



Reviewing Systemic Risk within the Insurance Industry



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Executive Summary

The Global Financial Crisis of 2007-2009, driven by mortgage loans and facilitated by nearly every stakeholder in the financial system, left legislators looking for ideas that might lower the likelihood of such an event. One suggestion was to identify companies that create systemic risk and set up regulations making it harder for a problem to spread. Financial institutions were considered the primary perpetrators, and international and U.S. legislators set up groups to identify these companies.

The problem is that no specific criteria identifying such companies have been released. The G20 (Group of 20) published lists of individual banks and insurers, and talked about reinsurers and asset managers joining the group. In the U.S., the Dodd-Frank Act included a provision to select systemically risky companies, and several insurers have been designated as a systemically important financial institution (SIFI). Some have filed suit to be released from this burden and won (currently under appeal) due to the lack of a formal methodology to select them.

It is generally thought that large, complex, interconnected companies are most likely to drive systemic risk. Given that risks are often recognized only in hindsight, companies with the potential to create systemic risk should be considered as well as those who have previously spread risk beyond their own organization. Factors that increase the contagion risk may include providing a unique product that can't be easily substituted, holding a risk that can go downhill quickly (velocity), leverage, incentives, lack of transparency, and crossing international jurisdictions. Government policies can provide buffers but also encourage asset bubbles and unsustainable practices. Better coordination between fiscal policy, monetary policy, regulation, and taxation would result in a more transparent and consistent financial system.

Unlike banks, insurers are receivers of systemic risk; they are not primary drivers of it. They are not part of the financial payment system and interact only with consumers, not other insurers (except for reinsurance). This contrasts with banks, as they are primary lenders to other banks, so highly interconnected, and run the financial payment system. The ORSA (Own Risk Solvency Assessment) model law requires insurance regulators to consider all entities within a complex organization, including those in other jurisdictions. This helps fill a regulatory hole, where a weak federal regulator and poor internal risk culture failed to manage the risk of credit default swaps against mortgage exposure at AIG. The ORSA regulation now requires complex organizations with insurance components to be managed for risk at the broadest levels.

Small firms pose little risk of systemic problems, while large insurers rarely access state guaranty funds due to insolvency. This is due at least in part to conservative state based regulation, board approved

investment policy statements, and a conservative industry risk culture relative to other financial institutions. This system to date has proved resilient. Insurer liquidity needs are lower than banks due to long-dated liabilities, recurring premium requirements, and sophisticated asset-liability management (ALM) tools help to manage that risk across long time horizons. Insurance companies are not perfect, and some will default, but they are very unlikely to cause systemic risk by themselves.

Systemic Risk

The financial collapse of 2008-09 provides a litany of case studies that will be studied for generations to determine what helped and what hurt the global and regional economies. Governments have tried to legislate solutions to the issues that led to the problems, and the financial industry, especially banks, has lobbied legislators with their own proposals. Mostly due to the role of AIG in the crisis, legislators have looked beyond banks to insurance companies and asset managers to identify companies and industries that could create such a situation in the future. The role of systemically important financial institutions (SIFIs), along with whether and how stakeholders could impact the likelihood and severity through proactive actions, will be discussed.

Everyone in this process has good intentions and is trying to lower risk, but the nuances of the financial economy vary between industries. The financial services industry is not uniform. Unfortunately, in some situations, banking industry expertise has been applied to the insurance industry without full consideration from insurance risk experts. This paper will review the issues based on earlier writings and discuss the pros and cons, evaluate what previous authors and regulators got right and what they got wrong, and to address if individual companies in the insurance industry in the United States should be considered systemically important.

Insurance is a product based on trust. The consumer trusts that, by paying premiums today, the insurer will fulfill its promise to pay out claims as they are incurred. Over a century ago, in 1905, the Armstrong Committee set up regulations to ensure that this trust was earned.¹ Since then, some insurers have become insolvent but few consumers have been left without support in their time of need, and insurance has not been the driver behind broader crises. The system is not perfect and can always be improved, but this paper will argue that an overhaul is not needed, and that some changes being suggested would increase systemic risk.

Systemic Risk Definition

The first issue is the definition of systemic risk. It means different things to different people based on their personal life experiences. It has yet to be consistently defined by the regulatory bodies responsible for choosing systemically important companies. This has led to difficulty responding to information requests and subsequent lawsuits. Some argue that systemic risk arises from the failure in financial market (Wall Street), while others say it is failure in the real economy (Main Street). Which side of the

¹ The investigation of insurer practices led to more consumer-friendly legislation including policy language, agent practices, expense controls and other conservative financial policies.

squabble someone is on impacts the solutions shared, as it has for centuries. Conflicts of interest, conscious or not, lead to bias. The Wall Street versus Main Street arguments interact, as a fully functioning banking system makes it easier for citizens to transact business. A balance is required between liquidity for the international financial system and the consumer driven environment implied through metrics like inflation, interest rates, and GDP.

Here are some alternative definitions of systemic risk.

The key characteristic of systemic risk is the movement from one stable (positive) equilibrium to another stable (negative) equilibrium for the economy and financial system.²

This definition assumes that there is system equilibrium in the first place, while the system dynamically evolves over time.

The Financial Stability Board (FSB) leads international efforts to regulate financial institutions. Their definition is

the disruption to the flow of financial services that is (i) caused by an impairment of all or parts of the financial system, and (ii) has the potential to have serious negative consequences for the real economy.³

This definition tries to take both sides of the Wall Street/Main Street debate, but those groups are unlikely to act simultaneously.

The FSB definition or variations of it appears to be the one they, the IAIS⁴, and other supervisors are using as they implement the SIFI designations. Fundamental to this definition is the notion that systemic risk is associated with negative externalities and/or market failure and that a financial institution's failure or malfunction may impair the operation of the financial system or the real economy. In another, similar, comment the FSB states that SIFIs are institutions of such size, market importance and interconnectedness that their distress or failure would cause significant dislocation in the financial system and adverse economic consequences.

Jaime Caruana, General Manager of the Bank for International Settlements (BIS), with previous experience at the International Monetary Fund (IMF) and Bank of Spain, defined systemic risk as

² Hendricks, D., J. Kambhu, and P. Mosser (2007): "Systemic Risk and the Financial System," *Federal Reserve Bank of New York Economic Policy Review*, pp. 65–80.

³ October 2009 Report to G20 Finance Ministers and Governors: Guidance to Assess the Systemic Importance of Financial Institutions, Markets and Instruments: Initial Considerations (pages 5-6) October 2009 <https://www.imf.org/external/np/g20/pdf/100109.pdf>

⁴ Systemic risk and the insurance sector. IAIS October 25, 2009. www.iaisweb.org/file/34043/note-on-systemic-risk-and-the-insurance-sector

"a risk of disruption to financial services that is caused by an impairment of all or parts of the financial system and has the potential to have serious negative consequences for the real economy." ⁵

Ron Rimkus, writing for the CFA Institute, ⁶ attempted a definition that captured the essence of the many variations available. He references the 2012 working paper developed by the Office of Financial Research, A Survey of Systemic Risk Analytics, as a good resource to look at a compilation of risk metrics.⁷ His definition focuses on a specific loss of trust in the system:

"Systemic risk is the risk of a large-scale failure of a financial system whereby a crisis occurs when providers of capital (depositors, investors, and capital markets) lose trust in either the users of capital (banks, borrowers, leveraged investors, etc.), or in a given medium of exchange (the U.S. dollar, Japanese yen, pound sterling, gold, etc.). Perhaps the most important feature of systemic risk is that the risk spreads from unhealthy institutions to otherwise healthy institutions through a transmission mechanism. (If it were not for this transmission channel, then the risk would not be systemic, but rather fundamental in nature.) This means of transmission is characterized by leverage, interdependence and buffers throughout the financial system."

Others try to shorten the definition, focusing on the disorderly failure of systemically important firms that cause systemic harm, but this information is available only after the fact. The goal is to identify a SIFI in advance.

Each of these definitions differs slightly, but there are similarities. The definitions consider the normal state to be one of equilibrium, with concerns centered on phase transitions and what drives them. Surprisingly, some also consider the less favorable level to be at equilibrium.

Definition Nuances

The Financial Stability Oversight Council (FSOC) is the U.S. based collaboration between regulatory bodies charged with "identifying risks and responding to emerging threats to financial stability." The FSOC and other international regulatory bodies have not formally disclosed if they are looking for companies that "could" be systemically important, or those that "are" already systemically important.

An example will help to explain why this is an important distinction. For many years, American International Group (AIG) had been a top insurer internationally and earned top marks from rating agencies. Leading up to 2008, a division based in Europe and not regulated as an insurer (the U.S. Office of Thrift Supervision held this task) started trading credit default swaps, especially those backing mortgage backed securities (MBS). This product hedges credit risk, relying on the high rating of the counterparty to lower collateral requirements. These trades are not transparent, so only the immediate

⁵ Caruana, Jaime. Systemic Risk: How to Deal with it. February 2010. <http://www.bis.org/publ/othp08.htm>

⁶ Rimkus, Ron CFA. Systemic Risk: Definition and Application. CFA Institute Enterprising Investor blog September 28 2016. <https://blogs.cfainstitute.org/investor/2016/09/28/systemic-risk-definition-and-application/>

⁷ Bisias, Dimitrios, et al. A Survey of Systemic Risk Analytics. Office of Financial Research January 5, 2012. www.financialresearch.gov/working-papers/files/OFRwp0001_BisiasFloodLoValavanis_ASurveyOfSystemicRiskAnalytics.pdf

parties to a trade are aware of which counterparties are involved. No one seems to have been fully aware of the total exposure levels AIG had added. Even when rumors were heard that a highly-rated insurer had become overexposed to the MBS market, it was not clear who it was. Several other insurers also met the requirements for size and rating. The risk exposure at AIG had accumulated to systemically important levels, but no one (including the insurance regulator) realized it.

If a company is strong enough to survive a systemic event, and is not vulnerable, can it still be considered systemically important? As Warren Buffett said, "I try to buy stock in businesses that are so wonderful that an idiot can run them. Because sooner or later, one will."⁸ Are the FSOC and FSB looking for actual, or potential, systemically important insurers? That is unclear and is not known if the discussion has been held. This makes the discussion more difficult since systemically important risky activities are often identified only in hindsight. Rarely does a consensus exist in advance that warns of a systemic risk.

Regulators have presented their solutions with great confidence, but the reality is that the current environment of negative interest rates and high debt has never been experienced, and the times that were most similar ended up poorly, with hyper-inflation (devaluation) or sovereign defaults.⁹

Those trying to identify SIFI companies in advance use regulation that is onerous to these companies to force them to manage their risks. If the regulator can identify systemically important firms, and incent risk management practices along with well thought out living wills if insolvency occurs, they believe this will lower the aggregate risk in the financial system. The primary tool currently used by regulators to accomplish this is capital requirements. Additional capital is required for risky activities. When principles-based economic capital models are used instead of factor driven models, in theory this recognizes lower risk and lowers the capital required.

Efforts to identify systemically important financial institutions are active globally as well as in the United States. Selection methods have not been transparent, and the leading indicator for selection so far seems to be size.

Jaime Caruana, the General Manager for the Bank for International Settlements (BIS), shared his thoughts about systemic risk in 2010. The BIS is an international group of central banks. The BCBS, Basel Committee on Banking Supervision, is well known for its research papers and is part of BIS. As head of the BIS since 2009 he has had a front row seat as regulators reacted to the financial crisis. He argues that systemic risk focuses on consequences to the real economy, looking at common exposures and interlinkages between financial institutions.

Caruana presents as a common theme that risks tend to plant their seeds and grow during relatively stable periods. Risks are both hidden and underpriced during these times. This topic was previously

⁸ In a panel discussion after the premier of the 2008 documentary *I.O.U.S.A.*. Panel at the Premier, 0:05:42ff., DVD extras, *I.O.U.S.A.* (2008)

⁹ There is no historical data similar to today's environment except that presented by Reinhart/Rogoff in *This Time is Different* – and that leads to bad results (devaluation/default)

addressed by Hyman Minsky (Minsky Cycle or Minsky Moment),¹⁰ David Ingram (Risks Grow in the Dark),¹¹ and Warren Buffett (“Only when the tide goes out do you discover who’s been swimming naked”),¹² so risk managers and regulators should be wary of long periods of stability or growth (good times).

Following the Great Depression of the 1930s, legislation like Glass-Steagall created a framework to restore trust in the markets by focusing on prevention and transparency. Later periods of deregulation have led to increased moral hazard. Regulators tend to leave the punch bowl out too long during periods of calm and are fearful of allowing credit risk to function in a free market. Some have argued¹³ that a “Too Big to Fail” precedent was set with Continental Illinois in 1984 when bondholders were made whole,¹⁴ with numerous examples ramping up the strategy since then as regulations loosened and interest rates were lowered. Normal margins of safety become unnecessary hindrances to profit, and political pressures are exerted on regulators to maintain the status quo or do what is popular.

Some have suggested a reinstatement of the Glass-Steagall legislation, but its primary value was to separate investment banking from commercial banking. That component could be brought back without involving insurers in any way. A reason to include insurers would be due to separation of regulatory responsibility between banks and insurers. It is unclear that the Federal Reserve has accumulated the expertise to effectively regulate insurers.

The stable period between crises is the appropriate time to address increasing risks. It is relatively painless to reduce exaggerated gains and clear the financial system of excesses when times are good. Barney Fife, played by Don Knotts on the Andy Griffith Show half a century ago, said it best – you have to “Nip it in the bud!” Sometimes, government tends to come up with excuses why they can’t slow the economy down but has no problem throwing gasoline on a fire. Only Paul Volcker, as Federal Reserve Chairman, took the unpopular but necessary steps to break inflation in the early 1980s. The Federal Reserve could develop guidelines that react to extended markets.

Procyclicality is another risk that has grown during the mark-to-market era. When insurance reserves and required capital are determined based on factors there are certain offsets when risks increase. When interest rates increase, deferred annuities lapse and both reserves and capital are released. In a principles-based environment assumptions are set using fairly recent periods, and when markets become volatile the required amounts increase. When risk increases so does the required capital. A countercyclical regime would use a longer term assumption so that capital would be higher than the market would price at times, slowing down the party, and lower than market at other times. Jaime

¹⁰ Minsky’s Moment. The Economist. July 30 2016. <http://www.economist.com/news/economics-brief/21702740-second-article-our-series-seminal-economic-ideas-looks-hyman-minskys>

¹¹ Risk and Light. David Ingram. 2009 ERM Symposium Call for Papers. <http://www.ermssymposium.org/2009/pdf/2009-ingram-risk-light.pdf>

¹² Carol J. Loomis, Tap Dancing to Work (Penguin Group, 2012), p 161

¹³ Gelinas, Nicole. After the Fall: Saving Capitalism from Wall Street – and Washington. Encounter Books 2009

¹⁴ Gelinas, Nicole. After the Fall: Saving Capitalism from Wall Street – and Washington. Encounter Books 2009, also William Isaac (FDIC) in 1989

Caruana refers to this as a spillover effect and suggested the need to look forward, not back, for assumptions.

There are three distinct groups, according to Caruana, that influence the financial markets from a governmental perspective; regulatory, monetary and fiscal. These are the levers that governments have. It seems like a fourth group, influencing market discipline, transparency, governance, incentives, market integrity and consumer protection could also be targets for guidance.

Building blocks can be put in place proactively to increase the quality and quantity of liquidity and capital. Political pressure should be avoided when countermeasures are most needed. A process should be in place to orderly close down a firm (resolution regime) and the industry structure should reduce incentives for short-term profits and leverage (including tax incentives). Improving transparency through infrastructure requirements for counterparties will improve industry resiliency, as will improved supervision.

Regulators currently have fewer financial incentives than the private sector, so ideas that improve compensation and levels of experience would likely improve results. So would ideas that reduce complexity and focus on clear and simple limits enforced by normal people. Time after time groups formed by the smartest people in the room look past risks that a less gifted person would equate with historical issues.

In *The Road to Ruin*,¹⁵ Jim Rickards argues that there are additional reasons for naming non-banks as SIFI institutions. One is information collection. A large asset manager is a conduit to worldwide transactions, and the Federal Reserve could compel them to provide a data dump to help regulators better understand what was, and by contrast what was not, happening. A second argument, less common, is that naming interconnected asset managers as systemically important allows the Fed to control companies it otherwise has no jurisdiction over. In theory, the Fed could then force a large asset manager to go into lockdown mode and not buy or sell anything. The implication is that sovereign wealth funds would be unable to move funds back to their home market. This would limit capital outflows during a liquidity crisis or war. In this type of scenario, large insurers may be secondary to the decision to expand the SIFI definition beyond what is discussed in this paper.

What are the Drivers of Systemic Risk?

Systemic risk reflects the ability of one company, industry, or risk event to create a large enough disruption to the financial system that it collapses. There are various beliefs about whether this is measured by the impact on the real economy (Main Street) or the banks (Wall Street). There is plenty of overlap in these discussions. The next systemic risk is likely to be something new, so while important to guard against past risk events it is even more important to consider emerging risks and risks growing during stable periods. In any event, several specific attributes often play major roles in systemic risk events.

¹⁵ Rickards, James. *The Road to Ruin*. Penguin Random House 2016.

Size

Size can be measured by aggregate exposure to certain risks, transaction volume, or other measures of exposure. Concentration risk reflects a focus on a limited number of types of risks. There are fewer banks today than prior to the financial crisis and the largest have become even larger. As with many of these attributes the risk increases when more than one are found simultaneously, especially when leverage is present.

Interconnectedness, complexity and opacity

A company interacts with its environment. How much it interacts drives its riskiness to the system. For example, banks have an integral role in the payment system. This generates interactions throughout the economy. An insurer, on the other hand, connects only with its policyholders (and agents) and entities selling assets. Transparency of transactions and balance sheets, when practiced in aggregate, reduces systemic risk. Lack of clarity, or opacity, does the opposite. For example, during the financial crisis the lack of transparency between banks made liquidity dry up as they were fearful of making interbank loans as well as to non-bank firms whose assets might be frozen. Complex organizational structures can also make a firm more risky. Reaching out across geographic boundaries with subsidiaries, and taking on a multitude of products, can stretch an insurer's risk management capabilities.

The financial markets are a complex adaptive system with companies, individuals, and governments interacting with local players in ways that drive the system. Insurers tend to be relatively more transparent, at least quarterly when they report results, and tend to avoid alternative asset classes with limited historical data. Their derivatives often hedge liability positions. Insurers can get into trouble when they accept naked (unhedged) risks, especially when these involve leverage.

Principles-based models attempt to measure appropriate capital levels. Several metrics are utilized. Banks favor value at risk (VaR), which determines the amount which could be lost under normal conditions at a specific level of confidence. It ignores the extreme tail results beyond this level, and assumes that extreme tail events follow the same Normal distribution prevalent the rest of the time. Another metric, used for some life insurance balance sheet needs, continuous tail expectation (CTE) overcomes some of these criticisms by looking at an average of all events falling beyond the specified confidence level. When these metrics utilize longer term assumptions and include fat tails in their stochastic models they become even more effective.

Lack of Substitutability

If an insurer became unable or unwilling to provide their typical services, others would not be blocked from entering the market. Shadow banks, other insurers, securitizations, captives, and self-insurance are all vehicles to provide coverage. Alternative asset managers would be able to support any wealth accumulation lost from one or a group of insurers.

Timing

Systemic risk rarely plays out over a short period at an insurance company (sometimes referred to as velocity), but past practices set the stage for future problems. Insurance liabilities are both longer duration and less liquid than typical bank liabilities like demand deposits. Many insurance products have

required premiums and lapse without value if they are not paid. Others have no surrender options, and those that allow withdrawals can defer payment in times of crisis for a period of time. Matching asset and liability cash flows over longer periods of time reduces risk. This all provides more time for insurers to react to systemic risk than banks.

Insurance cover can dissipate quickly if the market changes through legal rulings or discontinuities from historical results. This can impact the economy, but if the market remains sustainable, either products will be repriced or new entrants will emerge.

Leverage

There are many ways to add leverage to a balance sheet. These include debt, guarantees (e.g., letters of credit), derivatives, low credit quality, duration mismatch, and margin accounts. Good and bad results are both amplified. Companies historically have used off-balance sheet items to hide leverage, but that is much harder to do today. Options and other derivative products, when they do not hedge liability positions, also serve to provide leverage and ramp up volatility. Buying assets on margin is another way to borrow, and is common for individual shareholders. Purchasing illiquid assets is a form of leverage if there is a mismatch with liabilities and asset sales become forced (an alternative option is to add new liabilities requiring an initial investment to enhance cash flow). Utilizing leverage improves returns when the asset class is advancing, but it indicates vulnerability to financial shocks and could become a systemic problem when an entity has a high level of interconnectedness with others in the financial system. This can lead to unintended consequences and contagion due to sequential or simultaneous impact on another firm. It may be possible to combine several forms of leverage into a single metric that becomes a leading indicator of pressure on systemic risk.

As John Maynard Keynes so famously said, “Markets can remain irrational longer than you can remain solvent.”¹⁶ This matters for a couple of reasons. When an asset is bought on margin, or with collateral generally, and the price goes down there is a margin call that could force a sale of a portion of the position. The pressure from the sale causes the price to reduce again, potentially creating a loss spiral. Even if your thinking is right, and the asset is currently undervalued relative to its intrinsic value, when you are leveraged you can’t afford to wait forever for markets to reflect your analysis. Banks commonly accept greater leverage than insurers, especially when asset-liability management (ALM) practices are considered. Long Term Capital Management (LTCM) and Executive Life, discussed later in this paper, are excellent examples. Those who ended up with the assets from these entities bought them inexpensively and they eventually rebounded. While leverage may initially drive strong returns, this is a leading indicator for future solvency issues. When everyone tries to sell the same assets at the same time, prices do not respond logically in a complex adaptive system. They reflect the fear in the market rather than intrinsic value.

¹⁶ Lowenstein, Roger. When Genius Failed: The Rise and Fall of Long-Term Capital Management. Random House. Page 123.

Cross-jurisdictional activity

Financial institutions often operate across a plethora of legal entities that include banks, insurers, and asset managers. They operate across countries and may have distinct entities for territories, states, and provinces. This reduces transparency and increases complexity, potentially leading to unintended consequences and surprises for both the entity and regulators.

Buffers

Governments have tools to manage markets using regulations, and the private financial markets can nudge behaviors as well. Banks can adjust lending standards by varying requirements surrounding such factors as down payments, covenants, collateralization, and margins.

Subprime lending was a leading factor in the financial crisis, but auto loans, student loans, and consumer finance have all re-entered this mine field.

Government policies and regulations

Government entities, using regulations, fiscal policy, and monetary policy, have the ability to slow growth and limit damage but often do just the opposite. During a period of high debt-to-GDP like we are experiencing today, there are many triggers that could set off a market collapse and recession (or more). A small subset of these trigger points include oil price shocks, trust lost in the system, or increased volatility when government policies lose control.

Fiscal policy

One group, often referred to as the Austrian school of economic thought, led historically by Ludwig von Mises and Friedrich Hayek, would argue that the best course of action is to do nothing and let Adam Smith's invisible hand work its magic. This strategy played out shortly after World War I, when a minimal response to an economic slump by central banks led to rapid recovery and a decade of expansion¹⁷. Their rallying cry could be, "First do no harm!"

Keynesian economists, on the other hand, believe that government intervention can stimulate or slow the economy through relative changes in spending and taxation. These tools were developed during the Great Depression by John Maynard Keynes.

Fiscal policy responses tend to be asymmetrical, with recessions and negative events greeted with spending and high growth described as "It's different this time." In the rare instances when budgets become balanced, expenditures and tax cuts are quickly implemented.

¹⁷ Grant, James. *The Forgotten Depression – 1921: The Crash That Cured Itself*. Simon & Schuster 2014.

In their book, *This Time is Different*,¹⁸ Kenneth Rogoff and Carmen Reinhart argue that debt accumulation by governments (currently 105% of GDP¹⁹), banks, corporations and consumers (80% of GDP²⁰) is the driver of systemic risk to the financial system. Governments around the world, including the United States, exceed the debt-to-GDP ratios they found led to related events such as sovereign defaults, banking crises, exchange rate crises and high inflation rates (roughly 90%). When debt levels are high it is hard to argue that sovereign debt is risk-free.

Keynesians believe that government spending is a component of GDP, so spending of any kind is stimulative and reduced spending (or higher taxation) will contract the economy. But where does this money come from?

Those who believe in the Austrian school of economics believe that the market should be allowed to function on its own and will quickly restabilize itself. The current income inequality between the highest and lowest workers drives geopolitical risk.

There is probably truth in each of these theories, and the risk grows when one group dominates. Following the Great Depression Keynesians have driven the discussion. Recently Hayek has become popular again, although with limited impact on government policy to date.²¹

As developed nations age, entitlements such as Social Security and Medicare that have not been prefunded will stretch government budgets if not modified. The importance of scenario testing across a variety of outcomes is important. No one knows the outcome, but scenarios testing inflation, deflation, and volatility should all be considered. Scenarios should also test non-financial outcomes such as climate change and geopolitical concerns.

At the very least, a central bank should include the opinion of contrarians in their decision-making process. This will help avoid group think or having the group leader dominate the discussion.

Monetary policy

Central banks have historically used a few specific tools to manage monetary policy (e.g., discount rate to banks, reserve requirements, currency operations) and have recently added additional techniques such as quantitative easing, where the central bank purchases assets. It remains to be seen if these new techniques can be effectively managed, or if the central bank becomes both the primary lender to banks

¹⁸ Reinhart, Carmen and Rogoff, Kenneth. *This Time is Different*. Princeton University Press 2009.

¹⁹ Federal reserve Bank of St. Louis and US Office of Management and Budget, Federal Debt: Total Public Debt as Percent of Gross domestic Product [GFDEGDQ188S], retrieved from FRED, Federal Reserve Bank of St. Louis; <https://fred.stlouisfed.org/series/GFDEGDQ188S>, October 20, 2016.

²⁰ International Monetary Fund, Household debt-to-GDP for United States© [HDTGPDUSQ163N], retrieved from FRED, Federal Reserve Bank of St. Louis; <https://fred.stlouisfed.org/series/HDTGPDUSQ163N>, October 20, 2016.

²¹ <https://www.youtube.com/watch?v=d0nERTFo-Sk> and <https://www.youtube.com/watch?v=GTQnarzmTOc> provide entertaining rap videos for economists of all persuasions and levels of knowledge. Courtesy of econstories.tv.

and the asset purchaser of choice. Adding to the uncertainty is what central banks will do as owners of asset classes during a downturn.

Monetary policy since the Volcker era has failed to restore the financial system to equilibrium after providing stimulus. The effect has been to move the bubble around. Rather than slow growth in the 1990s, excesses continued to build until the dot-com bubble burst. The 9/11 terrorist attacks in 2001 generated additional stimulus. Following the financial crisis in 2008 rates were dropped to near zero, quantitative easing was introduced (in several iterations), and global wars on terrorism continued.

Central bank policies have made it cheaper to borrow, encouraging and in some cases forcing investors to increase asset risks of all kinds. Savers include pension funds, retirees, and insurers. Their investment strategies have assumed long-term returns well above what is currently available through the bond market. As these asset accumulators start to pay out, they find they are underfunded and reach for yield to try and catch up.

Some believe that the proper strategy at any given time is counter-cyclical, or that the government should only become involved when there is a liquidity trap and markets have frozen. During normal economic cycles a central bank would be an observer, collecting data and monitoring the environment.

When a central bank buys an asset it leaves the liquidity pool of traded assets. Once purchased it is unlikely to be sold. This creates a new dynamic for the market to absorb during a crisis. Will central banks sell assets and realize a large capital loss or will they hold the asset no matter what? The answer is likely somewhere in between. As long-term holders of assets, the supply pool reduces, lowering returns for buyers as they battle over fewer assets in the secondary market.

Regulations

The third tool that governments possess to manage the economy is regulation. There is a continuum between no regulations, laissez faire style, and forms of statism that are best represented today by North Korea. This too cycles in most countries, and a period of re-regulation started following the implosion of Enron in 2001 at the turn of the century (the last period moving away from regulation started in the late 1970s).²² Governments traditionally have allowed popular opinion to drive policy. During stable times regulations become lax, only to be built back up after an event. The regulatory environment is a contrarian indicator. Examples include the Smoot-Hawley Tariff Act of 1930 and the deregulation of banks since 1990. With debt-to-GDP metrics high, the financial system is currently fragile. Regulations are important, but government must also be careful not to create the event that triggers a financial market collapse.

Taxation is another form of corporate regulation. For example, in the United States group health insurance is deductible for corporations but most individual policies are not. This reduces mobility of the work force, as someone with a job and health care is uncertain of both if they resign.

²² Economist September 17, 2016 Special Report: Companies – Why Giants Thrive page 6

Regulatory capture occurs most often when a government agency, with good intentions, becomes too familiar with industry members and thinks of them as their constituency rather than the public. Regular turnover of quasi-government and government leadership helps to avoid this, along with limitations on individuals jumping directly between industry, government, and lobbying.

Common Drivers of Company Problems

Companies that build resilient, bend but don't break, structures using scenario analysis and stress testing as primary ERM tools are more likely to survive whatever the environment, economy and government throw their way. Companies tend to get into trouble when certain situations and choices, both internal and external to a firm, become pervasive. These include:

- Culture – ego and overconfidence leads senior management to discourage contrarian views
- Leverage – borrowing increases the likelihood that bad decisions will turn out poorly and even good decisions will have a poor outcome as the long time horizons assumed are not allowed to arrive. While company debt-to-equity ratios are the primary risk factor, government and other rolled up debt-to-GDP ratios can also drive down confidence in the system.
- Incentives – people do what they are paid to do
- Exposures – when a company has results with fat tails for poor results this increases the likelihood of insolvency against expectations
- Transparency – a lack of transparency is reflected in lack of trust when fear is in the air. An example during the financial crisis occurred when companies outsourced their decision-making to external experts (e.g., relying on rating agencies to rate mortgage backed securitizations)
- Contagion – when an industry, or the entire economy, is complex and interactive there is increased likelihood that risks will interact in unexpected ways

Historical insurer insolvencies

The capitalistic process of creative destruction allows companies to fail and new companies preferred by consumers replace them. Insurers have not been immune to this process, and while the percentage of companies is small there have been some high profile examples.

If not for the bailout of AIG's holding company based on massive exposure to mortgage backed securities and credit default swaps there would likely not be a discussion around insurers and systemic risk. Their actions, and those of their regulator, had large ramifications to the financial system and were well documented in the Financial Crisis Inquiry Commission Report. The insurance industry likes to point out that it was not any of the AIG insurance subsidiaries that drove the primary issue during the financial crisis, and that none of the insurance regulatory bodies were involved with regulating the credit default swap product. This is an argument for coordinated regulation, but ran into the politics of federal versus

state regulation and common practices in other countries where financial institutions have a single regulator.

AIG – credit default swaps

Within AIG Financial Products Division a credit default swap (CDS) product was developed to “insure” mortgage backed securities. A small charge, thought to be free money by AIG (and others), was paid. A high rating made AIG the counterparty of choice. Few outside a small circle of insiders were involved in this product. The counterparties to these CDS products were banks, and when it became clear that AIG would not be able to meet its commitments the bank regulators became involved much as they had for Bear Stearns and Lehman Brothers. If the counterparties had been manufacturers it is unlikely that a bailout would have been set up.

When insurers take on leverage, or quasi-leverage through derivatives and off-balance sheet liabilities, additional metrics need to be monitored. Rather than concentrate on net exposures, metrics such as gross exposure, notional value of derivatives exposure, or potential losses due to counterparty failure will need to be included in the formal risk appetite of the company. This type of analysis would have been especially helpful in the frauds at Barings and Societe General, where large gross exposures were hidden by fraudulent hedges. An exercise like the ORSA requirement in the U.S. could be especially useful if peer reviewed by risk experts. Confidentiality around company strategy is important to uphold in these cases, but there may be a group of independent peer reviewers who understand the issues and would agree not to discuss them.

Capital requirements, especially in the United States, are relatively high for insurers (especially life and health) for equity positions so are discouraged. Some European financial institutions required a capital infusion following the dot-com bubble and bust to meet liquidity needs, and this continued to be an issue in 2008.

In the current environment bubbles are rarely acknowledged in advance so remain a solvency risk if exposure at a company becomes high relative to surplus levels. Controls can be devised within an investment policy statement (IPS) to monitor these exposures as market values can change quickly.

Baldwin-United

Baldwin-United, a Cincinnati based piano maker, entered the insurance industry in the late 1960s. Its problems were largely due to growth in single premium deferred annuity sales coupled with high leverage. It backed some of its liabilities with bonds written by other subsidiaries. Creditors forced the firm, already being rehabilitated by insurance commissioners, into default.²³

Concentration in a liability without adequate asset-liability management, along with leverage, increased the risk of insolvency.

²³ New York Times September 27, 1983. Michael Blumstein. Baldwin, A Casualty of Fast Expansion, Files for Bankruptcy

Executive Life

Executive Life (based in California, with a subsidiary in New York) defaulted in 1991 due to rapid growth and a high percentage of investments in below investment grade bonds referred to as “junk”. Junk bonds can become illiquid when many owners are trying to simultaneously redeem, and this played a part in the default.²⁴

A concentrated position in a new asset class is risky, as historical data is not available for valuation purposes. An unrealized capital loss may be permanent or may not, but regulators must take the conservative view.

Mutual Benefit Life

MBL was exposed to illiquid asset concentrations in commercial mortgages, private placements, and real estate with limited diversification. A “run on the bank” of policyholder withdrawals highlighted a lack of ALM discipline, and the state of New Jersey took control.

Insurers often require less liquidity than other financial institutions, but concentration risk increases the likelihood of problems.

Confederation Life

Confederation Life was a Canadian company with US business using Michigan laws, but the required trust was not properly collateralized. It was messy but did not require guaranty fund involvement.

Long Term Capital Management

Long Term Capital Management was run by titans of finance, including Nobel Prize winners Myron Scholes and Robert Merton. While financial markets tend toward long-term equilibrium levels, there are times when supply and demand create imbalances. Long time horizons allowed them to buy mispriced arbitrages, investments like 29-year on the run Treasuries that were inconsistent with newly issued 30-year Treasuries. This would have worked, generating small profits over time, except the firm chose to expand using both leverage and broader strategies where they had less expertise. This eliminated the benefit of having a long time horizon, something ignored by their models. LTCM’s strategy picked up pennies and nickels in front of a steamroller, leveraging arbitrage opportunities to make outsized profits. Eventually leverage left them with little flexibility when spreads moved against them. The fund required a bailout in 1998²⁵.

In her book, *After the Fall*²⁶, Nicole Gelinas noted that “Long-Term Capital Management also showed that sophisticated models built by the world’s smartest people, backed up by the financial industry’s

²⁴ Society of Actuaries Atlanta Spring Meeting. May 24-25, 1999. Session 61PD. Insurance Company Failures of the Early 1990s – Have We Learned Anything?

²⁵ Lowenstein, Roger. *When Genius Failed*. Random House 2000.

²⁶ Gelinas, Nicole. *After the Fall: Saving Capitalism from Wall Street – and Washington*. Encounter Books 2009, page 108.

discretion, could not replace clear and simple limits on certain risks prescribed by laws and rules and enforced by average people.”

While not an insurer, LTCM showed how a stable firm could quickly become aggressive through leverage and an unrealistic risk culture.

What could get an insurer into trouble

Insurers bring skills from a unique combination of risk transfer, pooling exposures, and capital formation. The industry is a long-term saver that invests cash flows in the real economy. Insurance generally stabilizes the financial markets since it often has cash flow available to invest when others don't. During a crisis these required premiums facilitate asset purchases.²⁷ When insurers leave a market with no replacement, it is usually because the market is no longer sustainable. This may require government to become involved if the market (e.g., terrorism insurance) is deemed important to the economy.

There is no single way that financial institutions generate a crisis, and it may not even result in an insolvency of the entity (e.g., the AIG parent never ceased to function). Most financial events build up over many years, much like an avalanche. Why seek out the final snowflake that causes the complex structure to give way rather than look for activities that built up future instability?

Complicated systems are difficult to comprehend but follow a defined structure. Complex systems cannot be modeled directly, as their interactions across many scenarios are unknown and higher order interactions go unrecognized. Relationships between variables are rarely linear, and the scale of the system expands exponentially. Unintended consequences result even from seemingly straightforward events.

Some financial structures are modeled using a method called regime switching, where most of the time one loss distribution is used and other times another is used. Models sometimes do this to reflect higher volatility at certain times but generally it is designed to replace the extreme values of a distribution with a so-called fat tail. This overcomes the shortcomings of many distributions that are easy for a mathematician to use but don't reflect the actual empirical distribution. There is evidence that fat tails can be represented by a power law distribution.²⁸ When utilized in a copula, the covariance matrix varies to reflect higher correlations during a crisis event. These phase transitions can often better reflect the future than does past historical data.

Funding Structures

Some insurers have gotten into trouble in the past by taking on risk by using short-term borrowing to change the characteristics of the balance sheet. This increases investment yield by creating a mismatch with long liabilities or reducing liquidity. Tools used include commercial paper and repurchase agreements (repos). The rolling over of derivatives that are shorter duration than the liabilities they back, creating basis risk, also adds risk. This can be especially true when the market suffers a liquidity trap and

²⁷ www.iaisweb.org/file/34043/note-on-systemic-risk-and-the-insurance-sector page 3

²⁸ Silver, Nate. *The Signal and the Noise*. Penguin Press. 2012

counterparties for needed derivatives are absent. One program received attention during the financial crisis, securities lending programs, and deserves a more in-depth look.

Securities lending programs

To “juice” returns by a few basis points, companies could lend specific assets to someone selling the asset short, or to fulfill various arbitrage techniques or option trading needs. These transactions typically rolled over on a monthly or daily basis. It’s not clear how this was reflected in regulatory models like cash flow testing (if at all). Many insurers utilized this strategy, and it played a large role in the AIG bailout scenario²⁹ as its life insurance subsidiaries held larger exposures to RMBS assets than was apparent to stakeholders. By taking what was seen to be a low-risk, low return, business and reinvesting collateral in a risky asset, they effectively created a swap that was not transparent to the balance sheet. Using their high credit rating, AIG was able to become a major player in this market. AIG continued to ramp up its exposure to subprime securities even after the Financial Products Division started to reduce its exposure – a concentrated risk became worse even as some in the company reversed strategy. Once short sellers and others began to deleverage their portfolios and return the original securities the liquidity shortfalls became obvious.

Securities lending programs can be a useful tool to provide assets to those who need to borrow assets they don’t currently own and return a small compensatory amount to the lenders. By ramping up the program a company can increase its risk of insolvency. The key is transparency. Companies should report, even if only in a footnote to the financial statements, the exposure to securities that have been lent out as well as those purchased with those funds. A disclosure should point out their use throughout the reporting period, not just if the position was held at the statement date. The arguments to manage securities lending exposures are like those for high yield bonds or other alternative asset classes.

Incentives - Originate and distribute model

Incentives need to be aligned between those who create an asset and those who ultimately accept the risk. When originators are paid strictly on revenue growth and underwriting standards become lax by the risk owners, a problem is almost guaranteed. During the financial crisis mortgages were sold and then bundled, with no risk retained, to be distributed to investors who relied on others (mainly the rating agencies) to determine the risk. The rating agencies were compensated by the distributors, so were compromised as well. Although investors are a bit more wary today, this model has not been modified.

Macroeconomic conditions

Political comments about loss of government control during late 2008 and early 2009 impacted trust in the financial system and was likely pro-cyclical, making a bad situation worse. President George W. Bush’s “If money isn’t loosened up, this sucker could go down”³⁰ did nothing to build confidence. This type of

29 Per Hester Pierce at George Mason University

http://mercatus.org/sites/default/files/Peirce_SecuritiesLendingAIG_v2.pdf

30 Herszenhorn, D., et al. Talks Implode During a Day of Chaos; Fate of Bailout Plan Remains Unresolved. The New York Times. September 25, 2008. <http://www.nytimes.com/2008/09/26/business/26bailout.html>

systemic risk is very dangerous to the complex financial system, including the insurance industry. Coordinated loose fiscal and monetary policy, coupled with increased regulation and trade restrictions could lead to a loss of control of the economy, leading to stagflation, hyperinflation or a depression. Each of these would have ramifications not only to insurers, but also to other financial institutions and businesses. Insurers will not drive these results, but the current environment of easy credit, low interest rates and deficits causes uncertainty. Based on recent experience, the geopolitical environment has revived populism and its extreme views last seen prior to World War II.

In 2008, the insurance companies that got into trouble either insured municipal debt, were highly concentrated in a new asset class, used leverage of some kind, or doubled down with assets under management backed by liability guarantees.

Variable Annuities with internal assets under management

Variable annuities (VA) have been sold since the early 1980s, so using historical data to produce policy holder behavior assumptions is often not possible. Newer products, like indexed annuities and GMIB products that guarantee an income benefit even if returns are poor, have some of these same challenges, along with basis risk that creates a mismatch between assets and liabilities.

While no company went insolvent due to this strategy, a risk for insurers occurs when internal mutual funds are used to back variable annuity products. Under FAS97 GAAP accounting, initial expenses are amortized using profits, so when future profit assumptions are reduced there is a catch-up DAC (deferred acquisition cost) amortization. Since in this case profits are coming both from the Assets Under Management piece and the VA liability, this is an earnings risk with minimal cash flow risk if the dip is not permanent.

Insurers who double down with a product holding internal AUM vehicles should use conservative assumptions based on this risk, or refrain from using internal mutual funds.

Would current insurance resolution methods work in a crisis?

In the United States, McCarran-Ferguson (1945) allows states to regulate insurance. They have developed a series of guaranty funds, with NOLHGA (National Organization of Life/Health Insurance Guaranty Associations) and the property/casualty focused NCIGF (National Conference of Insurance Guaranty Funds) organized to provide assistance and get involved when insolvencies involve multiple states.

During an insolvency, guaranty funds assess writers in the state of issue for that product type based on premiums collected in addition to trying to rehabilitate the company and maximize the assets available to policyholders. These premiums are not collected in advance and are not risk adjusted. States differ in the amount, but a maximum per policyholder is guaranteed.

The insolvencies of the early 1980s (Baldwin United, Executive Life, MBL and Confederation Life) led to a change as large insurers discovered that the industry's reputational risk and consumer trust took a hit each time a guaranty fund was used. This led a few of the larger companies to provide an informal backdrop for the funds, buying the companies and generally making the policyholders whole. Other players, like Warren Buffett at Berkshire Hathaway, have provided capital to insurers and others alike

during times of tight liquidity. They are well compensated for providing this negotiated function, but it is not required that they do so.

The current Penn Treaty assessment highlights a couple of issues worth mentioning. One of the primary risks involved with long term care (LTC) policies is interest rate risk. Since the guaranty funds were formed, interest rates have been in a downward trajectory. Only recently have they shown signs of bottoming out. Continued low rates, or rapid spikes in rates, are the primary risk for deferred annuities. Future periods may not reflect historical risk. The Penn Treaty assessment is being applied to health writers even though LTC policies combine insurance and interest risk much as life insurance policies do. Pure health insurance is driven almost entirely by claims risk, but pure LTC insurers would be susceptible to contagion if assessments were not broader. The senior team at NOLHGA has been in place since 1999, and a broad internal review of the guaranty fund process would be valuable.

Going forward there are several alternatives that could make insurer insolvencies less certain to provide benefits to policyholders. If the burden were to fall exclusively on the guaranty funds, and especially if the insolvent firm was one of the largest in the country, it would be a challenge for them to provide the same level of protection as in the past. This would be mainly due to the lack of a risk-based collection of funds in advance. In fact the smooth running of the system in the past may have created moral hazard, with few really looking at the system to see where the cracks lie.

Reinsurance

The reinsurance market, where insurers buy insurance for business that exceeds their risk appetite, has worked effectively for many years. Transparency remains a key risk, with external stakeholders not fully aware of risks accepted. If a reinsurer became insolvent, the complex arrangements associated with counterparties, retrocessions, and cross ownership would be revealed. This could theoretically lead to a retrocession spiral or a domino effect. Industry interactions increase contagion risk. Occasionally only one reinsurer covers a specific product, increasing a form of concentration risk.

Captive reinsurers that are subsidiaries of non-insurers are unlikely to provide contagion risk for other companies. Those set up as insurance subsidiaries should stress transparency to stakeholders.

Financial reinsurance, where an insurer uses a reinsurance contract to change the timing of cash flows, is of great interest to regulators because these contracts can obfuscate the financial impacts of a business strategy. They want to be sure that something of value has been exchanged by both sides and that there is a true risk of loss by the reinsurer. A poorly written contract could delay insolvency and make a bad situation worse.

Climate scientists are projecting future weather events that are inconsistent, and generally more intense, than historical events. This is an example of an unknown known, where a known statistical claims distribution is no longer relevant and leads to poor decisions and potentially insolvency. This risk impacts

the entire industry, but the primary products impacted are repriced annually so it would be surprising to see an insolvency occur at a large firm.³¹

Some contracts have rating triggers, so when an insurer has its rating reduced it can trigger a liquidity run on its liabilities. Many insurer liabilities are illiquid, especially those that do not provide surrender benefits, but products like deferred annuities generate excess withdrawals during a crisis. New business may also be impacted as the perception of trust is impacted. If a situation at the insurer leads to this response it can push the insurer toward insolvency.

Investments

Despite internal Investment Policy Statements and board approved Risk Appetites, along with a multitude of regulatory requirements regarding investments, this is an area that has been a problem in the past for some insurers. This can result from new asset classes that do not perform as expected. Other issues could involve investments in other financial institutions (e.g., banks, hedge funds, mutual funds, brokers), increasing potential contagion risk if industry or specific company risks increase.

Asset classes like bonds and mortgages dominate insurer portfolios, so when interest rates are low as they are in the current environment there is a willingness to reach for yield, increasing credit, liquidity, mismatch, and other risks. Unless a company pursues a concentrated portfolio in an asset class where it does not have the requisite knowledge the risk is one at the industry level if everyone is doing the same thing and gets it wrong. This would be a great time for insurers to review the asset portfolio oversight process and make sure that it is independent and knowledgeable. Insurers have a contractual benefit that is unique to them as premiums must continue to be paid for many contracts to remain in force. This provides guaranteed cash flow and can help avoid asset sales during the worst times.

Asset-liability management encourages incoming and outgoing cash flows to be consistent. In low yield environments, duration can be less exact so multiple metrics should be used. It is very hard to match long duration liabilities with investments. Products like Long Term Care and structured settlements accept a reinvestment risk with limited compensation. This attempt to monitor Asset-Liability Management is counter to the banking philosophy, where demand deposits (liabilities) are typically invested in bonds and mortgages.

New asset classes are developed on a regular basis, and recently some have become extremely complex with little historical data to compare against. They are often sold as “sure things” for conservative investors. The key for investing in any new asset class is to start in moderation. Any products that uses “rules of thumb” to price, either assets or liabilities, deserves additional review.

If an asset class is predominately owned by the insurance industry, there could be contagion or concentration risk. Examples of asset classes susceptible to this are long-duration and below investment grade bonds.

31 <http://fortune.com/2016/09/20/global-warming-financial-crisis/> climate change driven problems for reinsurers

A short-sighted response could be to ban the use of derivatives. This ignores the optionality held by liabilities, but one option would be to require derivatives to be transparently used as hedges.

Misconduct

A rogue action by an individual, similar to Nick Leeson at Barings Bank, is possible at an insurance company but very unlikely. Asset purchases need to be reviewed by an investment committee, and similar controls exist for liabilities. It is more likely to occur at a small insurer, but such an event would not stress the entire industry.

Mark Carney, Governor of the Bank of England, says that the global financial system is vulnerable to misconduct by traders and bankers as well as from developments in financial technology. In a letter written to leaders of the Group of 20 he said, "The incidence of financial sector misconduct has risen to a level that has the potential to create systemic risks by undermining trust in both financial institutions and markets." Mr. Carney is also chairman of the Financial Stability Board, the global financial standards setter. He said the FSB was pursuing a major work program that would study both financial-system pay and the possibility of increasing individual accountability for bad behavior.³²

Moral hazard in a highly regulated industry can increase from the presence of a systemic risk regulator. Investors, consumers and other stakeholders may have a false confidence about existing oversight, while the next crisis is likely to be something different than previous historical crises. Today's U.S. system involving multiple regulators limits the insurer's ability to perform regulatory arbitrage and choose the least worthy. This is likely better than a single regulator beset by politics, lobbyists and a rules-based mentality to regulation.

Regulatory Driven Risks

Model driven capital requirements, using principles-based approaches as currently applied, tend to be procyclical. This means that they increase when insurers are looking for relief and reduce during stable times. This is driven by assumptions that reset to recent data, or are driven by market prices, rather than using a long-term assumption. Adding margins to assumptions does not solve this problem unless the margins are countercyclical. Overall this exacerbates a crisis.

Internationally, the Solvency II regulation is driving much of the discussion today. Here no stochastic modeling is performed, with a deterministic scenario using the risk-free curve for discounting. This example shows how efforts by one governmental group (regulation) interacts, with sometimes unintended consequences, with other efforts (monetary and fiscal policy). A new regulator, with limited insurance expertise, could potentially encourage some to take advantage of the weak knowledge set. This would be especially true if the audit team did not have broad experience in the insurance industry.

³² Verlain, Julia-Ambra. Wall Street Journal. September 1, 2016. Page C3.
<http://www.wsj.com/articles/misconduct-new-technology-threaten-global-financial-stability-carney-warns-1472641092>

Life insurance companies that sell annuities or life products are required to credit a minimum nominal interest rate. These regulations have been modified to reflect the lower level of nominal rates than in the past, but they were not designed for periods of negative interest rates as are currently being experienced in European countries. The supportable rate for new business has recently been lower than what is available in the marketplace for traditional assets due to current monetary policy. Business written in the past has higher guarantees, so policyholders have little incentive to surrender the policy. Products sold with secondary guarantees act like interest rate options in a low interest rate environment. Insurers should work with regulators to consider both low interest rate scenarios as well as scenarios where a spike in rates occurs. Filing requirements assume that an investment strategy remains stable for its lifetime, but liquidity benefits change and the investment strategy should too. A policy that has no deterrent (e.g., surrender charges) to withdrawal should be invested in a way that competes with the demand deposit that it is. Insurers should not rely on previous inefficient use of options granted when managing products.

Solutions could include deferred annuity spreads that vary based on the duration of the product. For example, when a policy is issued with a 7-year surrender charge, assets can be invested longer to match them but after seven years there is little to keep the policyholder from treating the account like a checking account. The credited rate and assets purchased should reflect that. To reduce this risk the guaranteed rate could either reset periodically or be set using real rather than nominal rates. If the U.S. were to experience negative rates, the NAIC (National Association of Insurance Commissioners) regulatory system should be able to handle that. It can't today because all regulations are based on nominal rates. If interest rates spike, many insurers will be hit hard by surrenders and capital losses on assets, but a low interest rate scenario that persists will be sure to create industry-wide risk in the life insurance, annuity, long term care and disability product lines. The NAIC should address this risk proactively and provide solutions.

Concentration

If many insurers utilized the same strategies, selling the same liabilities, buying the same assets, or using the same sales tactics, this would increase concentration risk for the industry. The largest insurers lead others toward specific product features, so if all started to sell an unsustainable product and it came to dominate the industry, this would be a large potential problem, with some contagion, but likely still not systemic to broader financial institutions.

Concentration of risk management tools, with most companies using the same risk metrics, can also lead to problems as risks are not transparent.

If the insurance industry consolidates further, and many firms are named systemically important, this could encourage moral hazard as there is comfort that someone will step in during a crisis to protect policyholders and other stakeholders. The markets watched this develop as the GSE (government sponsored entity) model lobbied politicians in the housing market. Big supposedly regulated firms become bureaucratic and more interested in optimizing returns and holding minimum required capital, than in building resilience and redundant capital.

How do insurers differ from banks?

Insurers tend to follow a more conservative investment policy statement than banks and rely more on internal credit analysis.³³ This provides conservative guidance that interacts with a focus on downside risk and liquidity rather than optimizing returns. Having a formal IPS, approved by the board, forces insurers to think in advance of various stress situations. Regulations encourage transparency but are not perfect, and high capital charges discourage equity type investments (especially for life insurers). This discourages many high flyers from entering the industry as there are easier theaters to operate in elsewhere. Operating earnings and contractually required premiums provide cash flow that makes insurers an asset purchaser when markets are down.

Insurance regulators are led by the state of domicile insurance department. Insurers can't choose their regulator (although some have re-domesticated to another state), but each one is a little different. This provides room to try new ideas in a limited way, and if successful other states will incorporate them. In addition, the NAIC Financial Analysis Working Group provides expertise on demand to coordinate and focus on companies in trouble (this could be expanded to include ORSA reviews and staff expanded to include independent risk experts). For a state to be accredited requires many model laws approved by the NAIC to be implemented. The 50 state models, with varying levels of staffing and financial support provided to the insurance department could be consolidated into a few well-staffed teams, but provides better variety of views on issues than a single regulator can.

Insurance regulation has traditionally been separated from banking regulation in the U.S., so the regulatory model was developed based on the specific needs of the insurance industry. Legislated limits avoid concentration of specific asset classes. Insurers are complex in different ways from banks, with much of the regulatory effort designed to avoid mismatches and concentration. The political lobbying at the federal level by banks does not occur to the same extent at the state level for insurers.

Insurers do not have as their primary method of funding a deposit scheme. Most of the assets at insurers can't be withdrawn without some type of charge, while cash is available on demand at a bank. The insurer is less likely to suffer a surge of withdrawals (run on the bank). Insurers have no role in the monetary or payment system. Checks are cleared through banks, while insurers have a one-off relationship with their customer. Because of the need to resolve bank insolvencies quickly and avoid a run, bank resolution must be done quickly. The FDIC (Federal Deposit Insurance Corporation) does a very nice job of this, but the longer time horizon used by insurers to close down and sell a company allows more bidders to participate.

Banks have recently started to complete regulatory derived stress tests, but with fairly short time horizons. The recent ORSA regulation requires insurers to disclose how they manage their capital and how they would raise funds, if needed, at the higher group level. Life insurers have utilized cash flow testing regulations for many years requiring them to run out the business until it is materially gone, often for 30 years.

While large banks are required to have a plan for stressful environments, insurers use guaranty funds set up at the state level. They are neither pre-funded nor risk-based, with the capability of contagion if a

³³ CFA magazine May 2012 Why U.S. Insurers Fared Better Than Banks, Max Rudolph and Rick Beard

large insurer becomes insolvent, so may not provide the peace of mind desired. By providing a safety net that has historically worked well, they may encourage moral hazard. Prefunded guaranty funds are not perfect, and fully funding them would leave assets vulnerable to political whims. There currently are annual caps on assessment levels to protect the surviving insurers from contagion.

Some insurance type products can be offered by others in the financial market with limited oversight. Hedge funds and private equity groups should be regulated in the same way as other insurers and not be allowed to avoid oversight or to choose their regulator. If it looks like a duck, and quacks like a duck, then regulate it as a duck.

Observations from other papers

When reviewing these papers on systemic risk as applied to the insurance industry, some of the information provided is misleading.

Weiss/Cummins

In their 2010 paper, Weiss/Cummins³⁴ present life insurers as highly leveraged but may not fully understand the differences between the accounting bases used by insurers. Statutory accounting is very conservative, and differs from GAAP in other important ways. When surplus is considered as a percentage of overall assets and there are deferred annuities (both general account and variable) in the block, these differences should be disclosed. In statutory accounting, deposits are considered premiums and are included in asset totals, while GAAP accounting uses only the profits earned from these sums so assets appear lower. Surplus is higher for GAAP due to the deferred amortization costs, and assets are lower. In statutory accounting, all acquisition expenses enter the income statement immediately. The authors compared statutory surplus to asset ratios with banks and casualty insurers, and concluded that life insurers are highly leveraged. This can be true if the assets and liabilities are not matched, but if they are it is highly misleading.

Not all companies file GAAP statements, so the data set used appears to include only statutory results. The results are reported in aggregate, while many firms do not have typical practices. There are many small insurers who reinsure all or nearly all of their exposure, so metrics like loss ratios distributions can vary widely. Other companies invest in unique ways relative to the rest of the insurance industry (e.g., Kaiser Permanente's real estate portfolio, Berkshire Hathaway's portfolio of fully owned companies, and State Farm's equity portfolio).

A better way of looking at the riskiness of life insurers versus casualty insurers would be to compare the overall industry's RBC ratio, reflecting how much surplus is held relative to a multiple of the risk-based capital that is required to be held.

The paper expresses concern with the liquidity of mortgage backed securities and private placement asset classes, but by looking at them in isolation assumes the liabilities they are backing can be fully

34 Cummins, J. David and Weiss, Mary.A. Systemic Risk and the U.S. Insurance Sector. September 14 2010. <http://fic.wharton.upenn.edu/fic/papers/11/11-07.pdf>

surrendered, which is not usually the case. These statements need to be put in context with the ALM program and needs of the liabilities. If the insurer does not need the assets until after they mature, why focus on their liquidity?

Insurer insolvencies are based on those reported by NOLHGA, but no mention is made that this data set is limited to insolvent insurers operating in multiple states and does not include companies like AIG that did not utilize state guaranty funds due to federal government bailout programs. While this data set may be the best available (AM Best has an alternative set but does not make it publicly available), qualitative comments would have been helpful. The data also suffers from a lack of insurer insolvencies, which is good for the industry but hard for statisticians to use the law of large numbers and make conclusions. A filter applied to the data to avoid low rated companies and those with small levels of assets under management, companies that would generally not be considered systemically important, leaves very few remaining insolvencies over the last 40 years. Most of those remaining were discussed earlier as specific case studies.

Using stock price movements to show that public insurance company stock movements are causal for similar movements in bank stock price movements seems happenstance. Why this would matter needs to be presented in a logical framework that is currently missing. The paper avoids talking about the current system of U.S. state regulation. There are pros and cons to state versus federal regulation which are not shared.

Billio

In a 2011 paper published in the Journal of Financial Economics, the authors use statistical methods to show that highly connected financial institutions suffered most during the Financial Crisis of 2007-2009. They also found those that impacted others fell more than those that were affected by others.³⁵

Office of Financial Research (OFR) 2016 Annual Report to Congress³⁶

The most recent report from the Office of Financial Research highlights the group's work during 2016. The OFR was created by Dodd-Frank and supports the FSOC while working within the Department of the Treasury. The focus is on their Dodd-Frank mandate, and primarily is applied to banks. As changes to Dodd-Frank are contemplated it would be a shame if the OFR was dissolved. Its goals of transparency and collaboration, and analysis of liquidity and concentrations, are to be applauded. It may be beneficial to allot a voting slot to someone representing the insurance industry and collaborate with industry education and research groups like the Society of Actuaries. It could also be more geographically diverse if it were open to defining systemic risk as impacting businesses and consumers (Main Street). Currently all staff is located in Washington, D.C., and New York City.

³⁵ Billio, M., et al., Econometric measures of connectedness and systemic risk in the finance and insurance sectors. Journal of Financial Economics (2012), doi:10.1016/j.jfineco.2011.12.010 <http://lfe.mit.edu/wp-content/uploads/2015/08/EconometricMeasuresConnectednessSysRisk2013.pdf>

³⁶ Office of Financial Research (OFR) Annual Report to Congress. <https://www.financialresearch.gov/annual-reports/2016-annual-report/>

The OFR could look to add additional insurance expertise to its skill set, especially at the senior level. At times the report refers to insurance and other times to life insurance, without defining what is and what is not included. Other references may not recognize differences between GAAP and statutory accounting or support understanding of the industry.³⁷ Statements like “a large and interconnected insurer could adversely affect U.S. financial stability” are made without facts backing them up.³⁸ Insolvency of a levered bank differs from that of an insurer. It is hard to imagine an insurer insolvency that pays its policyholders in full, or nearly so, creating systemic risk. When the example describing the insurance systemic risk creator is a non-insurance subsidiary of a bank holding company,³⁹ it shows that the argument for insurers creating systemic risk is weak.

The ALM expertise that life insurers have developed would be very useful to other financial institutions. Derivatives, for example, have differing risks depending on whether they are hedges or naked exposures. Stock holdings held in separate accounts do not directly impact an insurer’s solvency. Longer time horizons, consistently applied to all types of firms, would help to identify emerging risks entering the financial system. Liquidity events that cause insolvency would be better served by short time horizons applied to all firms consistently. When time horizons are applied ad hoc, an adjustment needs to be made to maintain consistent degrees of severity. A plausible scenario 18 months from now might be much more severe than a plausible scenario with a 15 year time horizon.

The report refers to insurer’s Own Risk and Solvency Assessment as a good start, then goes on to say that a consistent set of scenarios and reporting template are needed. “Own” risk means looking at what risks are important to an individual family of insurers, not an industry perspective. Consistent scenarios have been available since cash flow testing was required in the 1980s. The industry has moved away from regulator defined scenarios for a couple of reasons. A company often understands its risks better than an external stakeholder. When a rules-based regime determines the metrics that are important, companies manage to the metric.

When considering the financial system as a complex adaptive system, which is anything but linear, government actions become much more important. The OFR would be extremely valuable as an independent overseer of the financial system. A model could be the Congressional Budget Office which provides nonpartisan analysis. While lamenting that the metrics they look at tend to be lagging indicators, revealing themselves only after the stress has occurred, the OFR currently does not comment on leading indicators of systemic risk like debt-to-GDP or the quantitative easing programs that place government as a primary buyer of assets.

The Society of Actuaries could provide useful research to OFR. Meetings and seminars could be arranged around the ERM Symposium, which is the primary ERM seminar for the North American insurers, or the

³⁷ For example on page 12 the report refers to state guarantee funds, rather than state guaranty funds. It also states “The framework for resolving failed U.S. insurance companies is designed for individual firms and has not been tested for multiple large failures.” Although this paper suggests improvements to this system, not being tested is different from a failed system.

³⁸ OFR Financial Stability Report 2016. Page 58. https://www.financialresearch.gov/financial-stability-reports/files/OFR_2016_Financial-Stability-Report.pdf

³⁹ Ibid. page 63.

Investment Actuary Symposium where actuaries from various types of financial institutions and pension plans meet to discuss current issues.

Summary

Insurers lack involvement in the payment system, are not unique in their offerings, do not rely on interactions with other financial institutions, and have formed their own shield against insolvency using the guaranty organizations. This makes firms in the insurance industry unlikely to create a systemic risk on their own, but of course there is no guarantee. AIG got into trouble selling a niche product it did not fully understand with lax internal and external oversight. Although it was not regulated as an insurer for this part of its business, state regulators and the NAIC have sought to close this regulatory hole using the ORSA regulation. The challenge for stakeholders is to monitor a firm's risk culture and incentives.

Insurers create less systemic risk than banks due to proactive ALM techniques and products designed with restricted access to assets under management and required ongoing premiums. Assets purchased by insurers tend to have longer maturities than banks, and high capital charges discourage new asset classes. Regulation focuses on solvency, letting conservatism in financial statements drive company culture. A well-run insurance company tends to have redundant capital over minimums expected from stakeholders, while banks focus on return optimization and try to reduce capital to regulatory minimum. Insurers generally have board approved investment policy statements which guide them during times of crisis. This was very helpful during the global financial crisis as it provided a proactive road map for companies to use as for guidance.

Guaranty funds impose assessments as needed, but alternatively could collect funds on a risk-based formula in advance. This could be done using a national guaranty assessment "reinsurer". Insurers face insolvency due to factors like fraud and misconduct, unrestrained growth, and investment losses. Only when a single insurer offers a specific niche product does this limit options for substitution.

Reinstating a slimmed down version of Glass-Steagall that limited proprietary trading and combinations of investment and retail banking operations would not need to involve insurers in any way, although overall risk may be reduced by keeping insurers away from banking practices and culture.

Insurers are not immune to the process of destructive capitalism, but the exercise is often much less disruptive than for banks. The customer is viewed as the primary stakeholder by insurance regulators.

Reinsurers could see contagion with a rare combination of events that crosses previously diversifying lines of business. For example, if a major influenza pandemic occurred at the same time as a major Californian earthquake and European floods it would create a challenging scenario. Insurers are primary buyers of long term assets and could create a shortage of buyers if the industry was stressed. Transparency of reinsurer interactions and complex structures would reduce risk.

There are paths to insolvency that are difficult for a regulator to recognize. An insurer could become involved with an under-regulated insurance niche product, or they could try to hide risky assets using short term funding, derivatives, or off balance sheet liabilities. An insurer could write liabilities or buy assets where they don't fully understand the risks or how the risks interact. In any of these cases, a

sophisticated regulator of the holding company would negate the likelihood of systemic risk and contagion.

The current primary factor used to identify systemically important institutions, size, does not align with systemic importance. A large insurer could be allowed to fail and it would be expected to cease operations with little implication to the financial system.

An appropriate systemic risk definition would focus on the potential impact of a company, since new systemic risks are likely different from the past and hard for a consensus to identify in advance. The primary risks to insurers in the current environment are poor government regulation and fiscal/monetary policy that increases debt and eventually loses control of economic growth. Levers held by government tend to exacerbate volatility rather than rein it in. When bubbles are forming, they are not discouraged, and asymmetric policy adds money to the financial system but never clears the stimulus back to equilibrium levels. Better counter-cyclical regulation can limit the growth in hidden risks that only become transparent during a crisis and reduce the risk of moral hazard.

It is hard to imagine an insurer, or even the insurance industry, taking down either Wall Street or Main Street. If regulators continue their conservative stance and broad view of complex organizations through ORSA, the industry may participate in systemic risk but is unlikely to be a driver.

The OFR is a welcome addition if it is an unbiased facilitator of transparency and collaboration. The Society of Actuaries would welcome the opportunity to work with it to develop measures of risk for the financial system.

About The Society of Actuaries

The Society of Actuaries (SOA), formed in 1949, is one of the largest actuarial professional organizations in the world dedicated to serving 24,000 actuarial members and the public in the United States, Canada and worldwide. In line with the SOA Vision Statement, actuaries act as business leaders who develop and use mathematical models to measure and manage risk in support of financial security for individuals, organizations and the public.

The SOA supports actuaries and advances knowledge through research and education. As part of its work, the SOA seeks to inform public policy development and public understanding through research. The SOA aspires to be a trusted source of objective, data-driven research and analysis with an actuarial perspective for its members, industry, policymakers and the public. This distinct perspective comes from the SOA as an association of actuaries, who have a rigorous formal education and direct experience as practitioners as they perform applied research. The SOA also welcomes the opportunity to partner with other organizations in our work where appropriate.

The SOA has a history of working with public policymakers and regulators in developing historical experience studies and projection techniques as well as individual reports on health care, retirement, and other topics. The SOA's research is intended to aid the work of policymakers and regulators and follow certain core principles:

Objectivity: The SOA's research informs and provides analysis that can be relied upon by other individuals or organizations involved in public policy discussions. The SOA does not take advocacy positions or lobby specific policy proposals.

Quality: The SOA aspires to the highest ethical and quality standards in all of its research and analysis. Our research process is overseen by experienced actuaries and non-actuaries from a range of industry sectors and organizations. A rigorous peer-review process ensures the quality and integrity of our work.

Relevance: The SOA provides timely research on public policy issues. Our research advances actuarial knowledge while providing critical insights on key policy issues, and thereby provides value to stakeholders and decision makers.

Quantification: The SOA leverages the diverse skill sets of actuaries to provide research and findings that are driven by the best available data and methods. Actuaries use detailed modeling to analyze financial risk and provide distinct insight and quantification. Further, actuarial standards require transparency and the disclosure of the assumptions and analytic approach underlying the work.

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