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Corporate Governance Codes-Evidence
from the German Stock Market

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The (Ir)relevance of Disclosure of Compliance with Corporate Governance Codes - Evidence from the German Stock Market

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Abstract

This paper studies the short- and long-run announcement effects of declaring compliance with the German Corporate Governance Code ('the Code'). We examine a unique, hand-collected data set of 317 German listed firms from 2002-2005. First, we present evidence from an analysis of firms' compliance behaviour regarding the Code. Second, event study results suggest that firm value is unaffected by such announcements, although there was widespread assumption by the Code's regulator and promoters that short-term market reactions would follow first-time disclosure of the declaration of conformity. For the long term, we find that neither higher levels of Code compliance nor improvements in governance quality have a (positive) impact on stock price performance compared to low levels of compliance and a reduction in the level of compliance. Our results add further evidence to the hypothesis that self-regulatory corporate governance reform initiatives relying on mandatory disclosure without independent monitoring and legal enforcement are ineffective and do not positively influence shareholder value.

JEL classification: G14, G34, G38, K22

Keywords: Corporate Governance, Self-Regulation, Governance Index, Event Studies, Long-Run Performance

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"Corporate governance mechanisms are economic and legal institutions that can be altered through the political process – sometimes for the better." (Shleifer/Vishny, 1997, p. 3)

I. Introduction

On August 8, 2002, the German Corporate Governance Code was published in the official Federal Bulletin.¹ Between that date and December 31, 2002, all German listed companies had to disclose their acceptance of this voluntary Code in a declaration of conformity under section 161 of the Stock Corporation Act (Aktiengesetz). The first declaration was published on October 1, 2002 by ThyssenKrupp AG.²

The purpose of this paper is to determine whether the publication of the declaration of conformity has any economic consequences. More precisely, we want to examine whether the Code is regarded by the market as a guarantee of good corporate governance, or if acceptance of the Code is not in fact considered value-relevant at all.

This is an important question for two reasons. First, we want to know whether the government that promoted the development of a voluntary Code as a central device for the reform of German corporate governance achieved its stated goal, which was 'to promote the trust of international and national investors (...) in the management and supervision of listed German stock corporations.'³ This goal was to be achieved by self-regulation enforced via the capital market. We directly quote Gerhard Cromme, the Chairman of the Code Commission: 'Those who dare not comply with the Code shall be punished by the capital market'.⁴

Second, the question of whether certain corporate governance practices are value-relevant, from a theoretical perspective, raises the interesting issue of whether disclosure of Code compliance is a credible signal. Due to information asymmetry, outside investors may not be able to differentiate between firms with good and bad governance quality. If disclosure of Code compliance is a credible signal, this must be because the cost of the signal is significantly higher for firms with bad governance than for firms with good governance practices, so that the "bad" do not find it worthwhile to mimic the "good".⁵ In such a case, shareholders are ultimately willing to pay a higher price for firms with good governance, for

¹ Code (2002), German Corporate Governance Code (Deutscher Corporate Governance Kodex). For the current Code (version of June 2, 2005) and its amendments since publication, consult the official website of the Cromme Commission at: <http://www.corporate-governance-code.de> (last visited March 12, 2006).

² See Appendix I for the ThyssenKrupp AG example.

³ Code (2002), *supra* note 1.

⁴ Cromme (2001), Those who dare not comply with the Code shall be punished by the capital market (Wer den Kodex nicht einhält, den bestraft der Kapitalmarkt), in: Frankfurter Allgemeine Zeitung, December 19, 13.

⁵ Spence (1973), Job Market Signaling, Quarterly Journal of Economics, 87.

example due to the corresponding reduction in monitoring and auditing costs.⁶ This would be true even if the signal itself is not efficient. Following Crawford and Sobel's 'cheap talk' model⁷, Code compliance could be a credible signal even if adoption of the signal is costless, because the Code attracts attention, and firms with bad governance do not want that attention. Yet, in the same authors' model of strategic communication, perfect communication can only occur if the preferences of the sender, i.e. the board, and the receiver, i.e. the shareholder, are identical. At the other extreme, when the agents' preferences are in complete opposition, no real communication can occur. Shareholders are less willing to trust the signal sent out by the management and supervisory board, i.e. the declaration of conformity, if their respective preferences are heterogeneous. Aumann and Hart show that repeated communication generally makes it possible to reach outcomes that cannot be achieved with single-period communication.⁸ Therefore, *annual* recurring disclosure of Code compliance gives firms an opportunity to certify information, in addition to making cheap talk claims. For example, firms may present physical evidence such as documents, observable characteristics of their governance choices, or costs. Alternatively, in economic or legal interactions there may be penalties for misleading disclosure, or accounting principles that allow agents to submit substantive evidence of their information.⁹ For empirical researchers, the evolution of a new regulatory mechanism of corporate governance in Germany provides a natural experiment to test its credibility and thus, its effectiveness, in the short and in the long run.

Our null hypothesis is that disclosure of the declaration of conformity has no information content, is irrelevant for shareholders and, thus, does not affect firm value. The underlying intuition is obvious: why should disclosure make any difference, considering that firms have previously chosen their specific governance practices knowing that these factors are already reflected in the share price? Our alternative hypothesis is that the Code constitutes a value-relevant corporate governance innovation, because it makes mandatory disclosure of firms' governance practices a credible signal. If the declaration of conformity is a credible signal, then it increases the costs of bad governance, and it also increases the risk that false information in the declaration can lead to a liability loss for board members.

⁶ Lombardo and Pagano (2002), *Law and Equity Markets: A Simple Model*, in: McCahery, Moerland, Raajmakers, and Renneboog (2002), *Corporate Governance Regimes: Convergence and Diversity*, Oxford and New York.

⁷ Cheap talk games are games with costless, nonbinding, and unmediated communication. Crawford and Sobel (1982), *Strategic Information Transmission*, *Econometrica* 50.

⁸ Aumann and Hart (2003), *Long Cheap Talk*, *Econometrica* 71.

⁹ See Forges and Koessler (2005), *Long Persuasion in Sender-Receiver Games*, Working Paper, University of Paris-Dauphine, with a model of such strategic information certification.

The question of whether disclosure of Code compliance is or is not credible ultimately has to be answered by the primary addressees: the shareholders.¹⁰ In financial economics, event study methodology is the standard approach used to analyse shareholder rationale. Assuming that the event – disclosure of Code compliance – will be reflected in the share price, a careful analysis of share price reactions during and after the event will reveal whether shareholders consider acceptance of the Code and high (low) Code compliance to be good news (bad news) or no news at all.

To our knowledge, this is the first study to analyse both the short-run *and* long-run effects of voluntary Code compliance at individual firm level as well as at the aggregate market level. In particular, our paper broadens the literature in three distinct areas: (i) we analyse the stock price reactions to Code compliance announcements, to detect whether the declaration of conformity is a credible signal and the capital market acts as an effective enforcement mechanism. This has important policy implications, because its effectiveness had been taken for granted when the Code was established, leading the German government to abstain from any other form of enforcement and/or regulation; (ii) we also conduct a long-run analysis which allows for strategic information certification by firms and for 'learning' by market participants about the relevance of the Code as suggested by Gompers, Ishii, and Metrick;¹¹ (iii) we have assembled data of exceptional quality: our sample comprises a unique, hand-collected data set of 317 large German firms for the first year of disclosure and the following two years. This allows us to compile an unbalanced panel of 717 observations for the long-run analysis from October 2002 until September 2005. Our results indicate that there is neither a positive or negative announcement effect for Code compliance, nor a long-run share price appreciation due to variations in Code acceptance, both across companies and through time.

The remainder of the paper is organised as follows. After a literature review in Section II, Section III gives an overview of the development of the German Corporate Governance Code, its main objectives and content. Section IV presents comprehensive descriptive statistics on Code compliance. In Section V we derive testable hypotheses and document what happened in the short term to share prices of firms that accept the Code and disclose high compliance versus those firms that disclose low compliance with the Code. Section VI of our paper analyses the long-term effects of corporate governance compliance on

¹⁰ This perception is anchored in the Preamble: 'The Code clarifies the rights of shareholders, who provide the company with the required equity capital and who carry the entrepreneurial risk.'

¹¹ Gompers, Ishii, and Metrick (2003), Corporate Governance and Equity Prices, Quarterly Journal of Economics 118.

firm value. In Section VII we conclude, and discuss several explanations for our results, suggesting that the declaration of conformity is a non-event.

II. Literature Review

Our paper belongs to the increasing body of literature in law and economics that studies the desirability of corporate governance rules, either through voluntary codes of best practice or in the form of mandatory regulation.

A significant share of that literature is concerned with the effect of regulatory events in the U.S. capital market. The events under consideration are announcements related to regulations introduced by the State or Federal Government. These studies are concerned with the ex post implications of new laws on firm value, i.e. whether on average the benefits of the regulation exceed its costs. To answer this question, researchers examine whether disclosure related to rules and regulations provides value-relevant information for investors. This is important since such laws affect all firms similarly, i.e. firms cannot opt out even if the costs exceed the perceived benefits. For example, Greenstone, Oyer, and Vissing-Jørgensen study the effect of the 1964 OTC disclosure rules on firm value, and find an overall positive effect.¹² More recently, the introduction of the Sarbanes-Oxley Act (SOX) in 2002 was surrounded by a large number of regulatory events that have attracted much research attention, especially the CEO certification of financial statements required by the SEC and changes in the NYSE and NASDAQ listing rules. Li, Pincus, and Rego; Jain and Razaee; and Zhang study the effect of announcements concerning the SOX on firm value.¹³ Their approach is based on identifying key dates associated with changes in the likelihood that the law would be passed and examining abnormal market reaction as well as abnormal firm-level reaction around those dates. Li et al. and Jain and Razaee find that on average, SOX is wealth-increasing for shareholders. Zhang finds a total negative effect of the law on firm value. The results differ across studies, because each identifies different key dates associated with the introduction of new regulation, and each has a different interpretation as to whether the information release on these key dates increased or decreased the likelihood that the law would be passed. To overcome this problem, Chhaochharia and Grinstein consider a large

¹² Greenstone, Oyer, and Vissing-Jørgensen (2005), Mandated Disclosure, Stock Returns, and the 1964 Securities Act Amendments, NBER Working Paper No. 11478.

¹³ Li, Pincus, and Rego (2004), Market Reaction to Events Surrounding the Sarbanes-Oxley Act of 2002, Working Paper, University of Iowa. Jain and Razaee (2005), The Sarbanes-Oxley Act of 2002 and Securities Market Behavior, Working Paper, University of Memphis. Zhang (2005), The Effects of Firm- and Country-level Governance Mechanisms on Dividend Policy, Cash Holdings, and Firm Value, Working Paper, University of Tennessee.

event window that captures any information overspill and belief updates by the market during the legislation process.¹⁴ They find, on average, that the rules have a positive effect on firm value. However, their positive announcement result for firms that need to make more governance changes due to the rules is significant only in large firms. This suggests that for small firms, the costs of the rules might be greater than their benefits. Agrawal and Chadha analyse the announcement of earnings restatements and find that independent board members with financial expertise (a listing requirement recently introduced by U.S. stock exchanges) reduce the probability of restatements.¹⁵ With respect to the SEC order of June 27, 2002, which requires CEOs and CFOs to certify that the financial reports are materially accurate and complete, Griffin and Lont present event study results consistent with the view that investors on the identified dates did, in fact, respond to the SEC certification requirement.¹⁶ Hirtle, studying a sample of bank holding companies, finds that they experienced positive and significant average abnormal returns from certification.¹⁷ However, Battacharya, Groznik and Haslem find that certification was a non-event for the certifiers.¹⁸ They argue that the market had already separated firms with good earnings transparency from firms with bad earnings transparency before the SEC order. As a result, the SEC order did not improve the market's ability to differentiate between firms that are likely to indulge in accounting manipulation and those that are not and thus, they question the benefits of SOX for investors. Finally, Romano evaluates the effectiveness of SOX based on a review of the empirical literature that was available when Congress was legislating.¹⁹ She concludes that the corporate governance provisions of the SOX should be stripped of their mandatory force and rendered optional, so that firms can decide for themselves whether they want to adopt them. From the U.S. literature, measuring the value relevance of voluntary adoptions of corporate governance codes could be seen as a test of the effectiveness of their enforcement mechanism.

More closely related to our work are studies that look at the effect of voluntary governance changes on firm value. Gregory provides a comprehensive overview of the global

¹⁴ Chhaochharia and Grinstein (2005), Corporate Governance and Firm Value – the Impact of the 2002 Governance Rules, Working Paper, Cornell University.

¹⁵ Agrawal and Chadha (2005), Corporate Governance and Accounting Scandals, Journal of Law and Economics 48.

¹⁶ Griffin and Lont (2005), Taking the Oath: Investor Response to SEC Certification, Working Paper, University of California.

¹⁷ Hirtle (2005), Stock Market Reactions to Financial Statement Certification by Bank Holding Company CEOs, Working Paper, Federal Reserve Bank of New York.

¹⁸ Bhattacharya, Groznik and Haslem (2002), Is CEO Certification of Earnings Numbers Value-Relevant?, Unpublished Working Paper, Indiana University.

¹⁹ Romano (2004), The Sarbanes-Oxley Act and the Making of Quack Corporate Governance, ECGI Finance Working Paper No. 52/2004.

proliferation of voluntary governance codes that started with the UK Cadbury Code in 1992.²⁰ Aguilera and Cuervo-Cazurra address the logic behind the emergence of these codes.²¹ They suggest that codes are intended to compensate for deficiencies in a country's corporate governance system regarding the protection of shareholders' rights. Cuervo provides a comparative international analysis of corporate governance mechanisms, concluding that in Continental Europe the applicability of governance codes is limited by the lower enforceability of norms.²² More recently, Wymeersch compares the enforcement mechanisms for corporate governance codes in several European jurisdictions.²³ He concludes that market-led enforcement, even with the legal backing of the Codes as in Germany or the Netherlands, is insufficient and suggests that 'sometimes the law is needed to convince recalcitrant firms.'

Despite the widespread existence of codes today, the economic results of compliance with best practice codes are inconclusive. The recommendations of the Cadbury Commission supposedly led to positive changes in corporate control through better board supervision²⁴, an increased likelihood of outside CEO appointment²⁵, higher sensitivity of CEO turnover to performance²⁶, and an improvement in the average performance of firms²⁷. On the other hand, Doble presents mixed evidence of the value relevance for small and medium-sized companies.²⁸ Weir and Laing find no effect and Weir, Laing and McKnight only a weak effect of the extent of code compliance in the UK on firm performance.²⁹ According to Dedman there is no empirical evidence of an association of Code compliance with firm value,

²⁰ Gregory (2002), *Comparative Study of Corporate Governance Codes Relevant to the European Union and its Member States*, Weil, Gotshal & Manges LLP (Eds.), New York. Gregory (2003), *International Comparison of Selected Corporate Governance Guidelines and Codes of Best Practice*, Weil, Gotshal & Manges LLP (Eds.), New York.

²¹ Aguilera and Cuervo-Cazurra (2004), *The Spread of Codes of Good Governance Worldwide: What's the trigger?* *Organization Studies* 25.

²² Cuervo (2002), *Corporate Governance Mechanisms: A Plea for Less Code of Good Governance and More Market Control*, *Corporate Governance – An International Review* 10.

²³ Wymeersch (2005), *Enforcement of Corporate Governance Codes*, ECGI Law Working Paper No. 46/2005.

²⁴ Stiles and Taylor (1993), *Benchmarking Corporate Governance: An Update*, *Long Range Planning* 26.

²⁵ Dahya and McConnell (2005), *Outside Directors and Corporate Board Decisions*, *Journal of Corporate Finance* 11.

²⁶ Dahya, McConnell, and Travlos (2002), *The Cadbury Committee, Corporate Performance and Management Turnover*, *Journal of Finance* 57; Dedman (2000), *An Investigation into the Determinants of UK Board Structure before and after Cadbury*, *Corporate Governance: An International Review* 8; Peasnell, Pope, and Young (2000), *Accrual Management to Meet Earnings Targets: Did Cadbury Make a Difference*, *British Accounting Review* 32.

²⁷ McKnight and Mira (2003), *Corporate Governance Mechanisms, Agency Costs and Firm Performance in UK Firms*, Working Paper, Cardiff University.

²⁸ Doble (1997), *The Impact of the Cadbury Code on Selection of Directors and Board Composition in UK Newly-quoted Companies*, *Corporate Governance* 5.

²⁹ Weir and Laing (2000), *The Performance-Governance Relationship: The Effects of Cadbury Compliance on UK Quoted Companies*, *Journal of Management & Governance* 4; Weir, Laing, and McKnight (2002), *Internal and External Governance Mechanisms: Their Impact on the Performance of Large UK Public Companies*, *Journal of Business and Accounting* 29.

but 'some evidence that compliance with the Cadbury recommendations enhances board oversight with respect to the manipulation of accounting numbers and the discipline of the top executives.'³⁰ For the Netherlands, the results of self-regulation in corporate governance reform appear to be unambiguous. According to de Jong, Dejong, Mertens, and Wasley the recommendations of the Peters Commission of 1996 led to no (positive) influence on firm value.³¹ Furthermore, no stock price reactions can be found when resolutions suggested by the Peters Commission were adopted. For Spain, Fernández-Rodríguez, Gómez-Ansón, and Cuervo-García report that the market reaction to announcements of compliance with the national code seems only to be positive for firms that also concurrently announce a major restructuring of the board.³² Alves and Mendes find no systematic effect of compliance on the performance of Portuguese firms.³³ Gilson and Milhaupt find no significant market price movement on announcement of voluntary governance reform by Japanese firms for the first year of adoption in 2003.³⁴ For Germany, there is broad evidence of a high level of acceptance of the Code in general, but studies on the supposed market reaction are scant.³⁵

III. The German Corporate Governance Code – an Overview

A. The Baums Commission

The 'Government Commission on Corporate Governance' (Baums Commission) was set up in July 2000 by the German government to develop detailed recommendations regarding standards of good governance and advancements to German company law.³⁶ In its final report of July 2001, the Baums Commission suggested a code of best practice and articulated

³⁰ Dedman (2002), The Cadbury Committee Recommendations on Corporate Governance – A Review of Compliance and Performance Impacts, *International Journal of Management Reviews* 4.

³¹ De Jong, Dejong, Mertens, and Wasley (2005), The Role of Self-Regulation in Corporate Governance: Evidence and Implications from The Netherlands, *Journal of Corporate Finance* 11.

³² Fernández-Rodríguez, Gómez-Ansón, and Cuervo-García (2004), The Stock Market Reaction to the Introduction of Best Practice Codes by Spanish Firms, *Corporate Governance: An International Review* 12.

³³ Alves and Mendes (2004), Corporate Governance Policy and Company Performance: The Portuguese Case, *Corporate Governance: An International Review* 12.

³⁴ Gilson and Milhaupt (2004), Choice as Regulatory Reform: The Case of Japanese Corporate Governance, ECGI Law Working Paper No. 22/2004.

³⁵ We are only aware of one unpublished study by Zimmermann, Goncharov, and Werner (2004), Does Compliance with the German Corporate Governance Code have an Impact on Stock Valuation? An Empirical Analysis, Working Paper, University of Bremen. The authors find for a sample of 61 large non-financial firms that the degree of compliance with the Code is 'value-relevant' information. Although their two-stage-least-square regression approach explicitly accounts for potential endogeneity between corporate governance and their measure of firm value, the reduced-form regression estimates could be biased due to weak instruments. For a comprehensive discussion of the impact of endogenous explanatory variables in models using two-stage least square estimators see, for example, Larcker and Rusticus (2005), On the Use of Instrument Variables in Accounting Research, Working Paper, University of Pennsylvania. Besides these econometric problems Holthausen and Watts (2001), The Relevance of the Value Relevance Literature for Financial Accounting Standard Setting, *Journal of Accounting and Economics* 31, have shown why 'drawing Standard-Setting inferences is difficult' and not justified by conducting value-relevance tests.

³⁶ Appendix II gives a detailed chronological overview of the regulatory stages introducing the Code.

support for a voluntary self-regulation mechanism, since adoption of legally enforced regulations was arguably often cumbersome and detrimentally delayed.³⁷ According to the Baums Report, such laws would often be too inflexible for the necessary differentiation between firms. This lack of legal enforcement was in fact highly appreciated by the corporate sector, since it is a commonly-held view that the German economy is already ‘over-regulated’ (with almost 20,000 legal provisions) and inhibits business activity.³⁸

Overall, the Baums Report aims to show a strong orientation towards the flexible stock corporation laws of U.S. federal states. But in contrast to Germany, investor protection in the U.S. is based on three strong foundations: (i) the common law tradition of ex-post protection in law, in the event of violations of fiduciary duty by majority shareholders or breaches of loyalty by the board; (ii) the powerful SEC’s investor protection regime; and (iii) the pressure of an efficient capital market (institutional investors, analysts, financial press, and listing rules). Nevertheless, the Baums Commission argued that transferring flexible corporate governance principles into the legal and institutional German capital market environment was reasonable, because they anticipated future convergence of investor protection standards in Germany and other continental European countries in the direction of ‘Anglo-Saxon’ company law. However, the validity of this convergence hypothesis is warmly debated among academics³⁹, and even the Commission itself points out that investor protection in Germany is different from U.S. investor protection in two of the three fundamental principles outlined: (i) the consequences for effective ex-post investor protection, resulting from different legal traditions; and (ii) the differences between the SEC and the German Federal Securities Supervisory Office.⁴⁰ The Commission even addressed this second point in justifying its recommendation of a voluntary code, arguing against further development of the

³⁷ Baums (2001), Report of the Government Commission on Corporate Governance, Cologne. The Baums Report also considered the experience of two private initiatives, both having published a voluntary code of best practice for German companies: Schneider and Strenger (2000), Die 'Corporate Governance-Grundsätze der Grundsatzkommission Corporate Governance, Die Aktiengesellschaft 45; Peltzer and von Werder (2001), Der 'German Code of Corporate Governance (GCCG)' des Berliner Initiativkreises, Die Aktiengesellschaft 46. Strenger (2004), The Corporate Governance Scorecard – A Tool for the Implementation of Corporate Governance, Corporate Governance: An International Review 12, provides further evidence.

³⁸ This view is often expressed in the financial press, see for example, von Rosen (2004), Die Überregulierung ist kaum noch zu bewältigen, in: Frankfurter Allgemeine Zeitung (FAZ), May 12, 27.

³⁹ See, for example, Gilson (2001), Globalizing Corporate Finance: Convergence of Form or Function, American Journal of Comparative Law 49, defending the convergence view, and on the other side of the argument Schmidt and Spindler (2002), Path Dependence, Corporate Governance and Complementarity, International Finance 5.

⁴⁰ The former Federal Securities Supervisory Office ('Bundesaufsichtsamt fuer den Wertpapierhandel' - BAWe) was established in Frankfurt am Main on January 1, 1995 to secure the proper functioning of the securities and derivatives markets by pursuing the underlying principles of investor protection, market transparency, and market integrity. Following the adoption on April 22, 2002, of the Law on Integrated Financial Services Supervision, the BAWe, together with the former offices for banking supervision and insurance supervision was integrated to form a single state regulator, the new Federal Financial Supervisory Authority ('Bundesanstalt fuer Finanzdienstleistungsaufsicht' - BaFin). The BaFin, established on May 1, 2002, supervises banks, financial services institutions, and insurance companies across the entire financial market and comprises the key functions of consumer protection and solvency supervision.

Federal Financial Supervisory Authority ('Bundesanstalt für Finanzaufsicht' – BaFin) into a more all-encompassing capital market supervisor like the SEC.

B. The Cromme Commission and the Code

As a major result of the recommendations by the Baums Commission, the 'Government Commission for a German Corporate Governance Code' (Cromme Commission) was mandated in September 2001 to develop an official German Corporate Governance Code, which was released on February 26, 2002. The Code 'presents essential statutory regulations for the management and supervision (governance) of German listed companies and contains internationally and nationally recognised standards for good and responsible governance.'⁴¹ According to the Cromme Commission, the general objective of the Code is to *make Germany's corporate governance rules transparent for both national and international investors*.⁴² This general objective was emphasised in a speech by the Minister of Justice at the first conference on the German Code after its implementation.⁴³ The second main purpose of the Code is to *promote the trust of international and national investors* as well as other stakeholders (customers, employees and the general public) in the management and supervision of listed German stock corporations.⁴⁴ To stress its special relevance for the capital markets, the Preamble of the Code underlines that 'the Code clarifies the rights of shareholders, who provide the company with the required equity capital and who carry the entrepreneurial risk.' To achieve the stated objectives, the Code considers all major criticisms usually levelled at German corporate governance – especially by international investors: inadequate focus on shareholder interests, the two-tier system of management board and supervisory board, inadequate transparency in German corporate governance, inadequate independence of German supervisory boards, and limited independence of financial statement auditors.⁴⁵ Each of these reform issues is addressed within the six chapters of the Code: (i) shareholder rights, with special focus on the general meeting; (ii) cooperation between the management board and supervisory board; (iii) management board issues, covering its responsibilities, membership, compensation and conflicts of interest, (iv) supervisory board issues, with additional regard to the role of the chairman, its committees and its efficiency; (v) transparency; (vi) reporting and the audit of the annual financial statements.⁴⁶

⁴¹ Code (2002), *supra* note 1.

⁴² Code (2002), *supra* note 1.

⁴³ Zypries (2003), German Minister of Justice, Speech at the Second Conference on the German Corporate Governance Code, Berlin.

⁴⁴ Code (2002), *supra* note 1.

⁴⁵ Baums (2001), *supra* note 37.

⁴⁶ Code (2002), *supra* note 1.

Since the Code is principle-based – and thus cannot cover every single detail – it provides a framework which the individual companies will have to fill in. The recommendations of the Code are marked in its text by the use of the word "shall". Companies can deviate from them, but are then obliged to disclose this annually. This is designed to enable companies to reflect sector and enterprise-specific requirements, showing that the Code aims to contribute to more flexibility and more self-regulation in the German corporate constitution. The Code also contains suggestions which can be deviated from without disclosure; for these, the Code uses the terms "should" or "can". The remaining passages of the Code not marked by these terms contain provisions that enterprises are obliged to observe under applicable law. According to prevailing legal opinion in Germany, the Code embodies best practice standards that are not actually legally binding.⁴⁷ Nevertheless, the legal nature of the Code (especially the distinction between law, contract, and fiduciary duty) has been questioned.⁴⁸ Further clarification is thus necessary with respect to liability risks and the legal consequences of publishing misleading declarations of compliance with the Code.

The Code is regularly reviewed by the Commission and adapted in view of new laws and developments in the capital market. This continual process aims to ensure that its recommendations relate to recent changes in a flexible and pragmatic way. Thus far, the Code has been amended three times: the first amendment occurred on November 7, 2002 and the second, more comprehensive change dates from May 21, 2003. At its next annual meeting on June 8, 2004, the Commission decided not to alter the Code. A third amendment took place on June 2, 2005, and is thus not reflected in our data.⁴⁹

C. The declaration of conformity in accordance with Article 161 of the Stock Corporation Act

The Code has a (codified) legal basis through the *declaration of conformity* required by Article 161 of the German Stock Corporation Act as amended by the Transparency and Disclosure Law, which came into force on July 26, 2002.⁵⁰ As outlined by Germany's Ministry of Justice, the purpose of the declaration of conformity is the provision to capital

⁴⁷ Hopt (2002), Unternehmensführung, Unternehmenskontrolle, Modernisierung des Aktienrechts – Zum Bericht der Regierungskommission Corporate Governance, in: Hommelhoff et al. (Eds.), Corporate Governance, Gemeinschaftssymposium der Zeitschriften ZHR/ZGR, Heidelberg, Supplement 71; Lutter (2002), Die Erklärung zum Corporate Governance Kodex gemäß § 161 AktG – Pflichtverstöße und Binnenhaftung von Vorstands- und Aufsichtsratsmitgliedern, Zeitschrift für das gesamte Handelsrecht und Wirtschaftsrecht (ZHR).

⁴⁸ For example by Seidel (2004), Der Deutsche Corporate Governance Kodex – eine private oder doch eine staatliche Regelung?, Zeitschrift fuer Wirtschaftsrecht (ZIP) 25.

⁴⁹ See Appendix II.

⁵⁰ See Böcking/Dutzi (2005) for a comprehensive discussion of Article 161 of the German Stock Corporation Act and its application in financial reporting under Article 285 of the German Commercial Law.

market participants of firm-specific information regarding compliance with the Code.⁵¹ Accordingly, German companies must disclose their past and planned future Code compliance (the ‘comply or explain’ principle). Any deviations from the Code must be reported individually; beyond this requirement, no further explanation is necessary. The declaration of conformity must be accessible to the shareholders (published on the Internet) and updated at least annually. As the rules of conduct generally apply collectively to both boards, the declaration must be submitted jointly by the management board and supervisory board. The mandatory annual review of the Code aims to encourage board members to repeatedly revise standards of conduct. The first declaration of conformity was to be submitted by the end of 2002⁵², and under Article 285 of the German Commercial Law (Handelsgesetzbuch)⁵³, subsequent filings would occur at the end of each financial year. The firm must turn in its declaration together with the annual report to the register of corporations as outlined in Article 325 of the Commercial Law.

D. The Role of the Capital Market in Code Implementation

While disclosure of compliance is a legal requirement, monitoring and enforcement of the Code is expected to occur through self-regulation in conjunction with the capital market.⁵⁴ Interestingly, the government consciously omitted to make disclosure of an explanation of deviations from the Code compulsory, expecting each firm to act in its own best interests in this respect: ‘It can be assumed that the firm will issue a justification for each case of non-conformity’.⁵⁵

The particularly important role of the capital market in monitoring and enforcing the Code is magnified by the complete lack of any other enforcement mechanisms. In particular, Code compliance (i) is not a listing requirement, and (ii) is not supervised by the Federal Financial Supervisory Authority (BaFin); also, (iii) there is no requirement for any external examination of the accuracy of the conformity declarations, for instance by the firm's auditor.

⁵¹ BT-Drucks. 14/8796, Gesetzesentwurf des Bundesregierung: Entwurf eines Gesetzes zur weiteren Reform des Aktien- und Bilanzrechts, zu Transparenz und Publizität (Transparenz- und Publizitätsgesetz – Transparency and Disclosure Law), in: Drucksache des Deutschen Bundestages 14/8769 as of April 11, 2002.

⁵² Explanation of current and future conduct was required in the first submission.

⁵³ Handelsgesetzbuch (HGB), paragraph 1, number 16.

⁵⁴ Hopt (2002), *supra* note 47; Lutter (2002), *supra* note 47; BT Drucks. 14/8796, *supra* note 51; Seibert (2002), *Im Blickpunkt: Der deutsche Corporate Governance Kodex ist da*, Betriebsberater.

⁵⁵ BT-Drucks. 14/8796, *supra* note 51, 21. This is different to the ‘comply or explain’ principle in the UK that requires companies to explain not only where but also why they deviate from the Combined Code. For a descriptive analysis of the UK experience see Arcot and Bruno (2005), *In Letter but not in Spirit: An Analysis of Corporate Governance in the UK*, Working Paper, London School of Economics. The authors document companies' compliance with the Combined Code and the explanations provided in cases of non-compliance. They conclude that the Combined Code and its 'comply or explain' approach does not much differ from a prescriptive law, and that despite high compliance with the code the implementation of the regulation is flawed, leaving space for further intervention.

According to the German Institute of Auditors, the auditor's sole responsibility is to certify that the declaration of conformity has been filed according to the law, without reviewing the accuracy of its contents.⁵⁶

It is generally assumed by the Code Commission that at least significant cases of non-compliance will be sanctioned by the capital market.⁵⁷ In other words, the declaration of conformity should serve as a signal to investors about firm-specific governance, and in theory, investors will take the information contained in the declaration of conformity into account when they evaluate firms and adjust investment decisions.⁵⁸ From these assumptions made by the regulators and legal scholars, we derive testable hypotheses and try to shed light on the following questions: (i) To what extent do German listed companies comply with the Code? (ii) Does the capital market respond to acceptance or non-acceptance of the Code with stock price adjustments – be it in the short or long run? (iii) Does the capital market differentiate between firms according to their degree of Code compliance?

IV. Data description and analysis of compliance behaviour

Basic data was compiled for all firms of Deutsche Börse's 'Prime Standard' market segment.⁵⁹ As reported in Table 1, in this segment 398 securities were listed as of October 31, 2003 (record date for data collection). 40 securities issued by foreign companies had to be excluded, since the Code only applies to German companies. Another 21 securities had to be excluded to avoid double counting of companies that have issued more than one share class, e.g. common and preferred stock, leading to a total population of 337 companies.

The object of analysis in this part is the first-time declaration of conformity that had to be published by all listed German companies by the end of 2002. This first-time declaration of conformity was collected from company websites or requested in writing. All but 20 declarations (which were no longer published on the Internet at the time of data compilation and were not sent upon request) were hand-collected. The data thus contains the initial declarations of conformity of 317 firms, representing 94% of the total population of firms.

[Insert Table 1 here]

⁵⁶ IDW (2003), IDW Prüfungsstandard: Auswirkungen des Deutschen Corporate Governance-Kodex auf die Abschlußprüfung (IDW PS 345), Wirtschaftsprüfung (WPg).

⁵⁷ Cromme (2001), *supra* note 4.

⁵⁸ Currently, there is no empirical evidence backing this claim for Germany. Both previous measures for self-regulating the German capital market, namely the Insider Trading Code and the Takeover Code, failed as ineffective and were later incorporated into codified law. See Appendix III for an overview.

⁵⁹ For details on the entry requirements to the Deutsche Börse Prime Standard, see § 60-67 Bylaws of the Frankfurt Stock Exchange (Börsenordnung), available at <http://deutsche-boerse.com>.

Our initial finding relates to the overall acceptance of the Code. According to the law, a company can choose to reject the Code in total, for example, if it has published its own governance principles. However, only two of the 317 companies investigated completely rejected the Code.⁶⁰

Table 2 reports summary statistics for the 315 financial and non-financial firms that accepted the Code in 2002. Book value of total assets and market value of equity are both characterised by large variance, indicating the inclusion of both very large and very small firms in our sample. The profitability of the sample firms is rather low with a value-weighted average return on equity of 2% (median 9%). Leverage (calculated as total debt divided by total assets) is about 60%. On average, these firms have been quoted on the Frankfurt Stock Exchange for eleven years.

[Insert Table 2 here]

The evidence that the vast majority of companies complies with the Code in principle, at first sight, suggests a high relevance of the Code to firms' governance.⁶¹ On the other hand, full acceptance of all 60 'shall' recommendations contained in the 2002 Code is merely a voluntary requirement. The number of deviations from the Code recommendations ("*D*") therefore provides an objective measure to evaluate Code compliance. For the 315 firms that accepted the Code, we calculate the number of deviations reported by the companies in their declaration of conformity.⁶² We then use this number as a differentiation factor in order to divide the sample into two groups of 'high' and 'low' corporate governance compliance (CG-compliance) respectively. The higher the number of deviations, the lower the measure of CG-compliance.⁶³ Based on the two extreme quartiles of *D* drawn from the total number of firms, we define high CG-compliance firms as those disclosing zero, one or two deviations ($D = 2$), roughly representing the upper quartile, and low CG-compliance firms as those reporting six or more deviations ($D = 6$), roughly representing the lower quartile of the sample. On that

⁶⁰ Geratherm Medical AG (the explanation being insufficient time and financial resources) and Fortec AG (no explanation provided). For both companies the exact disclosure date is not available, so no further evidence on market impact can be derived from these cases.

⁶¹ This evidence is used by the German Ministry of Justice and by members of the Cromme Commission to confirm the success of the Code. The argument is put forward in von Werder, Talaulicar, and Kolat (2003), Kodex-Report 2003, Der Betrieb 56, and in a letter to one of the authors from the German Minister of Justice, Ms Zypries, dated June 8, 2004.

⁶² As we analyse the first-time declaration of conformity the relevant Code version is that of February 26, 2002 incorporating only the amendment of November 7, 2002 (provision for a new law on directors' dealings). For the long-run studies we also include the Code amendments of May 21, 2003, and scale the number of deviations by the respective total number of Code recommendations.

⁶³ Our measure *D* can thus be interpreted in the same way as the Governance Index *G* constructed by Gompers et al. (2003), *supra* note 11, with the difference that the provisions are defined by the German Code.

basis the picture looks quite different: only 23 companies explain that they follow all Code recommendations ($D = 0$), i.e. 93% of the sample companies report at least one (up to a maximum of 21) deviation(s). Figure 1 shows the frequency distribution of deviations by companies.

[Insert Figure 1 here]

We are aware of the possibility that the variations in the governance index D could be biased for at least two reasons: the deviation count might not capture firms' explanations for non-compliance, and Code recommendations could be cheap to adopt and economically unimportant. This issue of the value irrelevance of Code compliance is an empirical question that represents the focus of this paper.

We deal with the first issue by looking at both firm behaviour and investor opinion. As any sanction for non-compliance is subject to evaluation by investors, self-interest should explain the reasons for each company's deviations. It should be borne in mind that when it introduced the declaration of conformity, the German government was convinced that companies would publish a statement explaining each deviation with firm-specific reasons.⁶⁴ In fact, one third of companies do not state any reason for their deviation. Even fewer companies, only 5.3%, disclose their (non-)compliance with the 'should' suggestions of the Code, which again are merely a voluntary requirement. From this firm behaviour, we conclude that the disclosure of deviations contains sufficient information for investors.

Second, we survey institutional investors about the relevance of the explanations actually given. In general, there are three categories of arguments for rejecting certain Code recommendations: industry- or firm-specific requirements, reasonably explained decisions and personal matters. A summary of explanations for rejection of Code recommendations with the highest aggregate number of deviations was used for an independent plausibility check by leading German and foreign institutional investors.⁶⁵ The results are unambiguous: only a fraction of all rejections passes the investors' test as either unavoidable due to industry- or firm-specific circumstances, or reasonably explained.⁶⁶ Personal matters are not regarded

⁶⁴ BT-Drucks. 14/8796, *supra* note 51.

⁶⁵ The survey was conducted in June 2005. Respondents were: Dr. Hans-Christoph Hirt, Hermes Focus Funds; Alexander Juschus, ISS Proxy Services; Rolf Drees, Union Investment; Jochen Mathée, Westfalenbank Asset Management; and Christiane Hölz, DSW. Due to the small sample size the answers are indicative rather than representative, and for that reason the results are not reported in detail.

⁶⁶ It should be noted that one survey participant stressed the importance of individual company evaluations by investors: "I have fairly clear views on most issues [presented in the questionnaire] (but would always consider the individual case/explanation which may be difficult to capture in one short phrase). On some points I am very

as acceptable reasons by investors at all. The summary of the investor assessment indicates the irrelevance of most explanations in our sample. Although only indicative, we take this evidence together with firms' disclosure practices as justification for our measurement approach.

We further investigate additional firm-specific criteria to assess a more clearly-defined view of governance quality. These criteria are: (i) indications of future conduct in areas of Code deviation; (ii) implementation details regarding 'should' suggestions in the Code, and (iii) corporate governance reporting. On the basis of these criteria, we develop a corporate governance rating that will also account for additional qualitative governance differences. This rating is computed for all companies (individual results are outside the scope of this article).⁶⁷ As there is a high correlation between our (quantitative) measure of Code deviations and the results of the corporate governance rating, we finally find that the number of Code deviations can be interpreted as a reasonable proxy for governance quality. It can thus be said that despite broad acceptance of the Code, the average value of 4.3 deviations signals a significant gap between actual firm-level governance practices and those recommended by the Code.

Table 1 also gives a detailed description of compliance rates by index membership. The Prime Standard market segment includes four main indices: (i) DAX (30 German large caps), (ii) MDAX (50 international mid caps), (iii) TecDAX (30 international technology firms), and (iv) SDAX (50 international small caps). We find that the number of Code deviations is correlated with index membership: DAX firms have on average the lowest number of deviations (2.0), followed by MDAX and TecDAX firms (2.9 and 3.3 respectively). Companies in the SDAX index have the highest average number of deviations (5.2). As index membership is determined by market capitalisation based on free float and trade volume, it can be regarded as a proxy for company size (and probably capital market orientation). One potential explanation for the differences in Code compliance according to index membership is a move towards international governance standards by larger companies, which need access to international investors and a broader shareholder base (provided that these standards form part of the Code). Consequently, Code compliance for companies in the SDAX and companies without index membership – exhibiting low market capitalisation and low liquidity – is below average.

A small group of 23 companies in the sample are simultaneously listed on a U.S. stock exchange (including 17 companies at NYSE). Since they must comply with tougher US.

willing to listen to any reasonable explanation, e.g. retirement age. Here surely the test should be what the relevant person can do for the company (taking into account the overall board composition) and not his/her age."
⁶⁷ Details are available from the authors on request.

listing standards and disclosure requirements, these companies can be assumed to have governance structures in place that automatically comply with most Code recommendations.⁶⁸ Our analysis shows that indeed, seven of the companies in question fully comply with the Code, a ratio of 30% compared to just 6.8% for all companies. Of the remaining 16 companies, 13 comprehensively explain their deviations, i.e. 81% compared to just 68% for all companies. The average number of deviations is 2.6 compared to 4.3 for all companies. It therefore seems reasonable, as suggested by Licht, to assume that a dual listing on German and U.S. stock exchanges provides for good governance as defined by the Code.⁶⁹ But if one considers the respective index membership of these firms, the findings become rather weak, as not all companies deviate significantly from their respective index averages. This leads us to conclude that dual listing itself has no causal effect on better Code compliance. Instead, we suggest that better governance standards as implied by dual listing are not reflected in the Code and thus, the Code is fairly irrelevant for German companies with dual German/U.S. listing.

Table 2 (right panel) provides a comparison of firm characteristics between firms in the upper and lower quartile of Code compliance. The results of a mean comparison test reveal that, on average, high-compliance firms are larger (both in terms of book value of assets and market value of equity), riskier, and older. There are no significant differences in profitability, capital structure, and growth opportunities between the upper and lower quartile firms in the sample.

An analysis of Code acceptance by industry supports the assumption that industry membership can have an important influence on firm governance.⁷⁰ As shown in Table 3, firms from already highly regulated sectors (e.g. banking) report fewer deviations on average than firms from less regulated sectors. Another reason for this difference could be varying degrees of capital market orientation in different industries.

The last step in the descriptive analysis is concerned with *critical* Code recommendations, i.e. recommendations a significant number of companies has chosen to deviate from. For the year 2002, there is one particular Code recommendation (no. 3.8 paragraph 2 'Deductible for D&O-insurance') which the majority of companies choose not to follow. Four recommendations exhibit a deviation ratio of more than 25% and ten recommendations have deviation ratios between 10% and 25%. In contrast, 18

⁶⁸ Stulz (1999), Globalization, Corporate Finance, and the Cost of Capital, *Journal of Applied Corporate Finance* 12.

⁶⁹ Licht (2003), Cross-Listing and Corporate Governance: Bonding or Avoiding?, *Chicago Journal of International Law* 4.

⁷⁰ See, for example, Gillan, Hartzell and Starks (2003), Explaining Corporate Governance: Boards, Bylaws, and Charter Provisions, Working Paper, University of Delaware.

recommendations show less than 1% deviation for the entire sample. Table 4 shows all recommendations with a deviation-ratio of more than 25% in 2002, 2003, and 2004. The Code amendment of May 2003 introduced several new recommendations, two of which have very high rejection rates.

[Insert Tables 3 and 4 here]

The most critical recommendations are related to board member remuneration, supervisory board member qualifications, and financial reporting. Thus, it seems that the Code's critical recommendations can be – and indeed are – avoided by many of the companies. While we remain sceptical as to whether these critical recommendations are indeed provisions that should be considered crucial for good governance and performance (although by definition the commission assumes exactly that), for the predominant part of the critical recommendations we can rule out the possibility that they were known to investors before the Code came into existence.⁷¹ For these cases, the finding of high non-compliance sheds further doubt on the Code's ability to significantly change corporate governance practices in Germany, which was a major objective of the Cromme Commission.

V. Event study analysis of the declaration of conformity

A. Testable Hypotheses on the stock price impact of the declaration of conformity

In this section, we apply standard event study methodology to test the capital market reaction to the first disclosure of the declaration of conformity.⁷² Testable hypotheses can be directly derived from the assumptions made by members of the Cromme Commission concerning implementation of the official German Code in 2002.⁷³ While their arguments may sound naïve from an economic perspective, since they apparently assumed that before adoption of the Code and the resulting disclosures the market did not know which firms had good governance and which did not, they form the basis for the regulatory action taken. According to this view, when a firm accepts the Code, it demonstrates commitment and initiative in

⁷¹ The reason for this is that it was the very first time compliance with these provisions had to be made public, and anecdotal evidence suggests that the boards themselves only decided at the last minute – after hefty discussions with their lawyers and auditors - which choice to make, which is one reason why we have so many late filers for the first declaration of conformity.

⁷² For the application of event study methodology in law and economics see the survey of Bhagat and Romano (2005), *Empirical Studies of Corporate Law*, ECGI Law Working Paper No. 44/2005. Earlier texts include Mitchell and Netter (1994), *The Role of Financial Economics in Securities Fraus Cases*, *The Business Layer*, and Marais, Laurentius, and Schipper (1995), *Applications of Event Study Methods in Litigations Support*, in: Weil, Wagner and Frank, *Litigation Services Handbook*.

⁷³ See Section III.D.

enacting good governance procedures, and a willingness to increase transparency. The declaration of conformity provides the capital market with information that allows investors to improve their firm-specific risk assessment. Information asymmetries should decrease, reducing investors' desired risk premium, and thus the expected rate of return. If a company decides not to report compliance with the Code, it hinders efficient monitoring by the market, and as a result will immediately be punished by a depressed stock price. Clearly, this rationale only holds if market participants believe that Code acceptance is a proxy for actual behaviour in line with the spirit of the Code and not just a (costless) box-ticking exercise, and the following basic Hypothesis 1 can be derived:

H1: Firms that (do not) accept the Code will generate (negative) abnormal stock returns

(H₁0: Firms that accept the Code will generate no abnormal returns)

However, since almost every listed German firm has accepted the Code, more detailed analysis seems appropriate to detect potential market sanctions. At firm level, the quality of the declaration of conformity can be interpreted as a signal for the commitment to maintain or improve firm-specific governance practices. High compliance should result in smaller risk premiums and lead to stock return appreciations, and vice versa. An additional voluntary statement explaining the reasons for deviation from the declaration of conformity might create confidence that a company still belongs to the 'high compliance' firms. Firms with low governance quality find that the costs of a declaration of conformity with high compliance or detailed explanations are prohibitive. We formulate Hypothesis 2 accordingly:

H2: Firms which file a high (low) compliance declaration of conformity generate a positive (negative) abnormal return

(H₂0: The degree of compliance is not related to firm valuation by the capital market)

Testing the two hypotheses, we have to control for the fact that the sample firms are listed in various stock exchange indices. As a possible extension of the hypotheses, it could therefore be expected that in some indices the compliance effect will be more pronounced than in others; for example, the market might require a minimum (voluntary) governance standard in certain indices. This means it can be assumed that the market reaction is more clearcut for DAX index firms, as a result of the more comprehensive coverage by analysts, financial press, and investors compared to, say, small-cap firms with no index listing.

Another extension of the hypotheses relates to the possibility that market participants consider the firm's industry when evaluating the quality of the conformity declaration, so that in some industries a high-quality declaration carries greater value than in others.⁷⁴

Finally, another way to refine the analysis is to examine aggregate market reactions to the announcements of regulatory events related to the development of the Code. We include this test as a robustness check.

B. Sample selection

For all 317 companies in the sample we determine the exact publication date of the declaration of conformity. Likewise, all information of any kind around the event date which could cause a price effect (e.g. ad-hoc news, press releases) has been identified. Data was collected from the relevant company websites, and a subset of companies were directly contacted and interviewed in October 2003 to verify the event date.⁷⁵ The results are shown in Table 5. For 138 declarations, the exact disclosure day cannot be determined because the date was not mentioned in the declaration and the companies did not participate in our survey. For three companies, regression parameters are not available due to a lack of share price data. One company did not publish its declaration of conformity and thus has to be excluded. Of the remaining companies with exact event dates, thirty are excluded due to simultaneous company news releases, which cannot be definitively considered as having no price effect. This leaves a total of 145 firms for event study analysis. Based on the number of deviations (D) drawn from the total number of event firms, we construct two extreme portfolios, one of high CG-compliance ($D = 2$) with 46 firms and another one of 42 low CG-compliance firms ($D = 6$) representing approximately the upper and lower quartile of the event firms. This will enable us to test hypothesis H2.

[Insert Table 5 here]

C. Event study design

We investigate the event date $[t_0]$ and a number of small event windows around t_0 for significant price changes (abnormal or excess returns), the largest event window being $[t_{-1}, t_{+2}]$ to capture information leaks shortly before the event and delayed reactions occurring one

⁷⁴ Gillan et al. (2003), *supra* note 70, show that corporate governance characteristics vary by industry at least in the U.S.. We account for industry effects in the long-run study of section VI.

⁷⁵ These dates are highly reliable, because the actual publication date is accurately time-stamped in the declaration of conformity of the firms in our sample. Other sources such as newspapers or information provided by the German financial regulator (BaFin) are not available, since it is only compulsory to publish the declaration on the corporat website.

or two days after the event. The calculation of abnormal returns helps us to ascertain the effect of the declaration of conformity on the stock price. We calculate discrete daily returns (using the closing prices of the respective stocks on the Frankfurt stock exchange). Market returns are approximated using the Technical University of Karlsruhe's DAFOX market index.⁷⁶ We estimate standard market model returns with an estimation window defined as the time period of 120 trading days $[t_{-123}, t_{-3}]$ before the event period. A post-event window of 18 days is defined to check for the persistence of abnormal returns.⁷⁷

To infer statistical significance, we first use the simple parametric t -test as in Brown and Warner to determine the relationship between average abnormal returns and the variance of the time series.⁷⁸ To account for the restriction of no event-induced variance, we apply both the ordinary and standardised cross-sectional test.⁷⁹ We also apply non-parametric tests that do not require specific assumptions for the distribution of abnormal returns.⁸⁰ Finally, we apply Corrado's mean rank test, which produces more reliable results, particularly with smaller sample sizes that result from the definition of hypothesis H2 for our one-day return data.⁸¹

D. Results

The null hypothesis H_0 of no abnormal returns for firms that accept the Code cannot be rejected. The results of the parametric and non-parametric test statistics show no statistically significant price reaction upon acceptance of the Code.

⁷⁶ See <http://finance.wiwi.uni-karlsruhe.de/Forschung/DAFOX>.

⁷⁷ MacKinlay (1997), *Event Studies in Economics and Finance*, *Journal of Economic Literature* 35, provides a comprehensive description of this standard event study design and alternative parametric and non-parametric tests of the null hypothesis that the average abnormal returns are zero.

⁷⁸ This method implicitly assumes that securities residuals are uncorrelated and that event-induced variance is insignificant. See Brown and Warner (1980), *Measuring Security Price Performance*, *Journal of Financial Economics* 8.

⁷⁹ These test statistics reduce the influence of increases in variance caused by the event that leads to frequent rejections of the null hypothesis of zero average abnormal returns when it is, in fact, true. The ordinary method conducts a t -test by dividing the average event-period residual by its contemporaneous cross-sectional standard error. Boehmer, Musumeci, and Poulsen (1991), *Event Study Methodology under Conditions of Event-Induced Variance*, *Journal of Financial Econometrics* 30, argue that the ordinary cross-sectional technique will be misspecified if the event-period residuals for different firms are drawn from different distributions. To account for the potential drawback of the cross-sectional test, Boehmer et al. (1991) suggest a test statistic (abbreviated as the 'BMP test') that standardizes the residuals by the estimation-period standard deviation. They show that the BMP test is not influenced by event-induced changes of the variance.

⁸⁰ These methods are also able to minimize possible biases in the analysis due to a few firms driving the results. MacKinlay (1997), *supra* note 77, suggests the use of non-parametric tests in conjunction with the parametric counterparts. This provides a robustness check of conclusions based on parametric tests. The significance is first checked with the non-parametric sign test that assumes that 50% of the security returns are negative. However, this test could be biased since returns are, in fact, skewed to the right. See, for example, Brown and Warner (1980), *supra* note 78.

⁸¹ This test does not require the assumption of a normal distribution; it is particularly appropriate in cases of biased t -test conclusions due to outliers and in the presence of skewed daily security returns. See Corrado (1989), *A Nonparametric Test for Abnormal Security-Price Performance in Event Studies*, *Journal of Financial Economics* 23.

[Insert Table 6 here]

Table 6 at first sight shows a weakly significant, positive average cumulative abnormal return for the event windows $[t_0, t_{+2}]$ and $[t_{-1}, t_{+2}]$ for the standardised cross-section test (BMP-test) and the ordinary cross-sectional method respectively. However, the results of the simple t -test are insignificant in both cases. Comparisons between the median and mean value of the CARs confirm the fact that the distribution of excess returns is highly skewed towards the left. That means that a few extreme values may have exerted an unjustifiably high influence in raising the mean. When in $[t_0, t_{+2}]$ and $[t_{-1}, t_{+2}]$ the largest cumulative abnormal return is removed, the standardised cross-sectional test statistic becomes insignificant with reduced mean values of 0.7940 (t -ratio 1.42), as does the ordinary cross-sectional test with 0.9878 (t -ratio 1.57). An additional investigation with the sign test demonstrates no significant returns in t_0 and the four event windows between t_{-1} and t_{+2} . Corrado's rank test for the event date and $[t_{-1}, t_0]$, $[t_0, t_1]$, and $[t_1, t_2]$ also produces insignificant test statistics. Eyeball checks on Figure 2 confirm the interpretation of our results, since no reaction is visible on the event date. The slight increase in the CAAR on date t_{+1} and t_{+2} after the event has been found insignificant and can be explained by only two outliers.⁸² Finally, a weak positive trend that emerges after date t_{+12} cannot be linked to the event, as our methodology does not reject the null hypothesis of no abnormal return.

[Insert Figure 2 here]

The null hypothesis H_20 of no abnormal returns for firms that accept the Code to different degrees cannot be rejected. Although we have just shown that on average there is no abnormal price reaction for the whole sample, it could be suggested that the capital market differentiates between firms with unexpectedly high or low compliance declarations. However, our results concerning hypothesis H2 show that the capital market does not react to the *degree* of Code compliance with a corresponding price adjustment. Based on our event study methodology, there are no significant abnormal returns in the two subgroups independently of the respective test-statistic (see Table 7); in fact, the average cumulative abnormal returns of the 'high compliance' group are slightly negative in the time period around the event date. A two-sample Wilcoxon rank-sum test (also known as the Mann-

⁸² In the event window $[t_0, t_{+2}]$ the removed standardized mean value for Beiersdorf AG is 3.11; and in $[t_{-1}, t_{+2}]$ the removed value for Intershop AG equals 0.31.

Whitney two-sample statistic) reveals that the returns of firms with ‘high compliance’ declarations of conformity are not significantly different from the returns of firms with ‘low compliance’ declarations. Median values and eyeball checks on Figure 2 support our interpretation of these results, since no abnormal price reaction is observed at the event date t_0 for either group, and the subsequent cumulative values of the ‘high compliance’ firms become slightly negative and remain stable in the post-event window. The cumulative average abnormal returns of the ‘low compliance’ firms increases from date t_1 indicating an upward trend in returns, although this trend is not related to the event and goes against what we would expect.

[Insert Table 7 here]

To sum up, the stock market does not react in any way to the first-time disclosure of the declaration of conformity, and furthermore the degree of compliance has no immediate impact on a firm’s stock price (and any impact observed is counter-intuitive). While we cannot completely rule out that this finding may be driven by the fact that firms’ corporate governance characteristics were already reflected in their stock price before the event, it definitely shows that publication of the declaration of conformity is irrelevant. The Code’s main enforcement mechanism thus contains no value relevant information for shareholders, contrary to the expectations of the regulator and the Code’s legal supporters.

E. Robustness Checks

In this section we present further evidence showing that there were no immediate market responses to the Code and its implementation and that our results are robust. The no-results case is always difficult to defend but given its implications here, robustness checks are important to put forward a persuasive case. In Section VE1 we apply an alternative return-generating process, Section VE2 presents results using the portfolio approach, Section VE3 shows robustness to different specifications of the market portfolio, and Section VE4 assesses the aggregate market reaction to the Code’s regulatory history.

1. Alternative return generating process

As a first robustness test, we apply a constant-mean return model instead of the market model to estimate abnormal returns, and then repeat the test of both null hypotheses. The results are reported in Table 8. The significance of the parametric test statistic disappears after removing

a single outlier.⁸³ As we find no qualitative change compared to our prior findings based on market model returns, we do not repeat the discussion here. Likewise, the use of constant mean returns in the test of hypothesis H2 does not differ from the results based on market model returns.⁸⁴

[Insert Table 8 here]

2. Portfolio approach

Considering that about three-quarters of the firms published their declaration of conformity in December 2002, the traditional event study methodology of Brown and Warner may suffer from clustering problems.⁸⁵ In the case of overlapping event dates, the assumption of zero covariance between abnormal returns that underlies the market model regressions could be violated. Although ordinary least squares (OLS) can provide unbiased coefficient estimates in the context of event date clustering, OLS-based estimates of the corresponding standard errors would generally be biased. We address this problem by applying a test procedure suggested in the literature: the portfolio approach.⁸⁶ Abnormal returns are aggregated to form a single time series of observations. Hypothesis tests can then be based on the standard deviation in this series of (presumably) independent observations.⁸⁷ We use the aggregated portfolio method as proposed by Campbell, Lo, and MacKinlay to control for overlapping of events in calendar time,⁸⁸ and construct portfolios of all firms publishing the declaration of conformity at the same date. We then aggregate all abnormal returns into a portfolio dated using event time, and conduct a security-level analysis on this portfolio. This approach diminishes the error created by cross-correlation in the residuals. To obtain reasonable sample size, we create portfolios based around any date on which at least ten declarations were published. This is the case on four trading days, December 16, 18, 19, and 20, for which we build such portfolios with 11, 12, 16, and 19 event firms respectively. Results are shown in Table 9.

[Insert Table 9 here]

⁸³ The removed value in the three event windows with significant CAARs are from Intershop AG with AARs of 0.48, 0.46 and 0.43 respectively.

⁸⁴ Results are available on request.

⁸⁵ Brown and Warner (1980), *supra* note 78.

⁸⁶ For the case of total event date clustering, MacKinlay (1997), *supra* note 77, suggests the use of Zellner's seemingly unrelated regression technique instead of cross-sectional aggregation of abnormal returns. See also Bernard (1987), Cross-Sectional Dependence and Problems of Interference in Market-Based Accounting Research, *Journal of Accounting Research* 25, for a discussion of alternative treatment methods for event-date clustering.

⁸⁷ See Bernard (1987), *supra* note 86.

⁸⁸ Campbell, Lo, and MacKinlay (1997), *The Econometrics of Financial Markets*, Princeton.

Neither the parametric nor the non-parametric test statistics indicate the presence of abnormal returns in the portfolios. Thus, even controlling for clustering, the general inference of no significant abnormal returns upon the event remains unchanged. The robustness of our main results is also supported by simulations reported by Boehmer et al., who show that the results from the standardised cross-sectional procedure (BMP test) are essentially unaffected by the presence of event-date clustering.⁸⁹

3. Index proxy for market portfolio

Table 10 shows the result from the test of hypothesis H1 on the 23 DAX30 companies in our sample using market model returns. We derived the rationale for this test from the expectation that in some indices the compliance effect could be more pronounced than in others. In particular, the reaction could be limited to DAX index companies as a result of the more comprehensive coverage by analysts, financial press, and investors in the top index segment, thus leaving small capitalisation stocks unaffected. The parametric tests do not reject the null hypothesis of no such reaction. In contrast, the non-parametric sign test indicates a significantly positive reaction in the two-day and three-day event window starting at $[t_0]$ but not at the event date itself. On that date the sign test is insignificant and even shows a negative sign. In addition, the rank test is insignificant at $[t_0]$, $t[t_{+1}]$ and $[t_{+2}]$ leaving no doubt that the DAX companies did not experience a share price reaction when they published their declaration of conformity.

[Insert Table 10 here]

4. Capital market reactions to regulatory events

Finally, we check whether firms' share prices have been influenced simultaneously by the regulatory events that were part of the process to develop and implement the Code. We therefore conduct an event study in calendar time for each individual stage of the regulatory process between May 2000 (the announcement of the members of the Baums Commission), and June 2003 (the press release by the Cromme Commission regarding the first major amendment to the Code). The twelve events of the regulatory process identified for this study are outlined in Appendix II. This crude test is similar in spirit to the empirical analysis conducted by de Jong et al.⁹⁰ We proxy for the market by using the DAFOX index as the market portfolio and calculate constant-mean abnormal returns. The normal benchmark

⁸⁹ Boehmer et al. (1991), *supra* note 79.

⁹⁰ De Jong et al. (2005), *supra* note 31, apply Zellner's seemingly-unrelated regression technique.

return is calculated over the estimation window $[t_{-141}, t_{21}]$ before the first event. The event-day abnormal returns are calculated as the raw return on the event day minus the benchmark return. Cumulative abnormal returns are obtained by adding the abnormal returns before, at, and after the event, i.e. $t[t_{-1}]$, $[t_0]$, and $[t_{+1}]$. Statistical significance is obtained using the simple t -statistics of the time series.

[Insert Table 11 here]

We find only one regulatory event concerning the Code that experienced any significant positive abnormal returns on the event day (but not for the 3-day CAR). On August 8, 2002, the Code was published in the Federal Bulletin, and the stock market's abnormal return is 2.33%. On the other hand, seven of the twelve regulatory events experience negative abnormal returns. One such event is the official appointment of the members of the Cromme Commission on September 6, 2001. The membership of the commission could very well have been a disappointment to market participants, given that most members are CEOs (who thus find themselves regulating other CEOs), while shareholder groups and finance experts are almost unrepresented in the body. The stock market dropped abnormally by 2.28% on that day, and by 7% over the 3-day window. Upon the day of the first meeting of the commission, November 7, 2003, there is also a marginally significant negative abnormal return of 3.4%. All other events show no significant stock market reaction, even at the 10 percent level.

In sum, the market reaction to the regulatory events related to introduction of the Code can be considered to range from mixed (but predominantly negative) reactions, to taking no notice at all. We would not suggest drawing any conclusions about a positive (or negative) market reaction, as we cannot rule out any coinciding influence by other events causing significant stock market reactions on the dates of the regulatory events, and inference due to cross-correlations of the residuals; but the Code's introduction appears to have been a non-event in general, and clearly so at firm level as indicated by our main event study findings.

VI. Code Compliance and Long-Run Stock Returns

A. Background

The hypotheses tested above presume the existence of immediate price reactions in a semi-efficient capital market, i.e. any price effect would have occurred on the date the declaration of conformity was disclosed. However, the findings of Gompers et al. instead suggest a long-

term effect of corporate governance quality on firm value and the cost of capital.⁹¹ They argue that investors might learn only slowly (i.e. after recurring disclosure) about the true cost of differences in governance quality. In other words, the German capital market may not have fully incorporated the information immediately upon disclosure of Code compliance. Given that the declaration of conformity is filed on a yearly basis, we are able to perform a 'long-run event study' using portfolio returns over the three-year period from October 2002 until the end of September 2005. In this section, we test hypothesis H2 that there is a persistent relationship between different degrees of Code compliance (as expressed in the declaration of conformity) and abnormal returns. This is accomplished by the construction of different portfolios – each aggregating firms with matched levels of Code compliance.

When assessing the long-term performance effects of the Code, the design should give the Code its 'best shot' at showing positive results. We therefore extend our analysis and test the additional hypothesis that what is value-relevant is not the *level* of Code compliance but *changes* in the degree of compliance. More precisely, firms that improve their compliance with the Code during the observation period might be subject to higher market valuation and hence lower cost of capital, and vice versa. We therefore construct additional portfolios, respectively comprising companies whose corporate governance quality improved or declined after 2002, as measured by an improvement or reduction stated in the declaration of conformity. We formulate Hypothesis 3 accordingly:

H3: Firms which improve (reduce) their compliance with the Code generate a positive (negative) abnormal return

(H₃₀: The change of Code compliance is not related to stock market returns)

B. Data and Methodology

To perform a long-run analysis, we build on our year 2002 sample of 315 German firms listed in the Prime Standard of Deutsche Börse. We hand-collect additional data on Code compliance for the years 2003 and 2004 in March 2005. We obtain the declaration of conformity from 284 and 299 firms for the respective years, representing 85% and 96% of all firms in the Prime Standard. In total, we have 898 firm-year observations for the analysis. Table 4 presents data on those Code recommendations with the most frequent deviations in each year. All of the critical recommendations in 2002 remain above the cut-off level of 25% in the following two years, implying only little or no improvements in overall Code compliance. In addition, two important recommendations newly introduced in 2003 -

⁹¹ Gompers et al. (2003), *supra* note 11.

individual disclosure of management and supervisory board compensation (Code references 4.2.4 and 5.4.5 (3)) - were not complied with by most firms in the first and second year. To ensure comparability of Code compliance across time we scale the absolute number of deviations by the respective number of total Code recommendations that exist in a given year, i.e. 60 in 2002 and 68 in 2003 and 2004. Based on these scaled Code deviations we construct two mutually exclusive stock portfolios that contain all firms above and below the *median* according to their respective level of compliance. To check the robustness of our results, we similarly construct portfolios with more extreme levels of compliance: (i) upper and lower 30th percentiles and (ii) upper and lower 10th percentiles. Portfolios are reset annually to reflect changes in firms' compliance behaviour. Companies for which no declaration of conformity was available at the reset date are automatically excluded for the subsequent twelve-month period. To test hypothesis H3 we construct *change* portfolios following the same procedure: one portfolio comprises all firms that have improved their Code compliance, and a second portfolio contains firms that display a reduction in Code compliance. Similar extreme portfolios are constructed for further robustness checks. The change portfolios are compiled at the end of 2003 and re-formed once at the end of 2004. As a result, we can apply a time-series of 154 and 89 weekly portfolio returns in calendar time for the test of H2 and H3 respectively.

Lyon, Barber, and Tsai suggest using the calendar-time portfolio method to analyse whether sample firms persistently earn abnormal returns.⁹² By choosing this approach we make best use of the annual disclosure on Code compliance and also eliminate any event-date uncertainty.⁹³ We apply a four-factor model as suggested by Carhart to calculate long-run returns and then study the empirical relationship between our compliance index and firm performance with the portfolio method.⁹⁴ The four-factor model combines the three risk factors of Fama and French and the momentum factor of Jegadeesh and Titman.⁹⁵ We estimate the four-factor model as

$$R_{it}-R_{ft} = a_i + \beta_i (R_{mt}-R_{ft}) + s_i SMB_t + h_i HML_t + m_i MOM_t + e_{it},$$

⁹² Lyon, Barber, and Tsai (1999), Improved Methods for Tests of Long-Run Abnormal Stock Returns, *Journal of Finance* 54.

⁹³ For an alternative application of standard event study methodology with long-run abnormal stock returns see Barber and Lyon (1997), Detecting Long-Run Abnormal Stock Returns, *Journal of Financial Economics* 43, and Koharti and Warner (1997), Measuring Long-Horizon Securities Price Performance, *Journal of Financial Economics* 43.

⁹⁴ Carhart (1997), On Persistence in Mutual Fund Performance, *Journal of Finance* 52.

⁹⁵ Fama and French (1993), Common Risk Factors in the Returns on Stocks and Bonds, *Journal of Financial Economics* 33; Jegadeesh and Titman (1993), Returns to Buying Winners and Selling Losers: Implications for Stock Market Efficiency, *Journal of Finance* 48.

where R_{it} is the simple weekly return on the calendar-time portfolio i (value-weighted and equal-weighted), R_{ft} is the risk-free rate approximated by the weekly Euribor, R_{mt} is the week t value-weighted market return approximated by the DAFOX market index of all listed German firms. SMB_t (small minus big) is the return on a value-weighted portfolio of small stocks less the return on a value-weighted portfolio of big stocks, HML_t (high minus low) is the return on a value-weighted portfolio of high book-to-market stocks less the return on a value-weighted portfolio of low book-to-market stocks, and MOM_t is the week t return on a value-weighted portfolio of past twelve-months winners less the return on a value-weighted portfolio of past twelve-months losers. The regression yields parameter estimates for a_i , β_i , s_i , h_i and m_i . The error term in the regression is denoted by e_{it} with the usual normality assumptions of zero mean and equal variance. The parameter of interest in the regression is the intercept, a_i . A positive intercept indicates that after controlling for market, size, book-to-market equity, and momentum factors in returns, a sample portfolio has performed better than expected.⁹⁶ In interpreting the results we focus on the value-weighted portfolio returns, as in the presence of small capitalisation stocks value-weighted average returns result in more realistic portfolio returns. Nevertheless, equal-weighted portfolios are considered as a robustness check. Stock returns are calculated as discrete returns using performance-adjusted share prices from Thomson Financial (Datastream) that adjust for dividend and bonus payments as well as capital changes.

The three zero-investment factor-mimicking portfolios are designed to capture the well-known asset pricing anomalies of size, style, and momentum effects. The weekly SMB and HML factors are not available from public sources for Germany.⁹⁷ To our knowledge, Ziegler et al. are the first to calculate and test a three-factor-model for Germany with monthly data.⁹⁸ Their results show the advantage of a multi-factor model, compared to the single-factor CAPM, to reliably explain long-run returns on the German capital market, both with regard to the time-variance of returns and the explanation of portfolio returns in the cross-section. Thus, in the spirit of Fama and French, we approximate SMB and construct two portfolios comprising big and small capitalisation stocks. The big portfolio includes the largest and

⁹⁶ The error term in this regression may be heteroscedastic since the number of securities in the calendar-time portfolio varies between weeks. In a similar model, Lyon et al. (1999), *supra* note 92, find that this heteroscedasticity does not significantly affect the specification of the intercept test in random samples. When we calculate our portfolios using White's heteroscedasticity-robust standard errors our results do not change regarding significance and sign of the estimated coefficients.

⁹⁷ The factors are provided by K. French for the U.S. and international capital markets including Germany at http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html (website visited January 28, 2006). International data is calculated on a monthly basis and available until December 2004.

⁹⁸ Ziegler, Eberts, Schröder, Schulz, and Stehle (2003), Multifaktormodelle zur Erklärung deutscher Aktienrenditen: Eine empirische Analyse, Centre for European Economic Research (ZEW) Working Paper No. 03-45.

most liquid German stocks (DAX index) and the second portfolio contains firms from a small capitalisation stock index (SDAX). The big portfolio is regularly recalculated in September of each year and the small capitalisation portfolio at the end of each quarter.⁹⁹ For *HML* we use balance sheet data available from the Compustat Global Vantage Database and calculate the book-to-market ratio for all German firms as the book value of equity stated in the consolidated group accounts (*Compustat item SEQ*) divided by the market value of equity at the end of December of each year. If a company has issued preferred stock, the market value of equity is the sum of common and preferred stock multiplied by the respective share prices. We then calculate the 30th and 70th percentile of the book-to-market equity ratio and build the 'value' (high book-to-market) and 'growth' (low book-to-market) portfolios at December 31 of the previous year. The portfolios remain unchanged for the next twelve months when they are recalculated. We expand our three-factor model and include a fourth factor to account for an additional asset pricing anomaly presented by Jegadeesh and Titman, i.e. the continuation of prior returns (*momentum*).¹⁰⁰ For the construction of portfolios that capture the one-year momentum effect we follow Carhart and determine the 30th and 70th percentile of the twelve-month returns of all German firms. We use this cut-off to build the “winners” and “losers” portfolios. As before, the *MOM* portfolios are rebuilt annually. Finally, over the total observation period we determine weekly returns at the end of each week respectively for size, book-to-market equity, and momentum portfolios by calculating the value-weighted average of the weekly returns across all firms in the respective portfolio. The three factors for the German capital market are then calculated as the return difference of the respective extreme portfolios for each week.

C. Results

Estimation results of the four-factor model are given in Tables 12 and 13. Table 12 shows estimates of the relationship between absolute Code compliance and long-run stock returns. Table 13 contains the respective results for portfolios constructed based on the *change* in Code compliance during the observation period. The estimation models exhibit adjusted R² values of between 0.24 and 0.63, indicating that they are well-suited to explain portfolio returns by market sensitivity, size, book-to-market, and momentum.

In Table 12, the negative sign for SMB indicates that both the high-compliance and low-compliance portfolio are skewed towards large capitalisation stocks. The higher (absolute) coefficient of the size factor in the high-compliance portfolios is probably caused by the

⁹⁹ For further details see the 'Guide to the Equity Indices of Deutsche Börse' (January 2006), available at www.deutsche-boerse.com.

¹⁰⁰ Jegadeesh and Titman (1993), *supra* note 95.

positive relationship between high compliance and firm size. The positive coefficient on HML indicates a value stock bias in the portfolios. In Panel A, the alpha of 0.0015 basis points per week for the median high-compliance regression is positive but not statistically significant. This result remains robust even if portfolios are constructed differently (see Panels B and C). Thus, portfolio returns cannot be attributed to high Code compliance. Surprisingly, in Panel B the alpha of 0.0023 basis points in the low-compliance equation, which corresponds to approximately 12.5% per year, is statistically significant. There is no immediate explanation available for this finding, as prior research suggests that firms with better governance should generate higher returns than firms with weaker governance. When both portfolios are compared there are no statistically significant differences as indicated by the results of the *difference* regressions, i.e. the two portfolios do not differ in exposure to market risk and style factors. We are therefore reluctant to interpret the alpha in the low compliance group as directly related to governance.

[Insert Table 12 here]

Table 13 represents our findings on the governance “winners” (up) and “losers” (down). Neither group nor the *difference* portfolio have a significant alpha. The market factor remains significantly positive, while other factors become insignificant in most specifications. This indicates that increasing Code acceptance is not related to size or firm growth. Taking significance at the 1%-level, there appears to be one interesting result in the median-cut-off change portfolios (Panel A), with the positive loading of the momentum factor: firms that have improved their Code compliance seem to be those with good stock market performance ('winners'). When the difference portfolio is estimated, this finding remains significant at the 1%-level; it becomes insignificant in the more extreme portfolio specifications (see Panels B and C).

[Insert Table 13 here]

The insignificant alpha documents the non-existence of any long-term performance impact of high compliance with the Code, and thus supports our event study findings. Moreover, we are unable to detect any difference in stock performance that could be attributed to differences in Code compliance. Two minor results are noteworthy: (i) we find a statistically significant alpha for the low-compliance portfolio, indicating better stock price

performance for firms with lower Code compliance (see Panel B in Table 12) and (ii) as shown in Panel A of Table 13, we find a robust loading of the momentum factor, which implies that firms that experience above-average share price appreciation in the previous year are, on average, also likely to simultaneously improve their Code compliance.

Our results are robust with respect to industry influence. Lyon et al. show for long-run abnormal stock returns in the U.S. that potential misspecifications of the asset pricing model due to industry-induced variations in expected returns disappear when samples are evenly distributed among four or more two-digit SIC codes.¹⁰¹ Since our sample firms are from all 18 industries defined by Deutsche Börse, we can rule out industry clustering that could cause biased estimates. This assumption is proved in the final robustness checks summarised in Table 14. When we replicate our calculations with industry-adjusted returns, the inference remains the same.

When equally-weighted returns are considered, the alpha in the median difference portfolio for Code compliance becomes significant with a negative sign (see column (2) in Table 14). This implies that buying firms with high Code compliance and selling short firms with low Code compliance has been a value-destroying investment strategy. Thus, investors should not base their investment decisions on high compliance with the German corporate governance code.

[Insert Table 14 here]

VII. Discussion

The introduction of the German Corporate Governance Code ('the Code') in 2002 creates a particularly interesting natural experiment for evaluating a self-regulatory 'comply-or-explain' initiative with mandatory disclosure but no monitoring and no legal enforcement of compliance. In the light of our results, we can put the Code into the perspective of the recent German corporate governance reform, and the history of similar self-regulation efforts in Germany (which ultimately failed).¹⁰² Our empirical findings start with evidence and implications from a descriptive analysis of compliance behaviour regarding the Code. We then investigate the value-effects of compliance behaviour by analysing the disclosure of the annual declaration of conformity with the Code. We study short-run announcement and long-run performance effects of Code compliance on firm value. Using standard event study

¹⁰¹ See Lyon et al. (1999), *supra* note 92.

¹⁰² See Appendix III.

methodology, we examine the short-term reaction of share prices to the first-time disclosure of the declaration of conformity. Our event study results suggest that firm value is unaffected by the announcement, although such market reactions were widely assumed by the private and public promoters of the Code. If there is nothing unusual in returns during an event, this does not necessarily mean that the event is value-irrelevant. Bhattacharya, Daouk, Jorgenson, and Kehr provide reasons why a non-event may occur:¹⁰³ (i) the sample size could be small, which means the tests have no power; (ii) the market may be inefficient, in which case there is no link between value-relevant events and stock prices; (iii) though the event is value-relevant, there may be no price reactions because the market had anticipated the event or because insiders with private information about the event got away with trading in this market, and prices fully reflected the insiders' information; (iv) finally, the event may be value-irrelevant.

In our test, the sample size is rather large and comparable to the sample size in typical event studies. Also, unlike the tests of Bhattacharya et al. on the Mexican stock market, our tests concern the largest German firms in the prime segment of the German stock market. Given its high liquidity and intensive coverage by financial analysts, we have no reason to believe that this market is not efficient.¹⁰⁴ That leaves only two hypotheses to rule out: either the event is value-irrelevant, or the event is value-relevant but stock prices fully reflected the event prior to its occurrence. This could be the case either because the event was anticipated by the market, or because insiders with private information about the event traded in this market without being punished. Tests of the regulatory event on the whole market indicated no positive anticipation effect, and anecdotal evidence suggests the hypotheses of event anticipation and insider trading should be rejected. We therefore turn to the similar question of whether a pricing effect of changes in Code compliance exists over a longer period of time. We examine the impact of the degrees of Code compliance and respective changes on firm valuation over three years, and find that acceptance of the Code has no positive effect on stock price performance. Thus, our results suggest that – even in the long-term – better governance (measured by the degree of compliance with the Code and changes thereto) does not lead to higher stock returns, nor is less compliance related to stock price depreciations.

¹⁰³ Bhattacharya, Daouk, Jorgenson, and Kehr (2000), When an Event is Not an Event: The Curious Case of an Emerging Market, *Journal of Financial Economics* 55.

¹⁰⁴ According to Fama efficiency is defined as the ability of the market to incorporate all publicly available information immediately into share prices, i.e. the market is assumed to be semi information-efficient. See Fama (1970), *Efficient Capital Markets: A Review of Theory and Empirical Work*, *Journal of Finance* 25. Ziegler et al. (2003), *supra* note 98, argue that the highest market segment of the Frankfurt Stock Exchange is semi information-efficient.

Based on our results, we do not support the view that the declaration of conformity serves as a credible signal of actual governance practices. We arrive at pessimistic expectations for the future success of the enforcement mechanism underlying the German Code. In accordance with evidence from other studies¹⁰⁵, we conclude that corporate governance self-regulation (via market forces) is rather ineffective. It should therefore come as no surprise to the reader that the 'critical' recommendations of the German Code will be incorporated into codified law in the future – and so the Governance Code will (at least partially) share the fate of its two predecessors, the Insider Trading Code and the Takeover Code. Disappointed with issuers' compliance behaviour, the German Ministry of Justice has already replaced the most frequently-rejected provision requiring individual disclosure of executive compensation with codified law.¹⁰⁶ Complying with this recommendation would have benefited the shareholders, but would have imposed a slight personal disclosure cost on management board members.¹⁰⁷ We see the introduction of the Executive Compensation Disclosure Law as an implicit proof for our findings that the declaration of conformity is not a very effective enforcement mechanism. To improve effectiveness, Baums and Scott suggest a reform of German law that would facilitate legal actions to enforce the informational liability of management and the supervisory board members vis-à-vis their shareholders.¹⁰⁸ There is good reason to pursue this proposal intensively, since international evidence shows that 'financial markets do not prosper when left to market forces alone'.¹⁰⁹

¹⁰⁵ For example see de Jong et al. (2005), *supra* note 31, with further references.

¹⁰⁶ BT Drucks. 15/5577, Gesetzesentwurf der Bundesregierung: Entwurf eines Gesetzes über die Offenlegung der Vorstandsvergütungen (Vorstandsvergütungs-Offenlegungsgesetz – Executive Compensation Disclosure Law), in: Drucksache des Deutschen Bundestages 15/5577 as of May 31, 2005.

¹⁰⁷ Lo (2003), Economic Consequences of Regulated Changes in Disclosure: The Case of Executive Compensation, *Journal of Accounting and Economics* 35, empirically shows that increased executive compensation disclosure rules benefit shareholders by inducing corporate governance improvements.

¹⁰⁸ Baums and Scott (2005), Taking Shareholder Protection Seriously? Corporate Governance in the U.S. and Germany, *Journal of Applied Corporate Finance* 17.

¹⁰⁹ La Porta, Lopez-de-Silanes, and Shleifer (2006), What Works in Securities Law?, *Journal of Finance* 61.

Appendix I: Declaration of Conformity 2002 by ThyssenKrupp AG

**Declaration by the Executive Board and Supervisory Board
of ThyssenKrupp AG
on the recommendations of the
"Government Commission on the German Corporate Governance Code"
in accordance with Art. 161 of the Stock Corporation Act (AktG)**

ThyssenKrupp AG complies with the recommendations of the "Government Commission on the German Corporate Governance Code" with the following exceptions:

One Supervisory Board member, who is a director of an exchange-listed company, currently has more than five Supervisory Board mandates at non-Group exchange-listed companies (Code section 5.4.3 sentence 2).

To date, there has been no extra compensation for the chair and members of supervisory board committees. The Executive Board and Supervisory Board will propose to the forthcoming Annual Stockholders' Meeting on February 21, 2003 that Art. 14 par. 1 of the Articles of Association of ThyssenKrupp AG be amended to include a provision on compensation for the chair and members of supervisory board committees (Code section 5.4.5 par. 1 sentence 3).

Duisburg/Essex, October 1, 2002

For the Supervisory Board



Dr. Gerhard Cromme

For the Executive Board



Prof. Dr. Ekkehard D. Schulz

Source: <http://www.thyssenkrupp.de>

Appendix II: Chronological overview of events before and after the introduction of the German Corporate Governance Code of 2002

Event	Date	Event	Description
1	May 29, 2000	Appointment of the Baums Commission	Appointment of the members of the first government commission on corporate governance chaired by Theodor Baums.
2	June 20, 2000	Start of work by the Baums Commission	Issuance of a questionnaire to all relevant parties requesting comments on potential corporate governance changes in Germany. The Baums Commission was also influenced by the 'Corporate Governance Principles' published by the Frankfurt Panel in January 2000 and the 'German Code of Corporate Governance' published by the Berlin Panel in June 2000.
3	July 10, 2001	Report of the Baums Commission	Publication of the final report of the Baums Commission including recommendations to introduce a voluntary Corporate Governance code based on a 'comply-or-explain' principle.
4	Sep 6, 2001	Appointment of the Cromme Commission	The Minister of Justice appointed the members of the second government commission for a German Corporate Governance Code, chaired by Gerhard Cromme, to develop an official Code.
5	Dec 18, 2001	Presentation of a draft version of the Code	Public presentation of the draft of the Code.
6	Feb 26, 2002	Presentation of the Code	Public presentation of the final version of the Code.
7	April 11, 2002	Draft Transparency and Disclosure Law	Publication of printing 14/8769 regarding the planned Transparency and Disclosure Law by the German Bundestag, explaining the rationale for the introduction of the German Corporate Governance Code and the comply-or-explain principle.
8	July 26, 2002	Transparency and Disclosure Law	Commencement of the Transparency and Disclosure Law of July 19, 2002, including new Article 161 of the Stock Corporation Act (Aktengesetz) requiring a Declaration of Conformity with the Code (published in the Federal Bulletin July 29, 2002; press release by the Ministry of Justice July 30, 2002).
9	Aug 8, 2002	Publication of the Code in the Federal Bulletin	Publication of the German Corporate Governance Code in the Electronic Federal Bulletin (Elektronischer Bundesanzeiger): German listed companies had until the end of 2002 to publish their first Declaration of Conformity under Article 161 of the Stock Corporation Act.
10	Nov 7, 2002	First meeting of the Cromme Commission	The Cromme Commission decided to make one minor amendment to the Code (Section 6.6 first paragraph) in order to reflect new Article 15a of the Securities Trading Act (WpHG) introduced by the Transparency and Disclosure Law of July 19, 2002 (press release Nov 8, 2002; published in the Federal Bulletin Nov 26, 2002).
11	May 21, 2003	Second meeting of the Cromme Commission	The Cromme Commission decided on a major amendment to the Code of 2002, mainly concerning board remuneration (Sections 3.10, 4.2.2, 4.2.3, 4.2.4, 5.4.5, 6.6, and 7.2.1).
12	June 10, 2003	Indications for the application of Code amendments	Press release by the Ministry of Justice explaining application of Article 161 of the Stock Corporation Act in view of the amended version of the Code released by the Cromme Commission at its second meeting of May 21 (the Code of May 21, 2003, was published in the Federal Bulletin July 4, 2003).
13	June 8, 2004	Third meeting of the Cromme Commission	The Cromme Commission made no amendments to the Code.
14	June 2, 2005	Fourth meeting of the Cromme-Commission	The Cromme Commission decided to make several amendments to the Code re disclosure and the supervisory board (Sections 3.10, 5.3, and 5.4).

Appendix III: Past experiences with self-regulation in German corporate governance¹¹⁰

Initial doubts about the effectiveness of the Code arose in light of Germany's past experiences with self-enforced market regulations. The ability of the German civil law system to operate satisfactorily with voluntary enforcement mechanisms, such as those applied for the Code, has been already called into question twice by two self-regulation experiences, namely the Insider Trading Code and the Takeover Code.

The Insider Trading Code

In the 1980s, many prominent figures of the German banking and stock market industries were firmly of the opinion that voluntary 'gentlemen's agreements' could achieve better results than a legal insider trading prohibition enforced by the government. A voluntary 'merchants' code of conduct', pledging abstention from insider trading and promotion of 'good publicity', was seen as a sufficient measure. Under the influence of its customers – especially banks but also other issuers of listed securities – even the German stock exchange itself was fundamentally in favour of such 'gentlemen's agreements', seeing them as more effective than legally enforced regulations. Many people in Germany thus saw no need to enact legal regulations to combat insider trading or form a government agency to oversee securities trading.

The Commission of Securities Market Experts ('Börsensachverständigenkommission' – BSK) at the German Ministry of Finance first decided to concern itself with insider issues on July 15, 1969. Until then, any insider transactions in Germany were legally unrestricted and succeeded in eluding all registration efforts. Banks, stock markets, and trade associations pressed for voluntary regulation as a self-regulation mechanism, hoping to prevent a threatened legal ban on insider trading. The Ministry of Economics finally agreed to the details of the plan on November 13, 1970, giving Germany its first set of recommendations regarding insider problems, the 'Recommendations of the Commission of Stock Exchange Experts to the German Ministry of Commerce to resolve 'insider problems''. However, increasing doubt prompted the leading Trade Associations and the Working Committee of German Stock Exchanges to publish an extended commentary on the insider recommendations in 1971.

In practice, it turned out that the insider recommendations and their implementation procedures were inflexible, and hindered sensible action by the Board of Examiners. Due to this problem, a second set of insider recommendations was adopted on July 1, 1976. In the

¹¹⁰ This section is based on Erhardt and Nowak (2002), Die Durchsetzung von Corporate-Governance-Regeln, Die Aktiengesellschaft (AG) 47, who provide further references.

light of international criticism and under pressure from investors – especially the German Association for Shareholder Protection ('Deutsche Schutzvereinigung für Wertpapierbesitz' – DSW) – this set of rules was revised and expanded in May 1988. Only since then has passing on inside knowledge to third parties been prohibited, in addition to the previous ban on profiting privately from such information. The dissemination of insider knowledge through information systems was also addressed. To ensure greater transparency, the Board of Examiners was given more freedom both to publish information about Code compliance and to introduce a 'red flag' system in the official financial press for firms that did not recognise the voluntary insider regulations.

Although most stock companies accepted and attempted to adhere to the Code, it nevertheless remained a 'gentleman's agreement' that did not seem to pose a credible threat to insiders and clearly failed to measure up to international standards. The lack of power to sanction insider violations was a construction fault in the recommendations from the outset. The firm itself was responsible for taking action against an employee in the event of insider trading, with decisions about appropriate sanctions to be taken by the members of the board of directors concerned themselves. It is no wonder that no spectacular insider cases became public, as the recommendations essentially had no teeth. One rare exception is the case of the labour union official Franz Steinkühler in 1991. In the end, under international pressure from the EC guidelines of November 13, 1989 this voluntary self-regulation gave way to legal provisions, when the Securities Trading Act came into effect in 1994.

The Takeover Code

The Takeover Code, developed by the BSK, took effect on January 10, 1995 and was replaced on January 1, 2002 by the Takeover Act ('Wertpapiererwerbs- und Übernahmegesetz' – WpÜG). Adherence to the rules was monitored by the Takeover Commission, though it had no enforcement power in the event of code violations. 95 cases were registered by the Takeover Commission up to June 2000.

The Takeover Commission considered that the Code had been a successful transitional solution, closing a critical hole in German capital market regulations, but could not be effectively implemented as an instrument of self-regulation. First, it was shown that in most cases, despite monitoring, the takeover offer was not filed as required. Second, general acceptance of the Takeover Code was never achieved. As of June 2000, only 64% of publicly listed firms had accepted the Code, likewise 93% of DAX-30 companies and 79% of DAX-100 companies. Because of the problems observed previously, the BSK and the Takeover Commission both spoke out in favour of enacting binding takeover regulations.

It is indisputable that the duty of the bidder to file an offer to buy (*Mandatory Bid Rule*) as required by the Takeover Code (and correspondingly by the WpÜG) serves to protect the minority shareholders of the takeover target. This rule grants a call option to the minority shareholders of the firm being purchased, which essentially represents an asset transfer between the minority shareholders of both firms affected by the takeover (the buyer and seller). Because of the costs of a bid, a takeover will only take place when the controlling shareholder considers it possible to significantly increase cash flow at the purchased firm with its own management. Empirical evidence has proved the expected higher efficiency of proposed takeovers (and the corresponding wealth effect for the minority shareholders of the bidding firm) by the positive price reaction upon acceptance of the Code.

If requiring a firm to file a bid in a takeover provides protection to minority shareholders of both firms affected, then with hindsight it is interesting that a number of firms chose not to adopt the Takeover Code. Rejection of the Code could be interpreted as an indication of intentional use of control rents by the controlling shareholder, to the obvious detriment of the individual minority shareholders. This argument, based on theoretical considerations, finally supported the replacement of the voluntary Code by a binding legal provision.

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Tables

Table 1. Deviations from Code Recommendations for all Firms in the Sample and by Index Membership

	Prime Standard	DAX	MDAX	TecDAX	SDAX	Remaining Prime Standard
Firm Selection						
Regular Size	398	30	40	30	50	238
Adjusted Size ¹	337	30	47	25	47	188
Firms in the Sample	317	30	44	25	42	176
Coverage	0.94	1.00	0.94	1.00	0.89	0.96
Code Deviations ² (<i>D</i>)						
Mean	4.3	2.0	2.9	3.3	5.2	4.7
Standard Deviation	3.4	2.2	2.4	2.6	4.0	3.5
Median	4.0					
Minimum	0					
Maximum	21					
Number of firms						
<i>D</i> = 2 (High compliance)	86					
<i>D</i> = 3	47					
<i>D</i> = 4	57					
<i>D</i> = 5	45					
<i>D</i> = 6 (Low compliance)	80					
Total	315					

This table provides summary statistics on the overall sample selection and the distribution of Code deviations (*D*) by index membership. The Code in year 2002 contains 60 recommendations in total. Companies have to disclose in their annual declaration of conformity which of the 60 recommendations they do not comply with. We construct "quintile" portfolios according to the number of Code deviations with higher loading of the two extreme portfolios: Companies with *D* = 2 are considered as high-compliance firms, companies with *D* = 6 are considered low-compliance firms. Index definition follows Deutsche Boerse Group, <http://deutsche-boerse.com>.

1 Adjustments necessary to delete foreign companies and additional share classes per company.

2 The first declaration of conformity had to be disclosed by the end of 2002, and companies are required to update their declaration at least annually. Declarations that were no longer available online at the time of the data collection were requested from the relevant companies by mail; 20 companies failed to respond.

3 Code Deviations are calculated for 315 firms since two companies in the sample, Geratherm Medical AG and Fortec AG, have simply rejected the Code.

Table 2. Summary Statistics

	All Sample Firms with Declaration of Conformity (Year 2002)						Mean - High Compliance	Mean - Low Compliance	Difference in Means	
	Obs.	Mean	Median	Std. Dev.	Min	Max	(n = 86)	(n = 80)	Diff.	<i>t</i> -Ratio
Total Assets (m€)	308	15,034	148	82,261	1.73	852,056	34,287	4,306	29,981 **	2.22
Market Value (m€)	308	1,581	63	5,297	0.93	51,420	3,012	262	2,750 ***	4.17
Income (m€)	307	55	0.53	475	-3,442	4,877	104	2	102	1.47
3Y-Growth (%)	305	0.37	0.13	2.20	-0.74	37.82	0.17	0.63	-0.46	-1.07
ROE (%)	306	0.02	0.09	0.24	-6.27	0.73	0.08	0.08	0.00	0.00
Beta	307	1.05	0.93	0.78	-1.50	4.59	1.19	0.88	0.31 **	2.45
Leverage	308	0.58	0.62	0.24	0.02	1.00	0.62	0.61	0.01	0.38
Tobin's Q	305	1.06	0.97	0.50	0.41	4.73	1.08	1.09	-0.01	-0.15
Firm Age	315	11	3	17	0	114	16	8	8 ***	3.18

This table gives descriptive statistics for year 2002 sample firms as of December 31, 2002. The left panel reports the number of observations, mean, median, standard deviation, minimum, and maximum for all firms. The right panel reports mean values for a group of 89 firms with high Code compliance ($D = 2$) and a group of 80 firms with low compliance ($D = 6$). The equality of means between both portfolios is tested by a two-sample t -test with unequal variances. The t -values are reported in *italics*. Significance at the 10 percent, 5 percent and 1 percent levels is indicated by *, ** and *** respectively. Unless stated otherwise all data is from Compustat Global Database (Compustat Item Number or Mnemonic is given in brackets). Total Assets (G107) is the book value of total assets, Market Value (MKVAL) is the market value of equity (ordinary and preferred), Income (G378) is defined as income before extraordinary items. One outlier, Deutsche Telekom, reported an extraordinary loss of 24 billion euros for 2002 and has been deleted for the income variable. 3Y-Growth is the compound growth rate of total revenues over the previous three fiscal years (CREVT3). ROE (ROET) is the return on total equity. The mean value for ROE is weighted by the market value of equity (value-weighted average). Beta is calculated for a 36-month time period using the Dax composite index (Dax 300) as the market portfolio. Leverage is calculated as the difference between total assets (G107) and book value of equity (SEQ) divided by total assets. Tobin's Q (as a measure of firm valuation) is defined as the market value of assets (calculated as book value of assets minus book value of equity plus market value of equity) over book value of assets. Firm Age is from Hoppenstedt Aktienfuhrer; it indicates the number of years the firm has been trading on a German Stock Exchange.

Table 3. Deviations from Code Recommendations by Industry

Industry	Mean	Number of Companies*
Banks	1.2	5
Utilities	1.7	3
Transport & Logistics	2.7	7
Chemicals	3.1	9
Financial Services	3.4	17
Food & Beverages	3.5	2
Basic Resources	3.8	4
Insurance	3.8	6
Industrial	3.9	64
Pharma & Healthcare	4.0	32
Mean	4.3	315
Media	4.4	21
Technology	4.5	20
Construction	4.7	5
Retail	4.8	15
Software	4.8	64
Telecommunication	4.8	10
Automobile	4.9	14
Consumer	5.6	17

This table provides summary statistics on the distribution of Code deviations (*D*) by industry based on the 2002 Code, which contains 60 recommendations in total. Companies have to disclose in their annual declaration of conformity which of the Code's recommendations they do not comply with. Industry classification and denotations are from Deutsche Börse Group's 'Guide to the Equity Indices', November 3, 2003 (available at <http://deutsche-boerse.com>). Deutsche Boerse Group has defined a two-tier model for industry classification. Assignment to one of 62 industry groups (second tier) depends on a company's sales focus. Assignment to one of the 18 sectors of the Prime Standard (first tier) is then based on the prior industry group classification.

* Two of the 317 companies in the sample, Geratherm Medical AG (Pharma & Healthcare) and Fortec AG (Technology), have rejected the Code. Both companies were excluded when calculating average deviations from Code recommendations. The median value for the sample of 315 companies is 4.0 deviations.

Table 4. Most frequent Deviations from Code Recommendations
by all Companies in the Sample

Code Reference	Code Recommendation	Deviations		
		2002	2003	2004
4.2.4	Individual disclosure of management board compensation	-	68%	66%
3.8 (2)	Deductible for D&O - insurance	54%	58%	54%
5.4.5 (3)	Individual disclosure of supervisory board compensation	-	43%	40%
5.4.5 (2)	Performance-related compensation for the supervisory board	46%	40%	38%
7.1.2	Consolidated financial statements and interim reports publicly accessible within 90 and 45 days, respectively	39%	36%	34%
5.3.1	Supervisory board to form committees with sufficient expertise	32%	29%	30%
5.4.1	Supervisory board nominations to take international activities, potential conflicts of interest and an age limit into account	23%	25%	26%
5.4.5 (1)	Supervisory board compensation to take into consideration performance of additional tasks by board members, e.g. chairing a committee	29%	23%	20%
	Observations	315	284	299

This table presents Code recommendations with the most frequently-reported deviations by all sample companies in the stated year. The reference in the first column is based on the German Corporate Governance Code, May 21, 2003. As Code recommendations 4.2.4 and 5.4.5 (3) were introduced in May 2003, they have no values for 2002. The second column provides a short description of the content of the respective Code recommendation. Only Code recommendations with deviation-ratios of more than 25% are shown. The percentages in columns three to five show the degree of non-compliance with a given Code recommendation by the sample companies.

Table 5. Sample Selection for the Event Study

Description	Number
Total number of companies (Prime Standard)	337
- Declaration of Conformity unavailable	20
Total number of Declarations of Conformity	317
- Declaration disclosed but exact Event Date not certifiable	138
- Company disclosed material news around the Event Date	30
- Parameter values or share price data unavailable	3
- Declaration of Conformity not disclosed by the Company	1
Total number of Event Firms	145
- <i>including</i> : high compliance firms ($D = 2$):	46
- <i>including</i> : low compliance firms ($D = 6$):	42

This table shows the procedure for sample selection. The Prime Standard segment of the Frankfurt Stock Exchange listed 398 securities as of October 31, 2003 (record date for data collection). 40 securities issued by foreign companies were excluded since the Code only applies to German companies, and a further 21 securities were excluded to avoid double counting of companies that have issued double share classes, i.e. common and preferred stock. Thus, the total number of companies comprises 337 companies. For 20 companies no declaration of conformity is available. The first declaration of conformity had to be disclosed by the end of 2002, and companies are required to update their declaration at least annually. Declarations that were no longer available online at the time of the data collection were requested from the respective companies by mail; 20 companies failed to respond.

Table 6. Average (Cumulative) Abnormal Returns in the whole Sample using OLS Market Model Returns (n = 145)

	Event Date	Event Windows			
	t [0]	t [0,1]	t [0,2]	t [-1,1]	t [-1,2]
<u>Parametric Tests</u>					
(1) (Cumulative) Average Abnormal Return ¹	-0.0622	0.2526	0.9573* ²	0.4888	1.1935* ^{1b}
Brown and Warner (1980)-Method ^a	-0.15	0.31	0.78	0.40	0.73
Cross-Sectional-Test ^b	-0.19	0.53	1.64	0.89	1.82
(2) Standardised (C)AAR - BMP (1991) ²	-0.47	0.70	1.70	0.71	1.63
<u>Non-Parametric Tests</u>					
(3) Sign Test: Percentage of Positive (C)AARs	48.65	52.03	56.08	50.68	54.73
	-0.33	0.49	1.48	0.16	1.15
(4) Rank Test of Average Abnormal Returns		t [1]	t [2]	t [-1]	
Corrado (1989)	0.39	-0.39	-1.26	-0.16	

This table presents event study results for all 145 sample companies. We calculate discrete daily returns (using the closing prices of the respective stocks on the Frankfurt Stock Exchange). The estimation window is defined as the time period of 120 trading days $[t_{-123}, t_3]$ before the event period. The market returns are approximated using the Technical University of Karlsruhe's DAFOX market index. The parameter values of α (mean value = -0.00045) and β (mean value = -0.66127) for the market model were estimated for the period of 120 trading days before the event date. The mean value of the coefficient of determination R^2 is large enough to suggest a sufficient quality of the regression. Rows (1) and (2) in the upper panel show the results of parametric tests. For five event periods with lengths of 1, 2, 3, and 4 trading days, average (C)ARs are shown in row (1). Test statistics for the average (C)ARs are the simple t -test according to Brown and Warner (1980) in row (1a) and the Cross-Sectional-Test in row (1b). The test statistics in row (2) for the standardised average (C)ARs (not shown) are from Boehmer, Musumeci, and Poulsen (1991). Rows (3) to (4) in the lower panel show the results of non-parametric tests. The percentage of positive average (C)ARs is given in row (3). The results of a sign test regarding the null hypothesis that the percentage of positive average (C)ARs is 0.50 are reported in the line below. Row (4) shows the results of the rank test suggested by Corrado (1989) for one-day returns as indicated. Significance at the 10 percent, 5 percent and 1 percent levels is indicated by *, ** and *** respectively.

Table 7. Average (Cumulative) Abnormal Returns in the High (n = 46) and Low (n = 42) Code Compliance Portfolio using Market Model Returns

	Event Date			Event Windows											
	t [0]			t [0,1]			t [0,2]			t [-1,1]			t [-1,2]		
	High	Low	z-value	High	Low	z-value	High	Low	z-value	High	Low	z-value	High	Low	z-value
<u>Parametric Tests</u>															
(1) (C)AAR	-0.3257	-0.1966	0.61	-0.9892	-0.5191	0.13	-0.9307	0.3506	0.63	0.5218	0.2473	0.68	0.5803	1.1169	1.05
Brown and Warner (1980)-Method ^a	-0.48	-0.27		-0.73	-0.35		-0.46	0.16		0.26	0.11		0.21	0.38	
Cross-Sectional-Test ^b	-0.52	-0.34		-1.11	-0.85		-0.76	0.37		0.49	0.31		0.41	1.00	
(2) Standardised (C)AAR - BMP (1991)	-0.83	-0.39	0.67	-0.30	-0.99	0.12	-0.21	0.19	0.65	0.25	0.14	0.65	0.23	0.91	1.27
<u>Non-Parametric Tests</u>															
(3) Sign Test: % of Positive (C)AARs	52.38	53.66		45.24	43.90		47.62	43.90		47.62	58.54		47.62	48.78	
	0.31	0.47		-0.62	-0.78		-0.31	-0.78		-0.31	1.09		-0.31	-0.16	
(4) Rank Test of AARs				t [1]			t [2]			t [-1]					
Corrado (1989)	0.91	-0.33		0.76	0.62		0.10	0.43		-0.35	-1.43				

This table presents event study results for two sub-samples of 46 companies with D = 2 and 42 companies with D = 6 deviations from Code recommendations. Calculation of market model returns is as described in Table 6. The upper panel shows the results of parametric tests. For the event date t[0] and four event periods with lengths of 2, 3, and 4 successive trading days around t[0], the average (C)ARs are shown in row (1) for the high-compliance and low-compliance portfolio respectively. For the event date and the event windows a two-sample Wilcoxon rank-sum test (Mann-Whitney test) is conducted. Z-values are given in separate columns. Test statistics for the average (C)ARs are (a) the simple t-test according to Brown and Warner (1980) and (b) according to the Cross-Sectional-Method. The test statistics for the standardised average (C)ARs in row (2) are from Boehmer, Musumeci, and Poulsen (1991). The lower panel shows the results of non-parametric tests. The percentage of positive average (C)ARs is given in row (3). The results of a sign test regarding the null hypothesis that the percentage of positive average (C)ARs is 0.50 are reported in the row below. Row (4) shows the results of the rank test suggested by Corrado (1989) for one-day returns as indicated. Significance at the 10 percent, 5 percent and 1 percent levels is indicated by *, ** and *** respectively.

Table 8. Robustness Check: Average (Cumulative) Abnormal Returns in the whole Sample using Constant Mean Returns (n = 145)

	Event Date t [0]	Event Windows			
		t [0,1]	t [0,2]	t [-1,1]	t [-1,2]
<u>Parametric Tests</u>					
(1) (Cumulative) Average Abnormal Return ¹	-0.0084	1.1808* ^{1b,2}	1.7323** ^{1b,2}	0.9513	1.503* ^{1b}
Brown and Warner (1980)-Method ^a	-0.02	1.40	1.41	0.75	0.92
Cross-Sectional-Test ^b	-0.02	1.82	2.37	1.40	1.93
(2) Standardised (C)AAR - BMP (1991) ²	-1.09	1.73	2.07	1.28	1.58
<u>Non-Parametric Tests</u>					
(3) Sign Test: Percentage of Positive (C)AARs	44.83	50.34	52.41	49.66	48.97
	-1.25	0.08	0.58	-0.08	-0.25
(4) Rank Test of Average Abnormal Returns		t [1]	t [2]	t [-1]	
Corrado (1989)	0.09	-1.48	-0.46	0.25	

This table presents event study results for all 145 sample companies. We calculate discrete daily returns (using the closing prices of the relevant stocks on the Frankfurt Stock Exchange). The estimation window is defined as the time period of 120 trading days $[t_{-123}, t_3]$ before the event period. The constant mean returns are approximated for a period of 120 trading days before the event date using the Technical University of Karlsruhe's DAFOX market index. For the event date $t[0]$ and four event periods with lengths of 2, 3, and 4 successive trading days around $t[0]$, the average (C)ARs are shown in row (1) for the high-compliance and low-compliance portfolio respectively. Test statistics for the average (C)ARs are (a) the simple t -test according to Brown and Warner (1980) and (b) according to the Cross-Sectional-Method. The test statistics for the standardised average CARs in row (2) are from Boehmer, Musumeci, and Poulsen (1991). The lower panel shows the results of non-parametric tests. The percentage of positive average (C)ARs is given in row (3). The results of a sign test regarding the null hypothesis that the percentage of positive average (C)ARs is 0.50 are reported in the row below. Row (4) shows the results of the rank test suggested by Corrado (1989) for one-day returns as indicated. Significance at the 10 percent, 5 percent and 1 percent levels is indicated by *, ** and *** respectively.

Table 9. Robustness Check: Portfolio Approach

	Calendar Time							
	16 Dec		18 Dec		19 Dec		20 Dec	
	t[0]	t[0,1]	t[0]	t[0,1]	t[0]	t[0,1]	t[0]	t[0,1]
<u>Parametric Tests</u>								
(1) (Cumulative) Average Abnormal Return	-0.6232	0.6074	-1.2554	-0.2890	1.2979	-1.1584	1.2446	1.8917
Brown and Warner (1980)-Method ^a	-0.38	0.18	-0.80	-0.09	1.08	-0.48	0.79	0.73
Cross-Sectional-Test ^b	-0.65	0.24	-0.79	-0.45	1.24	-0.59	0.82	1.16
(2) Standardised (C)AAR - BMP (1991)	-1.18	0.27	-1.09	0.08	1.05	-0.48	1.16	1.15
<u>Non-Parametric Tests</u>								
(3) Sign Test: Percentage of Positive (C)AARs	33.33	44.44	50.00	60.00	54.55	63.64	64.71	58.82
	-1.00	-0.33	0.00	0.63	0.30	0.90	1.21	0.73
(4) Rank Test of Average Abnormal Returns		t[1]		t[1]		t[1]		t[1]
Corrado (1989)	1.53	-0.49	0.37	-0.52	-0.73	1.25	-1.01	-0.40
Observations	11		12		16		19	

This table presents event study results in calendar time using the portfolio approach. Portfolios are constructed for events that occurred for more than 10 companies on the same calendar day. These days are December 16, 18, 19, and 20, 2002. The number of firms in each portfolio is given in the last row. Calculation of market model returns is as described in Table 6. Rows (1) and (2) in the upper panel show the results of parametric tests. For the event date $t[0]$ and the event window $t[0,1]$ average (C)ARs are shown in row (1). Test statistics for the average (C)ARs are the simple t -test according to Brown and Warner (1980) in row (1a) and the Cross-Sectional-Test in row (1b). The test statistics for the standardised average (C)ARs in row (2) are from Boehmer, Musumeci, and Poulsen (1991). Rows (3) to (4) in the lower panel show the results of non-parametric tests. The percentage of positive average (C)ARs is given in row (3). The results of a sign test regarding the null hypothesis that the percentage of positive average (C)ARs is 0.50 are reported in the line below. Row (4) shows the results of the rank test suggested by Corrado (1989) for one-day returns as indicated. Significance at the 10 percent, 5 percent and 1 percent levels is indicated by *, **, and *** respectively.

Table 10. Robustness Check: Average (Cumulative) Abnormal Returns using Market Model Returns for DAX (n = 23)

	Event Date t [0]	Event Windows			
		t [0,1]	t [0,2]	t [-1,1]	t [-1,2]
<u>Parametric Tests</u>					
(1) (Cumulative) Average Abnormal Return	0.1190	0.0155	0.8841	0.2882	1.1568
Brown and Warner (1980)-Method ^a	<i>0.18</i>	<i>0.01</i>	<i>0.44</i>	<i>0.14</i>	<i>0.43</i>
Cross-Sectional-Test ^b	<i>0.16</i>	<i>0.01</i>	<i>0.72</i>	<i>0.23</i>	<i>0.78</i>
(2) Standardised (C)AAR - BMP (1991)	-0.07	0.05	0.73	0.33	0.88
<u>Non-Parametric Tests</u>					
(3) Sign Test: Percentage of Positive (C)AARs	39.13	69.57*	69.57*	52.17	60.87
	-1.04	1.88	1.88	0.21	1.04
(4) Rank Test of Average Abnormal Returns		t [1]	t [2]	t [-1]	
Corrado (1989)	0.40	-0.29	-1.01	-0.47	

This table presents event study results for the DAX companies in the sample (n=23). Calculation of market model returns is as described in Table 6. Rows (1) and (2) in the upper panel show the results of parametric tests. For five event periods with lengths of 1, 2, 3, and 4 trading days average CARs and standardised average (C)ARs are shown in rows (1) and (2). Test statistics for the average (C)ARs are the simple *t*-test according to Brown and Warner (1980) in row (1a) and the Cross-Sectional-Test in row (1b). The test statistics for the standardised average (C)ARs in row (2) are from Boehmer, Musumeci, and Poulsen (1991). Rows (3) to (4) in the lower panel show the results of non-parametric tests. The percentage of positive average (C)ARs is given in row (3). The results of a sign test regarding the null hypothesis that the percentage of positive average (C)ARs is 0.50 are reported in the line below. Row (4) shows the results of the rank test suggested by Corrado (1989) for one-day returns as indicated. Significance at the 10 percent, 5 percent and 1 percent levels is indicated by * , ** and *** respectively.

Table 11. Capital Market Reactions to Regulatory Events

No.	Event Date	Event Description	German Stock Market Index (DAFOX)			
			Abnormal Return (in %)	t-Ratio	3-day CAR (in %)	t-Ratio
1	May 29, 2000	Appointment of the Baums Commission	0.3495	<i>0.21</i>	1.1887	<i>0.26</i>
2	June 20, 2000	Start of work by the Baums Commission	0.2509	<i>0.15</i>	-2.9106	<i>-0.61</i>
3	July 10, 2001	Report of the Baums Commission	-0.6621	<i>-0.58</i>	-1.8133	<i>-0.55</i>
4	Sep 6, 2001	Appointment of the Cromme Commission	-2.2817**	<i>-1.96</i>	-7.0110**	<i>-2.02</i>
5	Dec 18, 2001	Presentation of a draft version of the Code	-0.5992	<i>-0.42</i>	0.3059	<i>0.07</i>
6	Feb 26, 2002	Presentation of the Code	0.1943	<i>0.13</i>	2.1662	<i>0.46</i>
7	April 11, 2002	Draft Transparency and Disclosure Law	-0.9332	<i>-0.75</i>	-0.5581	<i>-0.14</i>
8	July 26, 2002	Final Transparency and Disclosure Law	-0.1976	<i>-0.21</i>	4.1454	<i>1.53</i>
9	Aug 8, 2002	Publication of the Code in the Federal Bulletin	2.3262**	<i>2.29</i>	2.3354	<i>0.77</i>
10	Nov 7, 2002	First meeting of the Cromme Commission	-3.3879*	<i>-1.90</i>	-6.4256	<i>-1.19</i>
11	May 21, 2003	Second meeting of the Cromme Commission	-0.9415	<i>-0.51</i>	-0.7045	<i>-0.12</i>
12	June 10, 2003	Application information for Code amendments	0.7799	<i>0.44</i>	0.7970	<i>0.14</i>

This table presents event study results of the capital market reaction to announcements before and after the introduction of the German Corporate Governance Code. A detailed description of the events is given in Appendix II. Abnormal returns (AR) are calculated using the returns on the DAFOX market index in a constant-mean return model. The estimation window is calculated over 120 trading days [t_{-141} , t_{21}] before the first event. CARs are the sum of ARs on days [-1, 0, +1]. *t*-statistics are stated in *italics*. Significance at the 10 percent, 5 percent and 1 percent levels is indicated by *, ** and *** respectively.

Table 12. Performance-Attribution Regressions for Code Compliance Portfolios

Portfolio	a	$RMRF$	SMB	HML	MOM	R ² adj.	Obs
Panel A: Median Cut Off							
High	0.0015 <i>1.14</i>	0.1624** <i>3.33</i>	-0.4691** <i>-6.97</i>	0.2537** <i>4.31</i>	0.0374 <i>0.71</i>	0.59	153
Low	0.0019 <i>1.66</i>	0.2221** <i>4.94</i>	-0.3684** <i>-6.03</i>	0.1453** <i>2.64</i>	-0.0505 <i>-1.03</i>	0.59	150
<i>Difference</i>	0.0001 <i>0.11</i>	-0.0115 <i>-0.33</i>	-0.1209* <i>-2.52</i>	0.0867* <i>2.01</i>	-0.0038 <i>-0.10</i>	0.11	150
Panel B: 30% Cut Off							
High	0.0015 <i>1.07</i>	0.1730** <i>3.35</i>	-0.4796** <i>-6.73</i>	0.2491** <i>4.01</i>	0.0304 <i>0.54</i>	0.57	153
Low	0.0023* <i>2.10</i>	0.1676** <i>3.94</i>	-0.4025** <i>-6.97</i>	0.1580** <i>3.04</i>	-0.0289 <i>-0.63</i>	0.59	150
<i>Difference</i>	-0.0003 <i>-0.22</i>	0.0559 <i>1.26</i>	-0.0981 <i>-1.63</i>	0.0667 <i>1.23</i>	-0.0363 <i>-0.75</i>	0.10	150
Panel C: 10% Cut Off							
High	0.0008 <i>0.55</i>	0.1867** <i>3.41</i>	-0.4004** <i>-5.30</i>	0.2452** <i>3.71</i>	0.0452 <i>0.76</i>	0.49	153
Low	0.0020 <i>1.70</i>	0.1145* <i>2.56</i>	-0.0308 <i>-0.51</i>	0.1586** <i>2.90</i>	-0.0742 <i>-1.53</i>	0.24	150
<i>Difference</i>	-0.0008 <i>-0.57</i>	0.1166* <i>2.31</i>	-0.3834** <i>-5.61</i>	0.0750 <i>1.22</i>	0.0387 <i>0.71</i>	0.37	150

This table presents empirical results corresponding to the multifactor regression formally defined by equation:

$$R_{it}-R_{ft} = a_i + \beta_i (R_{it}-R_{ft}) + s_i SMB_t + h_i HML_t + m_i MOM_t + e_{it},$$

$R_{it}-R_{ft}$ represents the returns on the market proxy in excess of the risk-free rate, SMB denotes the difference in return between a small cap portfolio and a large cap portfolio, HML denotes the return spread between a value portfolio and a growth portfolio, and MOM is the return difference between a prior 12-month winner portfolio and a prior 12-month loser portfolio. The *Difference* portfolio is constructed by subtracting low-ranked portfolio returns from the returns of the high-ranked compliance portfolios. The sample period is October 2002 to September 2005. t -statistics are stated in *italics*. Significance at the 5 percent and 1 percent levels is indicated by * and ** respectively.

Table 13. Performance-Attribution Regressions for Change in Code Compliance Portfolios

Portfolio	<i>a</i>	<i>RMRF</i>	<i>SMB</i>	<i>HML</i>	<i>MOM</i>	R ² adj.	Obs
Panel A: Median Cut Off							
Up	-0.0006 <i>-0.51</i>	0.5324** <i>7.70</i>	-0.1038 <i>-1.09</i>	0.0096 <i>0.10</i>	0.2732** <i>3.70</i>	0.63	89
Down	-0.0002 <i>-0.16</i>	0.4898** <i>6.59</i>	-0.2085* <i>-2.04</i>	0.0246 <i>0.24</i>	0.0042 <i>0.05</i>	0.52	89
<i>Difference</i>	0.0000 <i>0.00</i>	0.0427 <i>0.74</i>	0.1047 <i>1.33</i>	-0.0150 <i>-0.19</i>	0.2689** <i>4.38</i>	0.20	89
Panel B: 30% Cut Off							
Up	0.0010 <i>0.58</i>	0.5786** <i>6.16</i>	0.0775 <i>0.56</i>	-0.0659 <i>-0.46</i>	0.1757 <i>1.75</i>	0.47	89
Down	0.0021 <i>1.06</i>	0.3062** <i>2.71</i>	-0.2442 <i>-1.45</i>	0.3254 <i>1.87</i>	0.1702 <i>1.39</i>	0.29	80
<i>Difference</i>	-0.0001 <i>-0.04</i>	0.2946* <i>2.1</i>	0.3726 <i>1.79</i>	-0.3460 <i>-1.60</i>	-0.0017 <i>-0.01</i>	0.04	80
Panel C: 10% Cut Off							
Up	-0.0002 <i>-0.16</i>	0.5289** <i>6.22</i>	-0.0304 <i>-0.26</i>	-0.1623 <i>-1.37</i>	0.0963 <i>1.06</i>	0.42	89
Down	0.0021 <i>0.96</i>	0.2964* <i>2.37</i>	-0.3110 <i>-1.67</i>	0.3747 <i>1.94</i>	0.1719 <i>1.27</i>	0.28	80
<i>Difference</i>	-0.0015 <i>-0.56</i>	0.2420 <i>1.61</i>	0.2178 <i>0.97</i>	-0.5459* <i>-2.35</i>	-0.0674 <i>-0.41</i>	0.04	80

This table presents empirical results corresponding to the multifactor regression formally defined by the equation:

$$R_{it}-R_{ft} = a_i + \beta_i (R_{it}-R_{ft}) + s_i SMB_t + h_i HML_t + m_i MOM_t + e_{it},$$

$R_{it}-R_{ft}$ represents the returns on the market proxy in excess of the risk-free rate, SMB denotes the difference in return between a small cap portfolio and a large cap portfolio, HML denotes the return spread between a value portfolio and a growth portfolio, and MOM is the return difference between a prior 12-month winner portfolio and a prior 12-month loser portfolio. The *Difference* portfolio is constructed by subtracting low-ranked portfolio returns from the returns of the high-ranked compliance portfolios. The sample period is October 2002 to September 2005. t -statistics are stated in *italics*. Significance at the 5 percent and 1 percent levels is indicated by * and ** respectively.

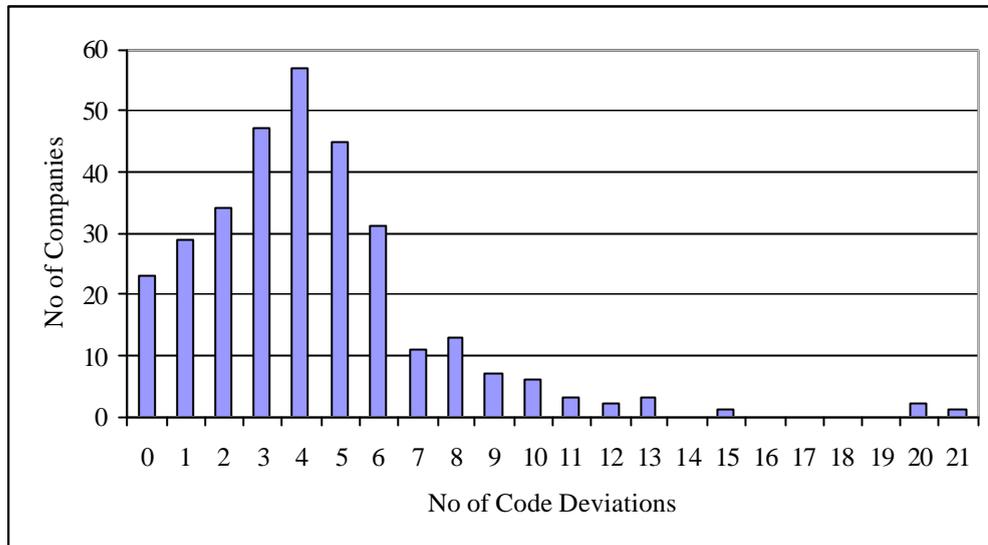
Table 14. Robustness Checks: Performance-Attribution Regressions
under Alternative Portfolio Constructions

Difference Portfolios	Code Compliance		Change in Code Compliance	
	a, Value-weighted (1)	a, Equal-weighted (2)	a, Value-weighted (3)	a, Equal-weighted (4)
Median Cut Off	0.0001 <i>0.11</i>	-0.0015* <i>-2.49</i>	0.0000 <i>0.00</i>	0.0004 <i>0.48</i>
30% Cut Off	-0.0003 <i>-0.22</i>	-0.0016 <i>-1.92</i>	-0.0001 <i>-0.04</i>	0.0023 <i>0.97</i>
10% Cut Off	-0.0008 <i>-0.57</i>	-0.0015 <i>-1.20</i>	-0.0015 <i>-0.56</i>	-0.0003 <i>-0.08</i>
Industry-Adjusted Returns				
Median Cut Off	0.0000 <i>-0.01</i>	-0.0015* <i>-2.43</i>	-0.0005 <i>-0.82</i>	-0.0009 <i>-1.02</i>
30% Cut Off	-0.0005 <i>-0.81</i>	-0.0015 <i>-1.64</i>	0.0009 <i>-0.55</i>	0.0017 <i>0.74</i>
10% Cut Off	-0.0005 <i>-0.41</i>	-0.0014 <i>-1.03</i>	-0.0031 <i>-1.00</i>	-0.0020 <i>-0.49</i>

This table presents the alphas from four-factor regressions for variations on the difference portfolios (Code compliance and change in Code compliance) with cut-off levels at the median, 30%, and 10% percentile as described in the text. Code compliance by sample firms is described in section III. The construction of the compliance portfolios is explained in section V. The portfolios are reset annually in accordance with the publication of the declaration of conformity. The upper panel uses the unadjusted difference between the weekly returns to the median, 30%, and 10% percentile portfolios. The lower panel contains the results using industry-adjusted returns, with industry adjustments based on the 18 industries of the Deutsche Börse AG classification. Columns (1) and (2) show the value-weighted and equal-weighted results for Code compliance portfolios, whereas columns (3) and (4) show respective results for the portfolios constructed based on the change in Code compliance. The explanatory variables are *RmRf*, *SMB*, *HML*, *MOM*, and a constant. These variables are the returns to zero-investment portfolios designed to capture market, size, book-to-market, and momentum effects respectively. See section V on the construction of these factors. All coefficients except for the alpha are omitted in this table. The sample period is October 2002 to September 2005. *t*-statistics are stated in *italics*. Significance at the 5 percent and 1 percent levels is indicated by * and ** respectively.

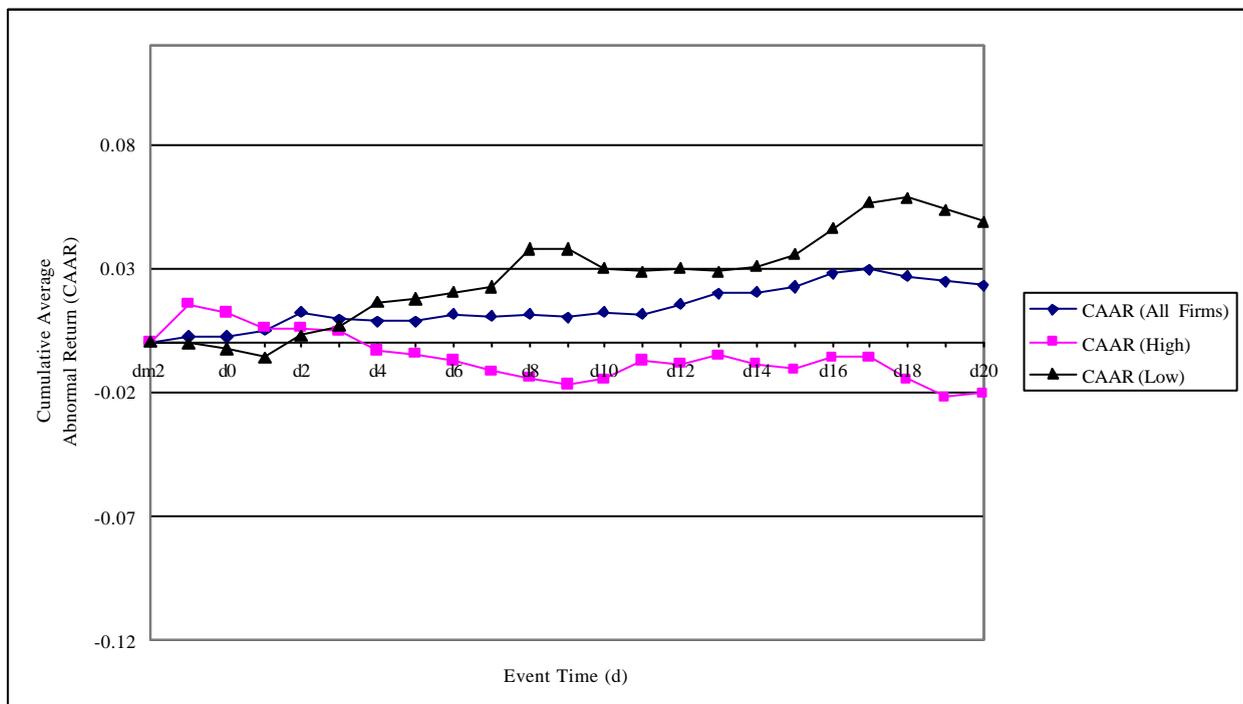
Figures

Figure 1. Number of companies with respective Number of Deviations from Code Recommendations (n=315)



This table presents a frequency distribution of Code deviations by all sample firms. Two of the 317 companies in the prime sample, Geratherm Medical AG and Fortec AG, have rejected the Code and are not included in the statistics.

Figure 2. Cumulated Average Abnormal Returns (CAAR) for all Sample Firms (n = 145) and Firms with High (n = 46) and Low (n = 42) Code Compliance



This figure presents cumulative average abnormal returns in event time for the event window $t[-2]$ until $t[+20]$ for all firms in the sample and the high-compliance and low-compliance portfolio respectively.