent Variable	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**	**CAR(+1,+10)**	**CAR(+1,+30)**	**CAR(+1,+60)**	**CAR(+1,+90)**
Control Variables								
Number of insider shares traded at insider level	<0.0000	<0.0000	<0.0000***	<0.0000***	<0.0000	<0.0000	<0.0000*	<0.0000**
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Number of insider shares traded at company level (%)	-0.0015*	-0.0032***	-0.0050***	-0.0071***	-0.0011	-0.0022**	-0.0030**	-0.0045***
	(0.0008)	(0.0010)	(0.0015)	(0.0018)	(0.0008)	(0.0009)	(0.0013)	(0.0015)
Market to book ratio (MTB)	0.0000	0.0000	-0.0000	-0.0000	0.0000	0.0000	0.0000	0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Loss (binary variable for net income < 0)	0.0042**	0.0041	-0.0010	0.0090	0.0028	0.0079**	0.0001	0.0025
	(0.0018)	(0.0033)	(0.0050)	(0.0063)	(0.0019)	(0.0034)	(0.0050)	(0.0064)
Return on assets (ROA)	-0.0045	0.0280	0.0264	-0.2332***	0.0030	0.0613	0.1107*	-0.1409**
	(0.0212)	(0.0383)	(0.0562)	(0.0689)	(0.0206)	(0.0394)	(0.0599)	(0.0688)
Leverage ratio (long-term debt/ equity)	0.0000	0.0001***	0.0002	0.0004**	0.0000	0.0000	0.0000	0.0001
	(0.0000)	(0.0000)	(0.0001)	(0.0002)	(0.0000)	(0.0001)	(0.0001)	(0.0002)
Insurance industry	0.0149***	0.0419***	0.0863***	0.1107***	0.0159***	0.0351***	0.0693***	0.1055***
	(0.0049)	(0.0101)	(0.0147)	(0.0205)	(0.0055)	(0.0105)	(0.0146)	(0.0208)
Banking industry	0.0114***	0.0364***	0.0842***	0.1331***	0.0128***	0.0318***	0.0754***	0.1325***
	(0.0039)	(0.0084)	(0.0118)	(0.0160)	(0.0042)	(0.0086)	(0.0119)	(0.0166)
January	-0.0023	-0.0161***	-0.0001	-0.0113*	-0.0067***	0.0026	0.0367***	0.0126*
	(0.0019)	(0.0035)	(0.0048)	(0.0065)	(0.0019)	(0.0036)	(0.0049)	(0.0066)
Fourth Quarter	0.0028**	0.0135***	0.0175***	0.0232***	-0.0015	-0.0120***	-0.0302***	-0.0157***
	(0.0012)	(0.0021)	(0.0031)	(0.0042)	(0.0012)	(0.0021)	(0.0031)	(0.0042)
Constant	0.0204***	0.0423***	0.0731***	0.1097***	0.0207***	0.0552***	0.1020***	0.1368***
	(0.0052)	(0.0104)	(0.0149)	(0.0202)	(0.0054)	(0.0106)	(0.0150)	(0.0205)
Year Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Sector Industry Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
R-squared	3.10%	5.33%	8.15%	8.76%	3.93%	7.12%	11.44%	12.32%

1. Heteroscedasticity-consistent standard errors are in parentheses.
2. The symbols ***, **, * show the significance at the 0.01, 0.05, and 0.10 levels of the t-test, respectively.
3. CAR(+1, +10), CAR(+1, +30), CAR(+1, +60), and CAR(+1, +90) refer to 10-day, 30-day, 60-day, and 90-day cumulative abnormal return of insider stock transactions, respectively. We employ the event study method based on the Market Model using CRSP value-weighted index and CRSP equal-weighted index, respectively.
4. We employ an indicator variable (ERM Date) to identify whether a firm employs ERM on the specific date over the sample period. For example, if a firm adopts ERM on March 1st 2004, the ERM indicator variable will be assigned with a value of one for March 1st 2014 and the following dates. If we do not find the enactment date of ERM, we use the SEC filing date/report date as the first evidence of ERM of a firm.
5. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares. We employ five binary variables to proxy CEO, CFO, director, officer, and large shareholders who made stock transactions of a firm from 1996 to 2013, respectively.
6. We use two binary variables to proxy significant changes in firm's stock prices (i.e., past stock performance): RET is less than -20% and RET is greater than 20%. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., 4 day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., 2 day past stock performance) to proxy RET and get similar results.
7. We employ two binary variables for firm size based on market capitalization: small firms with market capitalization less than or equal to $202,158,805 (33.33th percentile of the insider stock purchase and sale sample), medium firms with market capitalization between $202,158,805 and $1,068,003,868 (33.33th percentile to 66.66th percentile), and large firms with market capitalization greater than $1,068,003,868 (66.66th percentile).
8. We employ two binary variables for stock volatility of a firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: low stock volatility firms with stock volatility less than or equal to 0.019601 (33.33th percentile of the insider stock purchase and sale sample), medium stock volatility firms with stock volatility between 0.019601 and 0.032981 (33.33th percentile to 66.66th percentile), and high stock volatility firms with stock volatility greater than 0.032981 (66.66th percentile).
9. We employ a binary variable for the period of 2008 financial crisis (December 2007 to June 2009).
10. As for information quality (transparency) variable, we follow Wade, Hoyt, and Liebenberg (2015) and calculate dispersion (DISP) based on Diether, Malloy, and Scherbina (2002).

Appendix 3-K: Regression Results with Insider Sale (90-Day Holding Period Return) (Table 3-K)

Insider Stock Sale
90-Day Holding Period Return (HPR) Ordinary Least Squares Regression Model with Heteroscedasticity-Consistent Standard Errors
Number of Transactions = 49,170 (Insider-Firm-Day Level Data); Sample Period = 1996 to 2013

	Dependent Variable: 90-Day Holding Period Return					
	(1)	(2)	(3)	(4)	(5)	(6)
ERM Independent Variable	**ERM Year**	**ERM Year**	**ERM Year +1**	**ERM Year +1**	**ERM Date**	**ERM Date**
Independent Variables						
ERM	0.0048	0.0158	-0.0014	0.0172	-0.0036	0.0145
	(0.0097)	(0.0121)	(0.0114)	(0.0138)	(0.0103)	(0.0125)
ERM * Small Firms		-0.0345		-0.0399		-0.0270
		(0.0248)		(0.0268)		(0.0262)
ERM * High Stock Volatility Firms		-0.0773***		-0.0297		-0.0525*
		(0.0261)		(0.0272)		(0.0289)
ERM * Financial Crisis Period		-0.0152		-0.1575***		-0.1427***
		(0.0295)		(0.0431)		(0.0386)
ERM * RET <= -20%		-0.5115		-0.5007		-0.4883
		(0.3917)		(0.3861)		(0.3863)
ERM * RET > 20%		-0.0052		-0.0200		-0.0025
		(0.0840)		(0.0851)		(0.0851)
ERM * CEO		0.0172		0.0237		0.0241
		(0.0158)		(0.0174)		(0.0165)
Insider Type						
CEO	-0.0638***	-0.0667***	-0.0638***	-0.0660***	-0.0638***	-0.0667***
	(0.0152)	(0.0158)	(0.0152)	(0.0157)	(0.0152)	(0.0157)
CFO	-0.0582***	-0.0587***	-0.0584***	-0.0578***	-0.0584***	-0.0583***
	(0.0164)	(0.0163)	(0.0164)	(0.0165)	(0.0164)	(0.0164)
Director	-0.0455***	-0.0457***	-0.0454***	-0.0442***	-0.0454***	-0.0447***
	(0.0146)	(0.0147)	(0.0146)	(0.0148)	(0.0146)	(0.0148)
Officer	-0.0331**	-0.0334**	-0.0331**	-0.0319**	-0.0331**	-0.0323**
	(0.0137)	(0.0137)	(0.0137)	(0.0139)	(0.0137)	(0.0139)
Large Shareholders	-0.0171	-0.0173	-0.0174	-0.0158	-0.0175	-0.0165
	(0.0521)	(0.0522)	(0.0520)	(0.0522)	(0.0520)	(0.0522)
Past Stock Performance						
RET <= -20%	0.9484***	0.9665***	0.9484***	0.9670***	0.9484***	0.9665***
	(0.3262)	(0.3377)	(0.3262)	(0.3377)	(0.3262)	(0.3377)
RET > 20%	-0.0705**	-0.0702**	-0.0704**	-0.0693**	-0.0704**	-0.0698**
	(0.0328)	(0.0339)	(0.0328)	(0.0339)	(0.0328)	(0.0339)
Information Uncertainty						
Large Firms	-0.1659***	-0.1673***	-0.1653***	-0.1660***	-0.1650***	-0.1653***
	(0.0136)	(0.0141)	(0.0136)	(0.0140)	(0.0136)	(0.0140)
Medium Firms	-0.0805***	-0.0808***	-0.0806***	-0.0817***	-0.0806***	-0.0812***
	(0.0119)	(0.0122)	(0.0120)	(0.0121)	(0.0119)	(0.0122)
High Stock Volatility Firms	0.0571***	0.0624***	0.0571***	0.0609***	0.0571***	0.0620***
	(0.0116)	(0.0124)	(0.0115)	(0.0122)	(0.0115)	(0.0124)
Medium Stock Volatility Firms	0.0201***	0.0213***	0.0199***	0.0220***	0.0199***	0.0222***
	(0.0059)	(0.0060)	(0.0059)	(0.0060)	(0.0059)	(0.0060)
Financial Crisis Period (December 2007 to June 2009)	0.2857***	0.2918**	0.2857***	0.3101***	0.2857***	0.3091***
	(0.1103)	(0.1136)	(0.1103)	(0.1153)	(0.1103)	(0.1149)

(continued on next page)

Appendix 3-K: Regression Results with Insider Sale (90-Day Holding Period Return) (Table 3-K) (cont.)

Insider Stock Sale (cont.)

Dependent Variable: 90-Day Holding Period Return						
ERM Independent Variable	(1) **ERM Year**	(2) **ERM Year**	(3) **ERM Year +1**	(4) **ERM Year +1**	(5) **ERM Date**	(6) **ERM Date**
Control Variables						
Number of insider shares traded at insider level	<0.0000**	<0.0000**	<0.0000**	<0.0000**	<0.0000**	<0.0000**
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Number of insider shares traded at company level (%)	-0.0172	-0.0172	-0.0171	-0.0172	-0.0171	-0.0172
	(0.0122)	(0.0122)	(0.0122)	(0.0122)	(0.0122)	(0.0122)
Market to book ratio (MTB)	-0.0001*	-0.0001*	-0.0001*	-0.0001*	-0.0001*	-0.0001*
	(0.0001)	(0.0000)	(0.0001)	(0.0000)	(0.0001)	(0.0000)
Loss (binary variable for net income < 0)	-0.0586**	-0.0592**	-0.0586**	-0.0592**	-0.0587**	-0.0594**
	(0.0253)	(0.0253)	(0.0253)	(0.0253)	(0.0253)	(0.0253)
Return on assets (ROA)	-0.4278	-0.4247	-0.4280	-0.4248	-0.4282	-0.4246
	(0.3193)	(0.3194)	(0.3193)	(0.3195)	(0.3193)	(0.3195)
Leverage ratio (long-term debt/ equity)	0.0008*	0.0008*	0.0008*	0.0008*	0.0008*	0.0008*
	(0.0004)	(0.0004)	(0.0004)	(0.0004)	(0.0004)	(0.0004)
Insurance industry	0.0463**	0.0453**		0.0454**	0.0458**	0.0446*
	(0.0228)	(0.0228)		(0.0229)	(0.0228)	(0.0229)
Banking industry	0.0834***	0.0837***	0.0842***	0.0872***	0.0845***	0.0867***
	(0.0156)	(0.0156)	(0.0156)	(0.0158)	(0.0156)	(0.0157)
January	-0.0286**	-0.0289**	-0.0285**	-0.0295***	-0.0286**	-0.0293***
	(0.0113)	(0.0113)	(0.0113)	(0.0113)	(0.0113)	(0.0113)
Fourth Quarter	0.0293***	0.0294***	0.0294***	0.0297***	0.0294***	0.0295***
	(0.0102)	(0.0103)	(0.0102)	(0.0102)	(0.0102)	(0.0102)
Constant	-0.0527**	-0.0531**	-0.0526**	-0.0551**	-0.0526**	-0.0548**
	(0.0223)	(0.0225)	(0.0223)	(0.0226)	(0.0223)	(0.0225)
Year Fixed Effects	YES	YES	YES	YES	YES	YES
Sector Industry Fixed Effects	YES	YES	YES	YES	YES	YES
R-squared	6.14%	6.16%	6.14%	6.18%	6.14%	6.18%

1. Heteroscedasticity-consistent standard errors are in parentheses.
2. The symbols ***, **, * show the significance at the 0.01, 0.05, and 0.10 levels of the t-test, respectively.
3. The 500 firms in the sample are firms randomly chosen from the insider stock purchase and sale sample over the period 1996 to 2013.
4. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares.
5. The 90-Day Holding Period Return refers to a holding period return from the insider stock transaction date to ninety days after the insider stock transaction.
6. We employ three indicator variables to proxy ERM enactment (ERM Year, ERM Year +1, and ERM Date) and run the models, respectively.
7. We employ an indicator variable (ERM Year) to identify whether a firm employs ERM in any given year over the sample period. For example, if a firm adopts ERM in 2004, the ERM indicator variable will be assigned with a value of one for year 2004 and the following years.
8. We employ an indicator variable (ERM Year +1) to identify whether a firm employs ERM in any given year plus one year over the sample period. For example, if a firm adopts ERM in 2004, the ERM indicator variable will be assigned with a value of one for year 2005 and the following years.
9. We employ an indicator variable (ERM Date) to identify whether a firm employs ERM on the specific date over the sample period. For example, if a firm adopts ERM on March 1st 2004, the ERM indicator variable will be assigned with a value of one for March 1st 2014 and the following dates. If we do not find the enactment date of ERM, we use the SEC filing date/report date as the first evidence of ERM of a firm.
10. As in the Securities Exchange Act of 1934, we define insiders as officers, directors, and large shareholders who own 10 percent or more of their company's shares. We employ five binary variables to proxy CEO, CFO, director, officer, and large shareholders who made stock transactions of a firm from 1996 to 2013, respectively.
11. We use two binary variables to proxy significant changes in firm's stock prices (i.e., past stock performance): RET is less than -20% and RET is greater than 20%. RET refers to the cumulative daily stock returns from three days before the transaction date to the transaction date (i.e., 4 day past stock performance). We also use the cumulative daily stock returns from one day before the transaction date to the transaction date (i.e., 2 day past stock performance) to proxy RET and get similar results.
12. We employ two binary variables for firm size based on market capitalization: small firms with market capitalization less than or equal to $202,158,805 (33.33th percentile of the insider stock purchase and sale sample), medium firms with market capitalization between $202,158,805 and $1,068,003,868 (33.33th percentile to 66.66th percentile), and large firms with market capitalization greater than $1,068,003,868 (66.66th percentile).
13. We employ two binary variables for stock volatility of a firm which is measured by the standard deviation of daily stock returns over the 30 days prior to the insider transaction: low stock volatility firms with stock volatility less than or equal to 0.019601 (33.33th percentile of the insider stock purchase and sale sample), medium stock volatility firms with stock volatility between 0.019601 and 0.032981 (33.33th percentile to 66.66th percentile), and high stock volatility firms with stock volatility greater than 0.032981(66.66th percentile).
14. We employ a binary variable for the period of 2008 financial crisis (December 2007 to June 2009).