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How Not to Regulate Insurance Markets: The Risks and Dangers of Solvency II

Avinash Persaud

Avinash D. Persaud, *nonresident senior fellow at the Peterson Institute for International Economics since July 2014, is professor emeritus of Gresham College and nonexecutive chairman of Elara Capital Plc. He was governor of the London School of Economics, chairman of the regulatory subcommittee of the UN Commission on Financial Reform, chairman of the Warwick Commission, member of the UK Treasury's Audit and Risk Committee, and member of the Pew Task Force to the US Senate Banking Committee during legislation of the Dodd-Frank Act.*

With more than $50 trillion in assets worldwide, investment funds run by the insurance industry and pension system are one of the most systemically important elements of the global financial system (Bank of England 2014). In March 2014, following the global and euro area financial and economic crises, the European Parliament adopted a new directive, Solvency II, which codifies and harmonizes insurance regulations in Europe, in order to reduce the risk of an insurer defaulting on its obligations and producing dangerous systemic side effects. Solvency II tries to achieve these aims primarily by setting capital requirements for the assets of insurers and pension funds based on the annual volatility of the price of these assets.

The extraterritorial reach of the new directive, which is scheduled to take effect January 1, 2016, is significant, particularly for the United States.[1] US subsidiaries of insurance companies headquartered in the European Union, such as Allianz, Aviva, ING, and Mapfe, fall within the scope of Solvency II compliance. The EU subsidiary of a non-EU insurance group like MetLife, Canada Life, Travellers, and Tokio Marine will also have to comply with Solvency II as stand-alone entities.[2] US insurers with European subsidiaries or European parents are angry about what they see as an additional, unnecessary, and inconsistent level of regulation. As a result, the EU Commission, the US National Association of Insurance Commissioners (NAIC), and others are engaged in a discussion to ensure equivalency between US and European regulation. Perhaps because the European Union is the single largest insurance jurisdiction, the direction of travel has been for US state regulators and other non-EU jurisdictions to change their regulations to be more in line with Solvency II.

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This Policy Brief argues that the capital requirements of Solvency II, while not particularly onerous at an aggregate level, will impose an asset allocation on life insurers and pension funds that does not serve the interests of consumers, the financial system, or the economy. Apart from the Solvency II initiative, the Financial Stability Board (FSB)—the international body of finance ministers, central bankers, and other agencies established in 2009 after the global financial crisis—is seeking to set up an international standard for the regulation of what it considers to be systemically important insurance companies.[3] The move was prompted in part by the failure of AIG in September 2008.

1. Solvency II was initially scheduled to be implemented on January 1, 2013. Concerns over its impact caused that date to be pushed back to January 1, 2016, when implementation will be phased in.

2. Early on there were concerns that the entire group of a non-EU insurance company with an EU subsidiary would have to comply. It does not. Non-EU groups will complain that having the EU subsidiary comply with Solvency II as a stand-alone entity, with its own capital adequacy requirement, reduces the scope for its customers to benefit from efficiencies in capital management.

3. Whether insurance companies are systemic in the same way that banks are is an interesting question. Space constraints preclude it from being addressed here.

The FSB's list of systemically important insurance companies includes a number of non-European groups, including AIG, MetLife, Prudential Financial, and Ping An Insurance.[4] But given the influence of EU countries on the FSB, the long reach of Solvency II and the dearth of fundamental thinking about the nature of the risks of insurance companies, the standard to which the FSB is holding these firms looks increasingly similar to Solvency II.[5]

Regulation of banks and insurers has long pivoted on the idea of moving firms toward best practice (see Goodhart 2011). Basel I and II, the banking regulations put forward by the Basel Committee on Banking Supervision, were originally designed only for the internationally systemically important banks. However, deviations from Basel II were considered suspect by the marketplace, and so it became the standard for all banks. Pushed along by extraterritoriality, the pressure for equivalence, and the FSB's initiative, Solvency II and its approach of common valuations and risk assessments when calculating capital requirements have become the "best practice" standard in insurance and pension fund regulation everywhere.

The main problem with Solvency II is that the riskiness of the assets of a life insurer or pension fund with liabilities that will not materialize before 10 or sometimes 20 years is not well measured by the amount by which prices may fall during the next year.[6] Solvency II fails to take account of the fact that institutions with different liabilities have different capacities for absorbing different risks and that it is the exploitation of these differences that creates systemic resilience. An alternative approach that is more attuned to the risk that a pension fund or life insurer would fail to meet its obligations when they come due (shortfall risk) and less focused on the short-term volatility of asset prices would correct this problem.

WHAT'S WRONG WITH SOLVENCY II?

Solvency II was developed at the turn of the 21st century and modeled on the Basel II accord on the supervision of international banks. Both documents reflected faith in the "marketization of finance"—the idea that markets are better than financial firms and individuals at pricing and managing financial risks. This faith in markets was not limited to regulators but part of the zeitgeist of the 1980s and 1990s. It is a common feature of financial booms. Underpinning this conviction were the related beliefs that all assets had one price—the price that could be obtained were the asset to be sold in the marketplace tomorrow—and that the short-term volatility of this price captured the asset's riskiness. The capital adequacy regimes developed under Basel II and Solvency II marched in union with the shift toward mark-to-market accounting and risk management systems based on price volatility such as "value at risk." These ideas were seen to be grounded in theory and closely followed the capital asset pricing model popular with mutual funds investing in continuously trading markets.

The majority of assets in the world, especially long-term assets, such as property, infrastructure, or human capital, are not continuously traded. However, many regulators saw their task as bringing the purchase of an insurer's assets into the open. Their intention was to require insurers to hold assets that everyone priced and risk-assessed in the same way. Before the global financial crisis, this focus on consistent valuations had many perceived benefits, including fraud-busting transparency, level playing fields, and the imposition of market discipline. Investment banks also liked this approach as it created a new universe of financial innovation in which risks and balance sheets could be sliced and traded.[7]

Solvency II's solvency capital requirement is made up of a series of capital requirements for the risk of different activities, such as insurance risk, counterparty risk, and investment risk. In the last quantitative impact assessment reported by the European Insurance and Occupational Pension Authority (EIOPA), capital for the market risk of investments constituted the largest component of life insurers' capital requirements, accounting for more than 60 percent of their total capital requirements for many life insurers. The standard formula for capital with respect to market risk of investments sets the amount of capital required as that which would absorb a one-year decline in asset values of a scale that is estimated to take place no more than once every 200 years.

In the case of equities quoted on an exchange in the European Economic Area or the Organization for Economic

4. The FSB has declared the following insurance companies to be globally and systemically important: Allianz SE; American International Group, Inc.; Assicurazioni Generali S.p.A.; Aviva plc; Axa S.A.; MetLife, Inc.; Ping An Insurance (Group) Company of China, Ltd.; Prudential Financial Inc.; and Prudential plc.

5. A number of bodies, including the International Association of Insurance Supervisors and the FSB, are working toward establishing an international capital standard for internationally active insurance companies. Their stated goal is not so much a common capital requirement but a common framework. If the common framework focuses on short-term price volatility of assets rather than long-term shortfall risk, however, the damage is done whatever the capital requirement.

6. Not all insurers have long-term liabilities. Casualty insurers, for example, have potentially short-term liabilities. In Europe and elsewhere, however, life insurance companies hold 80 percent of the assets held by insurers (see European Insurance in Figures, Statistics No. 48. Insurance Europe, 2014, pp. 54–56).

7. It was not simply good luck for investment banks that regulators adopted this approach. They had a strong hand in making the case (see Persaud 2003).

Cooperation and Development (OECD), the standard formula of Solvency II requires that capital be provided for a 39 percent fall in prices. For other equities, such as emerging market equities or developed country private equity, it requires a capital provision sufficient to cover a 49 percent decline.[8] Reductions are made to account for the financial cycle, the tax effects of insurance loss, and the risk-absorptive aspects of technical insurance provisions. Quantitative impact assessments of Solvency II indicate that insurers would need to put up capital worth 23–28 percent of the value of their equity holdings compared with just 3.0 percent of the value of a 10-year A-rated corporate bond.[9] Preparation for Solvency II and previous regulatory preferences have already pushed insurers' holdings of equity and property down to about half of what they were 20 years ago. Although equity and property represent only 12 percent, or $6 trillion, of their holdings today, these worldwide holdings would account for 37 percent of life insurers' capital adequacy requirements under Solvency II if they were to hold on to them.

Solvency II could…reduce ownership of risk assets by life insurers and pension funds by as much as $5 trillion.

In parallel with Basel II, large insurance companies may adopt regulatory-approved internal risk models beyond these standardized specifications. However, these models are not a license to deviate from the central treatment of the risk of a once-in-200-years fall in asset prices measured over a year, merely a licence to extend this approach to asset classes not listed by the regulators.

Following a series of quantitative impact assessments and simulations, investment managers of insurers generally accept that, as a result of the disproportionate impact on their after-capital-charge returns, Solvency II will lead to a switch out of public and private equity, infrastructure bonds, property, and low-rated corporate bonds.[10] Regulators imposed this shift in the name of protecting consumers from insolvent insurers, but it is actually not in the interests of consumers of long-term insurance or pension products and has other wider, adverse consequences for financial stability and economic growth. Although it is also not in the insurer's interest to annoy the regulator, or even to worry about systemic risk, some insurance CEOs have warned of a negative impact on infrastructure financing in their private and sometimes public remarks.[11]

The architects of Solvency II describe their framework as being risk sensitive and adhering to market-consistent valuations. These terms sound sensible. Who would insist on being risk insensitive or market inconsistent? As a result, the rationale of Solvency II received scant scrutiny. Yet it rests on a flawed view of the investment risk of a life insurer or pension fund. The riskiness of the assets of a life insurer or pension fund with liabilities that will not come due before 10 or sometimes 20 years is not well measured by a once-every-200-year drop in prices on a one-year basis. The capital asset pricing model fails to account for the fact that institutions with different liabilities have different capacities for absorbing different risks.

The regulatory-induced reduction in the holdings of long-term investments by long-term savings institutions will reduce returns to consumers and magnify the risks they take. It will reduce the risk-absorptive capacity of the financial system, making it less resilient. Anticipation of the impact of Solvency II and other regulatory and accounting pressures has already reduced their holdings of equities, but insurers and pension funds still hold about 15–20 percent of the equities in developed markets (Bank of England 2014). The arrival of Solvency II will accelerate equity disposals, reduce the universe of equity investors and hence increase the cost of long-term investment by companies, reducing economic growth.

One irony of this policy is that quantitative easing by central banks in recent years has been aimed at encouraging investors to buy risky assets like equities and long-term corporate bonds by reducing the return on safe assets (government bonds). The Federal Reserve, the Bank of Japan, and the Bank of England purchased about $5 trillion of such assets. Solvency II could act in the opposite direction and reduce ownership of risk assets by life insurers and pension funds by as much as $5 trillion.

8. The European Economic Area is the European Union plus Norway, Liechtenstein, Iceland, and, pending ratification, Croatia.

9. Holding an A-rated EU government debt instrument actually reduces the capital requirement by 2.1 percent of the value of the government debt instruments.

10. Even before the most recent quantitative impact assessment, a 2014 survey of 223 insurers with European operations conducted by the Economist Intelligence Unit for BlackRock revealed that 97 percent agreed that the equity risk premium would have to rise to justify their investing in equities given the new capital charges, 91 percent agreed that share prices would be lower as a result of Solvency II, and 91 percent agreed that corporations would respond by switching from equity to debt issuance. For a simulation exercise on the impact of Solvency II on insurers investments, see Thibeault and Wambeke (2014).

11. Tidjane Thiam, then CEO of Prudential Insurance of the United Kingdom, was quoted as saying "the proposed Solvency II regime could prevent insurers from investing in infrastructure and property…costing the UK jobs and growth" (*Independent*, August 14, 2013).

Fundamental Principles of Investment Risk

A review of the fundamental principles of investment risk helps to illuminate this argument as it applies to investments by a life insurance company or pension fund.

An investment that delivers a return beyond that of a safe asset, such as cash in a bank with a US government deposit guarantee, requires some degree of risk. Different potential returns depend on taking different risks. The main investment risks are credit, liquidity, and market risk.

The 7 percent return on a US corporate bond, for example, comprises the following components:

- the risk-free rate (the return available on cash),
- the return from taking a credit risk (the risk that the issuer of the bond goes bust over the year),
- the return from taking a liquidity risk (the risk that the holder of the bond will have to accept a lower price if he or she has to sell the bond in a short period of time without waiting to find a more interested buyer), and
- the return from taking market risk (the risk that the price of the bond falls other than for credit or liquidity risk reasons, perhaps as a result of rising interest rates).

Avoiding each of these risks requires a different hedging strategy.

How to Hedge Different Investment Risks

The principal hedging strategy for credit risks is diversification. An investor holding a General Motors bond, for example, could include it in a portfolio of bonds issued by GM's main competitors, who might increase their car sales if GM got into trouble. The investor could also hold bonds issued by companies whose success might come at the expense of all traditional car companies—companies like Tesla or BP.

Liquidity risks are best hedged by having time to sell. An illiquid asset is one whose price falls below what could otherwise be obtained if there were more time to find a suitable buyer. One way to buy time is to finance an asset with a long-term mortgage. In general, the more one is able to wait for a suitable buyer, the lower the liquidity risk.

Market risks are hedged through a combination of diversification across uncorrelated market risks and time to allow for panic, uncertainty, or some other temporary reason for an extreme valuation to unwind.

Credit and liquidity risks are hedged in different ways, however. Time hedges liquidity risk, but more time in which a shock can arrive and a company can go bust increases credit risk. There is little credit risk in holding a GM bond for one day, much more if it is held for 20 years. Diversification across similarly sized but differently correlated credit risks reduces aggregate credit risk, but diversifying across equally illiquid assets does not reduce liquidity risks. The bottom line is that credit and liquidity risks are different risks, hedged in different ways and not usefully added up or sliced and mixed together, despite the best efforts of investment banks.

Different Capacities to Hedge Different Risks

Many investors have a natural capacity to hedge one or more types of risk. A bank with thousands of borrowers in different economic sectors can get paid for taking credit risks and self insure against these risks through diversification. Doing so is the real business model of banks. However, a bank with loans funded by cash deposits or money market funds that can be withdrawn overnight has limited capacity to hedge liquidity and market risks. Ideally, such a bank should earn the credit risk premium from lending to a diversified group of borrowers and charge enough that it can pay to transfer the portfolio of market and liquidity risks to someone else who can hedge these risks more cheaply.

During the global financial crisis, risk transfers went in the opposite direction. Regulatory capital charges on credit risks but not liquidity risks encouraged banks to sell credit risks and buy liquidity risks.[12]

When Lehman Brothers went bankrupt on September 15, 2008—triggering a global meltdown in financial markets and institutions—creditors of its UK arm contemplated losses on the order of $200 billion, as the price of the illiquid credit assets held by Lehman plunged below its liabilities (Cline and Gagnon 2013). However, with some irony, the longer the administrators took to unwind the complex array of the bank's assets and liabilities, the more the prices of those assets recovered. Seven years later, the administrators of the UK operation were able to announce that they had recouped all of the cash owed to secured and unsecured creditors. Despite their own enormous bill, they were left with a modest surplus, according to Tony Lomas, the PwC partner leading the winding up (*Financial Times*, March 5, 2014). Illiquidity played a major role in the last banking crisis and many before it.

Life insurers and young pension funds with likely concentration of payouts in 20 years have a natural capacity to take

12. Often, when banks sold credit risks to investors through special purpose vehicles, they made these vehicles more attractive to investors by providing a liquidity backstop (an agreement to buy back the assets).

liquidity and market risks and earn the liquidity and market risk premia. They do not have a natural capacity to hold credit risk.[13]

To see why, imagine two different portfolios of assets with the same expected annual return. The first is a package of poor but highly diversified and liquid credit risks listed and traded frequently on an exchange. The second is a portfolio of government-guaranteed loans that cannot be sold without a lengthy permission process. This instrument has low credit but high liquidity risks. Imagine that the investment strategy of the life insurer is to pop the two portfolios in a safe and to open the safe only to retrieve them when it had to make a payout, in about 20 years' time. The portfolio with the high credit risks will likely underperform the portfolio with high liquidity risks, because one of the credits in the poor-credit-risk portfolio will probably go bust. The longer the period, the more likely that will be.

Shortfall Risk Not Short-Term Volatility

For life insurers and pension funds, the risk of a shortfall in the return of the asset when they need to sell it is paramount. If they have a liability in 20 years' time, taking liquidity risk for the first 10 years does not endanger a shortfall, but taking credit risks for that time does. Shortfall risk is different and not well reflected, if at all, in the daily, monthly, or even annual volatility of the price of the asset. The capital asset pricing model is not designed for someone facing shortfall risk in 20 years' time. The model is designed for investors who may have to liquidate their assets quickly. Assets with low annual volatility but risks of a loss that rises over time or cannot be reduced over time may pose greater shortfall risk for a long-term investor than assets that exhibit high annual volatility but whose risks fall over time. The same amount of cash invested in a diversified portfolio of liquid credit risks may have a lower annual volatility but higher risk of failing to achieve the investment objective after 20 years than a diversified portfolio of illiquid private equity assets. From the perspective of a life insurer or pension fund, Solvency II thus muddles the notion of risk.

The attendant risk of an asset is not the same for everyone at all times: risk depends on who owns an asset and what they use it for. The right investment strategy is for investors to first hold risks they have a natural ability to hedge and to sell risks they cannot hedge to investors who can. To satisfy a hunger for returns, investors should begin by eating the free lunch on offer and understand that all other lunches come with a bill. This point may seem obvious, but Solvency II generates the opposite behavior.

13. For this reason, it is inappropriate of them to buy bail-in bonds issued by banks (see Persaud 2014).

S&P 500, Life Insurers, and Solvency II

These investment principles can be tested by examining the risks to a US subsidiary of a European life insurance firm of holding the components of the S&P 500 Index of large, liquid, US stocks. Since 1928 the S&P 500 Index has boasted an average return significantly above the risk-free rate of US government Treasury-bills or the riskier 10-year Treasury bonds. The credit and liquidity risks of this index are small, so this extra return is likely compensation for market risk.[14] Market risk is hedged by time as well as through diversification. The longer the time period over which the 500 stock portfolio is held and the more market risk is spread, the more likely the returns at the end of the period will be positive.

Over the past 22 years, the average daily return of the S&P 500 Index was 0.03 percent.[15] Although this return is more than double the average daily return of three-month US T-bills, it is not very representative of the distribution of daily returns, 48 percent of which were negative. Six percent of daily returns were more than two standard deviations below zero,[16] reflecting a "fat-tailed" distribution, in which the likelihood of extreme outcomes is greater than in a normal distribution. A money market fund or casualty insurer that may have to liquidate assets at short notice has no time over which it can hedge this size of market risk. The additional return for that investor from owning the S&P versus T-bills comes with a significant increase in shortfall risk.

Over the past 86 years, the average annual return of the S&P 500 was 12 percent.[17] The risk or distribution of these returns is different from the distribution of daily returns. Only 29 percent of annual returns were negative (versus 48 percent of daily returns), and just 3 percent were more than 2 standard deviations below zero (versus 6 percent of daily returns). The distribution of returns is more positive and less extreme.

Since 1928 the average cumulative return over discrete 10-year periods was 196 percent. Returns were positive in every discrete 10-year period except 1928–38. Although this single losing decade included the 1929 crash, the Great Depression, and the 1937 stock market collapse, the loss over 10 years was only 6 percent.[18] Similarly, only 7 percent of the 76 overlap-

14. The most common way to hold the S&P500 is via the Futures market and Futures in the S&P 500 are one of the most liquid instruments.

15. Daily returns data was provided by the Hong Kong–based brokerage firm CLSA.

16. Standard deviation is a measure of the distribution of outcomes. In a normal distribution, which looks like a bell jar, 68.3 percent of outcomes are within 1 standard deviation of the mean, 95.5 percent are within two standard deviations, and 99.7 percent are within three standard deviations.

17. See the Federal Reserve database (FRED), available in a spreadsheet at www.stern.nyu.edu/~adamodar/pc/datasets/histretSP.xls.

18. The peak to trough decline was obviously greater, but the point of the exercise is to see how much that volatility is smoothed over time.

ping[19] 10-year periods since 1928 were negative. These results are consistent with the proposition that liquidity and market risks fall with time, so the shortfall risk for an investor with long-term liabilities is reduced by holding assets with low credit risks but high market and liquidity risks.

The picture is stronger still if one looks at 20-year time periods, though there are only a few discrete ones. The average return is 583 percent (370 percent if the 1938–58 period is removed, on the grounds that the rebound from the Great Depression to postwar euphoria is unlikely to be repeated).

Solvency II risks pushing insurers and their policy holders into serious deficits and losses.

In none of the four discrete 20-year periods or the 66 overlapping 20-year periods were returns negative. There was also no negative return in investing in 10-year Treasury bonds over the same 20-year periods. However, the average 20-year return for 10-year US government bonds was much lower than for equities, at 165 percent (120 percent if the best decade, 1988–2008, is removed, on the grounds that the great disinflation is unlikely to be repeated).

When considering the shortfall risk of assets that back long-term liabilities such as life insurance and pensions, the impact of inflation on long-term returns should probably also be considered, because consumers are more concerned with the real value (after inflation) of a future pension or life insurance payout than the nominal value. Real equity returns over 10- or 20-year holding periods are arguably safer as well as more rewarding than for government securities. Since 1928 the average real 10-year cumulative return on equities was 113 percent, with only one decade of negative real returns (–17 percent in 1968–78). Over the same period, the average real annual cumulative return on US government bonds was 29 percent (one-fourth as great), with two decades of negative performance (–13.7 percent in 1938–48 and –3 percent in 1968–78). There are only nine discrete 10-year periods since 1928. If one considers overlapping 10-year windows, equities had a positive real return 89 percent of the time and US government bonds just 66 percent of the time.

Unlike a money market fund, a life insurance or young pension fund (with a high concentration of payouts in 20 years' time and a low probability of payouts in the short term) does not need to liquidate the majority of its portfolio in the short term. It can earn the substantial market risk premium available in moving from bonds to equities without increasing shortfall risk substantially and not increasing shortfall risk at all if one considers real returns.

Consumer Protection

In light of the theory of investment risk argued above, some regulators prefer to play it safe. But in so doing, these regulators are the slaves of a defunct financial theory, as John Maynard Keynes might say. That theory equates all financial risk to annual value-at-risk estimates, an idea that proved inadequate during the last crisis (Persaud 2002). Even worse, in this case playing it safe means shifting risk to the people least able to bear it—consumers of insurance and pensions.

In particular, forcing life insurers to hold liquid assets when they do not need liquidity raises the price of life insurance, causing the average consumer to buy less of it.[20] Consumers are therefore likely to be underinsured. Solvency II thus shifts insurance risk from institutions with full-time professionals that pool and spread risks to parties least able to do so.

Moreover, regulators are pushing life insurers into bonds when the outlook for long-term bond returns is skewed to the downside. Near-zero interest rates, modest economic growth, postcrash risk aversion, geopolitical uncertainty, and a massive bond-buying program that has just ended in the United States have pinned bond prices to the ceiling. A whole constellation of stars would have to be correctly aligned if prices are not to fall to more normal levels or real bond returns not to become negative. Basel II capital adequacy rules helped push banks into securitized housing loans. Solvency II risks pushing insurers and their policy holders into serious deficits and losses.

Systemic Risks

Life insurers or young pension funds holding good-quality credits with high liquidity and market risks (such as diversified portfolios of public equities or infrastructure bonds) is

19. The standard framework for analyzing the statistical distribution of returns assumes that each return is independent and so we should use returns over discrete 10-year periods, such as 1928 to 1937 and 1938 to 1947 where there is no overlap of years. However, because there are few discrete 10-year periods and even less 20-year periods for which reliable data are available, and fewer data points raises the risk that our inferences are overly influenced by how we divided up the 10-year periods or our starting point, it is useful to compare our results with overlapping periods, such as 1928 to 1937, 1929 to 1938, 1930 to 1939 etc. If the two distributions are similar we can have more confidence in our inferences.

20. The average consumer is liquidity constrained and insurance is viewed as a luxury good—which is consumed more when income rises and less when income falls. Consequently, if the price of insurance rises, the average consumer is likely to respond by buying less insurance rather than skimping on the grocery bill or other goods considered necessary.

right from an investment perspective and from the perspective of the buyer of insurance, who gets more coverage for a given premium. It is also right from a systemic risk perspective. If these market and illiquid risks were held by short-term investors, such as money market funds, hedge funds, or banks, there would be periods of steep, self-feeding declines in asset prices as they tried to offload the same assets at the same time whenever liquidity or market conditions turned down, pushing up short-term volatility and reported risk, prompting more sales and price declines.

The life insurer or pension fund uninterested in short-term volatility would be the ideal counterparty for a bank wanting to sell a package of market and liquidity risks where the bank had retained the credit risks. There are clear individual and systemic benefits of this type of risk transfer. Too often in the past the opposite risk transfer took place, because the transfers were not driven by where the greatest risk capacity was to be found but by where the regulatory capital charges were lowest. Life insurers were probably seduced by the low capital charges incurred by buying packages of securitized credit risks with high credit ratings. AIG most famously did so, but other insurers were guilty of similar conduct if on a smaller scale.[21]

Solvency II will make equity and other risk assets an endangered species in the portfolios of life insurers and pension funds.

Arguably, no reasonable amount of capital can guarantee safety to a financial system if risks are held in the wrong places: if the liquidity risks are held by those who have no liquidity and if all the credit risks are held by those who have little capacity to diversify them. Solvency II will make equity and other risk assets an endangered species in the portfolios of life insurers and pension funds. If instead capital requirements were based on shortfall risk (i.e., the risk that an asset when sold will not be sufficient to meet a liability), more than $15 trillion assets—just 30 percent of all assets of life insurers and pension funds—might be placed in assets that could absorb the financial systems market and liquidity risks as well as providing a better return for policy holders.[22] From a regulatory perspective, risk capacity is a more critical concept than "market-consistent valuations" and "risk sensitivity." It is a disappointment that it remains neglected by regulators.

Economic Growth

Investment is critical to economic growth. All else equal, the lower the cost of capital, the higher the level of investment. Investment assets tend to have long development times, and they are often large and not easily divisible: Half a train station is not as easily saleable as a completed one.

Long-term investments carry substantial liquidity and market risks. Funding costs would be lower if they were financed by companies with a natural capacity for taking liquidity and market risks (such as life insurers and pension funds). Denying these natural buyers of long-term assets the ability to do so will raise the cost of capital, reduce investment, and retard economic growth.

How much lower the investment would be depends on the size of long-term savings and the degree to which short-term savers can substitute for long-term savers in the holding of long-term assets. Both factors suggest that it is likely to be significant. In Europe life insurers and pension funds own about €10 trillion of assets, more than half of EU GDP or of all institutionally owned assets. If Solvency II did not get in the way, a life insurer with 20-year liabilities would always be able to outbid a hedge fund that offers near-immediate liquidity to its investors, because the insurer does not need to find a costly hedge for the liquidity risks. These investors are therefore not easily substitutable.

WHAT IS TO BE DONE?

A different but more straightforward approach to the solvency capital requirement of Solvency II would reflect the risk that an investment falls short of what is required. The shortfall risk of an asset is not independent of but linked to the liability it is intended to cover. If the liability is an expected payout of €100,000 in 20 years' time and the asset is a monthly investment in a basket of public equities, the data on the 20-year returns of the asset can help estimate the maximum shortfall, 99.5 percent of the time, between the final asset returns and the liability. Capital requirements would be set to offset this risk. This need not be done one liability at a time but with buckets of similar liabilities and buckets of assets matched against them.

Our proposed mechanism would imply different capital requirements than Solvency II. For instance, for a firm with long-term liabilities (such as a life insurer or pension fund), the capital requirements for diversified portfolios of blue-chip

21. Everyone tends to fight the last war; avoiding a repeat of AIG has been a strong motivation for insurance regulators in recent years. Arguably, however, AIG was a special case of an insurance company acting like a bank, which could be dealt with more specifically.

22. Estimates of the optimal asset allocation of life insurers using short-term volatility as risk but excluding capital charges suggest that 30 percent of the portfolio should be in equities. Shifting to shortfall risk and adding capital charges would lead to higher ratios.

equities would often be lower than for a portfolio of long-term, liquid bonds that carried the same expected annual return. Where the estimated maximum shortfall risk 99.5 percent of the time is greater than existing capital, the insurer would be required to raise the level of the premium, change the asset class, or raise the level of capital. Solvency II need not be abandoned, but risk assessments must be based on shortfall risk rather than annual price volatility.

CONCLUSION

Using an estimated once-every-200-years decline in annual asset prices to measure the risk of a life insurance and pension fund is flawed on many levels. The return and price of assets already reflect the risk of the asset to the average holder. Consequently, the starting point for the regulator ought to be whether the risks to life insurers or pension funds from holding the asset are lower or higher than already reflected in the market price. The riskiness of an asset is not independent of what it is used for or who owns it. Private equity funds are risky for a casualty insurer and safer for a life insurer with liabilities beyond the redemption period of the fund. To a life insurer, what matters is not the price of an asset or the risk of holding it tomorrow or at the end of the year but the risk at the point of maturity of the policy (shortfall risk).

Better matching the capital requirements of insurers to shortfall risk would allow insurers, consumers, the wider financial system, and the economy to establish a superior risk-return equilibrium. It would provide consumers with cheaper but no less adequate insurance; make the financial system safer, as risks flowed to where they are best spread or diversified; and reduce the cost of capital, boosting investment and economic growth. In its current form, Solvency II is likely to achieve the opposite.

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