

Anticipating New Sources of Systemic Risk in Insurance

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I. Introduction

Insurers played a central role in the 2008 global financial crisis. AIG – a holding company principally consisting of insurance businesses – was, by most accounts, a primary culprit in destabilizing the global financial system.³ AIG’s role in the crisis was rivaled to some extent by several financial guarantee (or “monoline”) insurers, which offered insurance against the default of various types of bonds but were unable to make good on their promises.⁴ Meanwhile, various large life insurance companies experienced substantial decreases in capital during the crisis, leading some to apply for federal bailout funds through the TARP program and many more to receive “regulatory relief” in the form of ad hoc changes in accounting rules.

As a result of these events, insurance regulation is in a state of flux worldwide. Historically, insurance regulation has centered predominantly on the goal of protecting policyholders by ensuring that insurers have sufficient financial capacity to pay claims. The financial crisis has raised the possibility that insurance regulation should also be attuned to limiting the prospect that insurance-related shocks could systemically threaten the larger financial system and the real economy. But the issue remains intensely controversial. While global sentiment seems to endorse the need for robust regulatory oversight of systemic risk in insurance, the embrace of this newly framed rationale for insurance regulation has been decidedly more lukewarm in the United States.⁵

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³ William K. Sjostrom, Jr, *The AIG Bailout*, 66 WASH. & LEE L. REV. 943 (2009).

⁴ Robert P. Bartlett, *Inefficiencies in the Information Thicket: A Case Study of Derivative Disclosures During the Financial Crisis*, 36 J. CORP. L. 1, 4 (2010).

⁵ Most of this chapter’s observations are not unique to the U.S. insurance industry, and thus should have broad relevance. And although we discuss certain issues primarily in the context of U.S.-based insurance regulation, even those observations should have salience outside the United States given the ongoing convergence of insurance markets and their regulation. The International Insurance Society’s 48th Annual Seminar in 2012 focused, for example, on “emerging insurance markets moving toward a more common approach to market structure, methods and regulation.” See <http://www.iisonline.org/forum/market-trends/> (last visited July 17, 2013).

This chapter suggests that the insurance industry can indeed pose systemic risk to the larger financial system. In doing so, the chapter emphasizes two points. First, it argues that there exist deep, substantial, and – most importantly – ever-changing connections between the insurance industry and the rest of the financial system. The most important such connection, we suggest, arises from the fact that insurers are among the largest investors in the world. Indeed, emerging evidence suggests that insurers were substantially responsible both for inflating the value of mortgage-backed securities prior to the crisis and in disrupting markets in these securities in the midst of the crisis. But this is hardly the only linkage between insurers and the rest of the financial system. For instance, insurers play a major and under-emphasized role in issuing financial guarantees to individuals through various life insurance products, such as Guaranteed Investment Contracts and Annuities with various guarantees. These connections are merely illustrative of our larger point: interlinkages between insurers and the rest of the financial system can, and often do, crop up in new and distinctive guises whose systemic significance is itself always changing, and thus cannot always be easily measured or dismissed in advance.⁶

Second, the chapter suggests that certain segments of the insurance industry are vulnerable to “black swan” events that may initially arise outside of the financial system. This is most clearly true for catastrophe events, which generally involve substantial correlated losses among policyholders within a short period of time. Such events could be particularly destabilizing for large swaths of insurers if carriers’ standard efforts to hedge, reinsure, or avoid these risks proved unsuccessful. Yet we argue that while risk-management strategies in the insurance industry effectively limit common forms of catastrophe risk, they are often poorly constructed to deal with tail-end forms of catastrophe risk.

Importantly, we argue that insurers’ inter-linkages to the larger financial system and their potential vulnerability to tail-end events are not simply the product of individual “too big to fail” firms, such as AIG. Instead, there exist pervasive correlations among individual insurance companies in their financial strategies, product design, and risk mitigation strategies, among others. These correlations stem from common economic features of insurance, insurance regulatory restrictions that apply to insurers, shared suppositions and strategies that are embedded within the culture of insurance executives and managers, and rational herding behavior among firms. But whatever their source,

⁶ See Testimony of Daniel Schwarcz, House Subcommittee on Insurance, Housing and Community Opportunity regarding “Insurance Oversight and Legislative Proposals,” November 16, 2011:

“The proposed legislation seems to ignore one of the central lessons of the 2008 Global Financial Crisis: that we do not always know what we do not know when it comes to systemic risk.... it enshrines the traditional view that insurance activities pose limited systemic risk and restricts the capacity of federal regulators to learn as they go and adapt to evolving research and knowledge. It does this by effectively exempting insurers from the heightened prudential standards that ought to apply to systemically risky firms, by limiting the tools available to federal agencies to investigate systemic risk within insurance companies, and by undermining the capacity of federal regulators to respond to facts on the ground that reveal the threat of systemic risk.”

these correlations mean that the insurance industry and its activities can distort markets in non-obvious ways that substantially contribute to systemic risk. Ultimately, these conclusions suggest the need for a regulatory structure that is adapted to anticipating, measuring, and mitigating existing and newly emerging sources of systemic risk in insurance.

II. The Traditional Narrative

The prevailing view, which predates the financial crisis, is that insurance, or at least traditional insurance, does not create or amplify systemic risk.⁷ Although various definitions of systemic risk exist, all emphasize the risk that an event will trigger a loss of economic value or confidence in a substantial segment of the financial system that is serious enough to have significant adverse effects on the real economy.⁸ This definition applies just as well in the insurance context as it does elsewhere.

The view that traditional insurance is not systemically risky is based on several claims. Perhaps the most important is that insurers have only limited interconnections with the larger financial system.⁹ The interconnectedness of financial institutions is one of the central criteria by which most regulators and analysts assess systemic risk.¹⁰ Unlike many financial intermediaries, insurers' funding traditionally stems principally from their policyholders, through their payment of premiums. Insurers have not historically depended substantially on other financial institutions to sustain, or even grow, their operations. From this perspective, policyholder premiums are a stable funding source because policyholders generally (though not always) are only free to withdraw monies on the occurrence of contractually-specified events, such as property destruction or death. These events do not have any relation to financial risk, it is generally thought, thus insulating insurers from the risk of a sudden funding shortfall stemming from financial panic.

⁷ See Scott Harrington, *Capital Adequacy in Insurance and Reinsurance*, in *CAPITAL ADEQUACY BEYOND BASEL: BANKING, SECURITIES, AND INSURANCE* 93 (Hal S. Scott ed., 2005); Richard Herring & Til Schuermann, *Capital Regulation for Position Risk in Banks, Securities Firms, and Insurance Companies*, in *CAPITAL ADEQUACY BEYOND BASEL: BANKING, SECURITIES, AND INSURANCE* 23–24 (Hal S. Scott ed., 2005). Robert W. Klein, *The Insurance Industry and Its Regulation: An Overview*, in *THE FUTURE OF INSURANCE REGULATION IN THE UNITED STATES* 28 (Martin F. Grace & Robert W. Klein eds., 2009); Geneva Association, *Cross Industry Analysis, 28 G-SIBs vs. 28 Insurers, Comparison of Systemic Risk Indicators* (Dec. 11, 2012) (hereinafter the “Geneva Report”); Mary A. Weiss, “Systemic Risk and the U.S. Insurance Sector” 2 (Feb. 23, 2010 unpublished draft), available at http://www.naic.org/documents/cipr_weiss_systemic_risk_100223.pdf.

⁸ One of us has proposed a more specific definition, which is along the same lines. Steven L. Schwarcz, *Systemic Risk*, 97 *GEO. L. J.* 193, 204 (2008) (defining systemic risk as “the risk that (i) an economic shock such as market or institutional failure triggers (through a panic or otherwise) either (x) the failure of a chain of markets or institutions or (y) a chain of significant losses to financial institutions, (ii) resulting in increases in the cost of capital or decreases in its availability, often evidenced by substantial financial-market price volatility.”).

⁹ See Geneva Report, *supra* note (arguing that insurers are “much less interconnected” to other financial services than banks).

¹⁰ It is one of three primary factors, along with size and substitutability, according to the FSB’s criteria. FSB (2009).

Another basis for the view that traditional insurance is not systemically risky turns on size, which is another major criterion by which regulators and analysts assess systemic risk.¹¹ Indeed, a major report by the Geneva Association, an industry-sponsored insurance think tank, argues that insurers are not systemically risky primarily because they are “significantly smaller” than banks.¹² Insurers in the United States had about \$7.1 trillion of assets on their books in 2011, whereas banks had \$12.6 trillion.

The third basis for the view that traditional insurance is not systemically risky turns on “substitutability.”¹³ Insurance is usually thought of as less uniquely essential to the operation of the economy than other types of financial services, such as banking.

At least in recent years, the prevailing sentiment has come to recognize a narrowly-framed exception to this view: “non-traditional” insurance activities, most now acknowledge, can indeed be systemically risky.¹⁴ This label is generally understood to encompass two activities. The first, which corresponds to AIG’s failure, is the writing of Credit Default Swaps, an insurance-like contract that protects counterparties against credit events.¹⁵ Such CDS’s – which have increasingly been used by insurers¹⁶ and, even more, by insurance-company affiliates¹⁷ -- are associated with the potential for a domino-effect collapse as a consequence of contractual interconnections.¹⁸ The second, which corresponds to monoline carriers, involves financial guarantee insurers who directly insure against the risk of defaults on bonds, other debt securities, and mortgages.¹⁹

¹¹ See *id.*

¹²The Geneva Association, Cross Industry Analysis, 28 G-SIBs vs. 28 Insurers, Comparison of Systemic Risk Indicators (Dec. 11, 2012) (hereinafter the “Geneva Report”).

¹³ Substitutability is another criterion by which regulators and analysts assess systemic risk. See FSB, *supra* note 10.

¹⁴ See Weiss & Cummins

¹⁵ In a CDS, one party (the credit or protection—seller) agrees, in exchange for the payment to it of a fee by a second party (the credit or protection—buyer), to assume the credit risk of certain obligations (the reference obligations) of a specified borrower or other obligor (the reference entity). If a credit event (for example, default or bankruptcy) occurs in respect of that obligor, the credit seller will either (a) pay the credit buyer an amount calculated by reference to post-default value of the debt obligations or (b) buy the debt obligations (or other eligible debt obligations of the obligor) for their full face value from the credit buyer. STEVEN L. SCHWARCZ, STRUCTURED FINANCE, A GUIDE TO THE PRINCIPLES OF ASSET SECURITIZATION § 10:3.1, at 10–16 (3d ed. 2002 & Supp. 2006) [hereinafter SCHWARCZ, STRUCTURED FINANCE].

¹⁶ “The top five end-users of credit derivatives are banks and broker-dealers (44 percent), hedge funds (32 percent), insurers (17 percent), pension funds (4 percent), and mutual funds (3 percent).” U.S. GOV’T ACCOUNTABILITY OFFICE, GAO-07-716, CREDIT DERIVATIVES: CONFIRMATION BACKLOGS INCREASED DEALERS’ OPERATIONAL RISKS, BUT WERE SUCCESSFULLY ADDRESSED AFTER JOINT REGULATORY ACTION 3 (2007).

¹⁷ See, e.g., Nadege Jassaud & Sebastian Schich, *Credit Default Swaps: Towards Tighter Regulation of the ‘Shadow Insurance Sector,’* in THE FUTURE OF INSURANCE REGULATION AND SUPERVISION: A GLOBAL PERSPECTIVE 171 (Patrick M. Liedtke & Jan Monkiewicz, eds. 2011) (observing that insurance-company affiliates are much more likely than insurers to sell protection under CDSs).

¹⁸ See Steven L. Schwarcz, *Regulating Complexity in Financial Markets*, 87 WASHINGTON UNIVERSITY LAW REVIEW 211, 235 (2009/2010).

¹⁹ See *supra* notes **Error! Bookmark not defined.-Error! Bookmark not defined.** and accompanying text.

III. The Insurance Industry's Potential to Generate Systemic Risk

As the global financial crisis vividly revealed, certain non-traditional forms of insurance, such as derivatives activities and monoline insurance of financial products, can contribute to systemic risk. But that is hardly the whole story. The connections between the insurance industry and the larger financial system are deep, pervasive, and perhaps most importantly, constantly evolving. At the same time, the insurance industry itself is susceptible to tail-end, catastrophic risk. For these reasons, efforts to conclusively define the parameters of potential systemic risks in insurance – which characterize much of the extant academic literature on insurance and systemic risk, as well as many policy discussions on how to regulate systemic risk in insurance – are both dangerous and misguided.²⁰

A. Interconnections Between Insurers and the Larger Financial System

1. Insurers as Owners of Financial Assets

Most discussions of systemic risk in insurance overlook or downplay the most important linkage between the insurance sector and the rest of the financial system when it comes to assessing systemic risk.²¹ This linkage involves the industry's position as a major owner of financial assets. The business of insurance requires taking in policyholder premiums and, at some later point in time, paying those premiums back to policyholders if an insured event occurs. As a result, insurers – and life insurers, in particular – are among the most important investors in financial securities in the entire financial system. One recent analysis concluded that insurers own approximately one-third of all investment-grade bonds²² and, collectively, own almost twice as much in foreign, corporate, and municipal bonds than do banks.²³

Insurers' collective role as primary purchasers of financial securities would not be systemically noteworthy were it not for the fact that their investment decisions – including what types of securities to invest in and when to offload securities from their books – are, in many cases, deeply correlated with one another. There are several explanations for these correlations. First, the business models of many insurers tend to favor certain types of securities. For instance, because life insurers' liabilities are very

²⁰ Cf. Iman Anabtawi & Steven L. Schwarcz, *Regulating Systemic Risk: Towards an Analytical Framework*, 86 NOTRE DAME L. REV. 1349, 1354-56 (2011) (arguing that systemic risk can be transmitted and amplified when low-probability adverse events that threaten firm integrity combine with interconnections among firms and markets in a financial system).

²¹ But see Viral V. Acharya et al., *On the Financial Regulation of Insurance Companies* [cite] (2009), available at <http://web-docs.stern.nyu.edu/salomon/docs/whitepaper.pdf> (arguing that insurance may be more systemically risky than commercial banks; because it is such a large part of investments, insurer downgrades can, and have, caused systemic harm); Robert F. Weber, *Combating the Teleological Drift of Life Insurance Solvency Regulation*, 8 BERKELEY BUS. L. J. 35, 53 (2011) (noting that the failure of a life insurer can trigger an asset fire sale, which can, in turn, “contribute to other fire sales in other corners of the market, in which case the effects of an insolvent insurer's sell-off are likely to be unpredictable.”).

²² Schultz, 2001.

²³ John Patrick Hunt, *Credit Ratings in Insurance Regulation: The Missing Piece of Financial Reform*, 68 WASH. & LEE L. REV. 1667 (2011).

long term, such insurers tend to invest heavily in long-term assets to attempt to limit asset/liability mismatch. Second, insurers generally face a complex array of regulatory rules that impact their investment strategies, including risk-based capital rules, and investment restrictions.²⁴ Although these rules are designed to ensure that insurers are able to pay their obligations as they come due, they have the side-effect of producing similarities in insurers' investment portfolios and decisions.²⁵ This is particularly true because these regulations often incorporate the ratings of private rating agencies, even after Dodd-Frank.²⁶ Third, insurers carefully safeguard their own financial strength ratings, which are produced by a small handful of rating agencies, many of whom use similar models of financial strength and claims paying ability.

Insurers' coordination of their investment strategies, when combined with their massive collective role as investors – can have potentially destructive consequences from a systemic risk perspective. First, such coordinated investment activity can inflate bubbles in certain securities or sectors related to those securities. Consider here a recent working paper that shows that life insurers were a core purchaser of mortgage-backed securities in the 2000s.²⁷ The central reason for life insurers' coordinated investments in mortgage-backed securities was that these instruments simultaneously returned a high-yield, but were treated as being of limited risk under prevailing risk-based capital rules, not to mention rating agency models of insurers' claims paying abilities. By investing heavily in these instruments, insurers played a central role in fueling the speculative bubble in mortgage-backed securities.²⁸ Such instruments would never have ballooned as they did if it were not for demand for these securities from investors. And, of course, distortions in the markets for mortgage-backed securities are largely understood to have been a central driver of the financial crisis writ large.²⁹

Second, insurers' coordinated investment activities can also ignite or exacerbate fire sales for particular assets that have systemic ramifications.³⁰ For instance, the actual or potential downgrading of the credit rating on a series of bonds can prompt large numbers of insurers to sell the downgraded (or about-to-be downgraded) bonds in a coordinated fashion, in order to avoid adverse regulatory or rating agency consequences. A recent paper in the *Journal of Financial Economics* found compelling evidence of just such a process.³¹ Studying insurer behavior between 2001 and 2005, the paper found evidence that insurers facing comparatively large regulatory constraints, because they were already operating close to regulatory restrictions regarding their investment

²⁴ See generally ROBERT KLEIN, A REGULATOR'S INTRODUCTION TO THE INSURANCE INDUSTRY 142-44.

²⁵ See Charles Whitehead, *Destructive Regulatory Coordination*, CORNELL L. REV.; Josh Mitts & Ian Aires, *Anti-Herding Regulation*, Working paper available at <http://islandia.law.yale.edu/ayres/Anti-Herding%20Regulation.pdf>

²⁶ Hunt.

²⁷ Craig Merrill, Taylor D. Nadauld, and Philip Strahan, *Final Demand for Structured Securities*, available at <http://ssrn.com/abstract=2380859>

²⁸ See *id.*

²⁹ See, e.g., CITE

³⁰ See Anabtawi & Schwarcz, *supra* note at 1372-73 & 1372 n. 92 (observing that fire sales are often key contributors to systemic risk).

³¹ See Andrew Ellul, Chotibhak Jotikasthira, & Christian T. Lundblad, *Regulatory Pressure and Fire Sales in the Corporate Bond Market*, 101 J. FINANCIAL ECON. 596 (2011).

portfolios, were more likely than other insurers to immediately sell bonds that were downgraded from investment-grade status. This process of forced-selling by regulatory-constrained firms caused the price of downgraded bonds to temporarily fall below their fundamental value.³²

In certain cases, this type of fire-sale caused by coordinated insurer selling of particular asset types can contribute to or trigger systemic risk. Recent evidence suggests that insurers contributed to distortions in mortgage-backed securities (RMBS) in 2008, when many insurers – facing similar regulatory and rating agency pressures -- attempted to sell these products at the same time.³³ In doing so, insurers contributed to the sudden illiquidity of these instruments. This, in turn, was substantially responsible for the failure or near failure of numerous investment banks, including Lehman Brothers, which was principally driven by the “toxic assets” on their balance sheets that could not be offloaded due to a sudden freezing in the markets for these assets.

A crucial, and largely overlooked, point regarding these interconnections between insurers and the rest of the financial system is that insurers’ role in stoking systemic risk through their coordinated investment activities need not involve mass failures or near-failures of numerous insurers. A dominant narrative in the debates regarding insurance and systemic risk argues that insurers other than AIG and the monoline carriers are not systemically risky because remarkably few insurers ultimately failed in connection with the global financial crisis.³⁴ But, in a way, this very fact is suggestive of why the industry can be systemically risky: despite helping to build the bubble in “toxic securities”, insurers seem to have collectively offloaded them at the first sign of trouble. Just like the first people in line during a run on a bank, insurers may have gotten through the financial crisis relatively unscathed, but that does not mean that they were not instrumental in causing the crisis in the first place.

Although insurers need not fail en masse in order for their role as investors to stoke systemic risk, the converse is not true: substantial failures of a series of insurers could well disrupt the financial system as a result of insurers’ status as massive investors. In many cases, an insurance company’s failure does not result in an immediate need for the company or its receiver to liquidate much of its portfolio.³⁵ But this is not necessarily true: an insurance company could be required to quickly liquidate its portfolio if it failed

³² Weiss and Harrington argue there are low cross-holdings between insurers’ and US banks’ investment portfolios. [cite] To that extent, fire sales of investment securities by insurers would not directly impact the value of investment securities held by banks. It may, nonetheless, indirectly impact that value, such as by depressing larger segments of the securities markets; and it might even trigger systemic risk through a market panic. See Anabtawi & Schwarcz, *supra* note **Error! Bookmark not defined.**, at [cite] (explaining how a market economic shock can become systemic). Furthermore, Cummins and Weiss observe that European insurers and banks may have high cross-holdings. [cite] That suggests not only that the systemic risk of insurer fire sales may be greater in Europe but also that the (arguably) currently low US cross-holdings may fluctuate and become greater.

³³ See Craig B. Merrill, Taylor D. Nadauld, Rene M. Stulz, & Shane Sherlund, “Did Capital Requirements and Fair Value Accounting Spark Fire Sales in Distressed Mortgage-Backed Securities?,” NBER Working Paper No. 18270 (Aug. 2012).

³⁴ See, e.g., GAO Report on insurers and financial crisis.

³⁵ See Peter Gallanis, NOHLGA.

due to a catastrophic event triggering unmanageable numbers of claims, due to a failure of a reinsurer, or due to a “run” on products that permitted policyholders to withdraw funds or take out loans against the policy. In each of these cases, an insurer or receiver would be required to quickly liquidate a substantial portion of the carrier’s portfolio. If many insurers simultaneously experienced this type of distress – which is not unlikely given correlations in carriers’ catastrophe exposures, product features, and reinsurance portfolios – this could trigger, or exacerbate, the types of distortions in capital markets that were witnessed in 2008.

Ultimately, then, there is strong newly emerging evidence that insurers played a major and under-appreciated role in the crisis of 2008 by virtue of their role as investors in mortgage-backed securities. Of course, this evidence – like much about the financial crisis – is still uncertain and requires further research and assessment. But the point here is not (just) that insurers did, in fact, contribute to systemic risk in our most recent global financial crisis through their role in stoking demand and triggering fire sales in mortgage-backed securities. Rather, the point is that insurers, as massive investors who often act in a coordinated fashion with respect to their investment appetites and decisions, play an important role in the global financial system, and in the potential accumulation of risk in that system.

2. Insurers’ Guarantees Against Financial Risk

As described above, much has been written acknowledging that insurers or their affiliates can contribute to systemic risk to the extent that they engage in “non-traditional” insurance transactions. This is generally understood to encompass writing Credit Default Swaps and issuing financial guarantee insurance, both of which involve insurers directly insuring against financial risk.

Remarkably, however, the most common and widespread category of financial guarantees that insurers provide is generally left out of this description. A substantial percentage of life insurers’ premiums are currently attributable to products that are principally investment-oriented and that guarantee contractually-specified investment returns to policyholders. Examples include variable annuities, fixed indexed annuities, and guaranteed investment contracts. Perhaps the most stark example of this – which illustrates how insurance products can morph into financial guarantee products – is the contingent deferred annuity, wherein a carrier guarantees that an investment vehicle chosen by the policyholder and maintained independently of the insurer (such as a 401(k) or mutual fund) will yield contractually-specified payments for the remainder of the policyholders’ lifetime.³⁶

To be sure, there are a number of important distinctions between this set of commonly offered products and the CDSs and financial guarantee insurance described earlier. But none of these distinctions clearly establish that these commonly-sold financial guarantee products do not pose systemic risk. One important distinction between these two sets of products is that the policyholders who would lose out in the

³⁶ See NAIC Contingent Deferred Annuity Subgroup.

event of an insurer's inability to pay are individuals rather than financial entities. But the wide-spread failure of investment guarantees to individuals could easily produce systemic consequences: popular outrage could necessitate the federal bailout of policyholders (bailing out main street rather than wall street) and disappeared retirement savings could trigger unanticipated mortgage and credit card defaults, a sudden uptick in the need for social services, or labor market distortions as newly retired individuals attempted to re-enter the job market.

Another important distinction between these financial guarantee products and those implicated in the crisis is that, in most of these products, the embedded financial guarantees provided by insurers are long-term. Of course, this need not, and is not always, true: Many insurance products offering financial market guarantees permit policyholders to cash out at specified times. Whatever the prevalence of such options is today, it is unclear what they will be in the future. Nonetheless, the long-term nature of these investment guarantees is likely the primary reason why these types of products did not fail in the crisis of 2008. Although recovery from the 2008 crisis has in many ways been slow, the crisis was characterized by a robust and relatively quick rebound in the value of most financial instruments, particularly equity markets. But this need not always be true: some financial market collapses are characterized by a long and sustained drop in the value of financial instruments. In such cases, the long-term nature of insurers' financial guarantees could end up substantially exacerbating the consequences of a financial crisis and extending it in to the future.

3. Other Potential Linkages Between Insurers and the Financial System

Insurers' existing – and potential – connections to financial markets are hardly exhausted by their roles as investors and guarantors of investment performance. Various additional linkages exist. In some cases, the magnitude of these interconnections is not currently sufficient to raise systemic risks. In other cases, it is hard to know how even to measure the systemic implications of these connections. But both of these statements could almost certainly have been made about insurers' (and their affiliates') participation in credit default swaps ten years ago.

Insurance Companies within Complex Financial Services Groups. Insurance companies are increasingly part of financial services conglomerate groups that provide an array of financial services, including banking and broker/dealer services.³⁷ This creates the prospect that insurance company failures or distress could have serious consequences for non-insurance financial firms within the conglomerate. Risks are much more likely to spread among corporate affiliates than among independent firms operating at arm's

³⁷ Houben & Teunissen, *supra* note at 254 & 258 (noting that euro area insurers' financial assets have almost doubled in the last decade and that many hedge funds and private equity groups are managing assets owned by insurers). In part, the rationale for the rise in conglomeration is to exploit synergies between financial services and parents' businesses and also to take advantage of economies of scale and scope. Some firms also hope that business diversification would reduce their earnings fluctuations. Gordon F. Boreham, *The Rise of Non-Bank Financial Conglomerates: A Major Trend*, SERVICE INDUSTRIES J. 95 (Oct. 1989).

length.³⁸ For instance, new empirical research shows that life insurers that are in financial distress tend to receive large capital contributions from other entities within their group and that this effect is concentrated in groups with a large number of affiliates.³⁹ A related concern is that the holding company or other affiliates might be motivated to take risky actions, effectively supported by (and thus taking advantage of) government-backed guarantees of insurers. Although this concern is commonly cited in banking regulation,⁴⁰ it is also a concern in insurance, where explicit state guarantee funds, and potentially implicit federal guarantees in the event that state-guarantee funds fail, would seem to create a similar type of moral hazard among affiliates.⁴¹

Insurance-linked securities. Insurers increasingly rely on financial markets to take on catastrophe risk. The most prominent example of this is catastrophe bonds, issued by insurers.⁴² Catastrophe bonds pay principal and interest to investors after a contractually specified term; but, unlike ordinary bonds, the issuer's obligation to repay principal or interest on a catastrophe bond is forgiven if contractually-specified catastrophic events occur within the bond's term. This makes catastrophe bonds unusually risky for investors: investors are at substantial risk of losing their entire investment if a catastrophe bond is triggered.⁴³ Investors are nonetheless willing to invest in catastrophe bonds because they assume that their returns provide investment diversification, displaying little or no correlation to the returns of shares and conventional bonds.⁴⁴ Thus, the probability of a hurricane hitting a major urban area is not impacted by the prospect of instability in financial markets.

³⁸ See Richard J. Herring & Anthony M. Santomero, *The Corporate Structure of Financial Conglomerates*, 4 J. FIN. SERV. RES. 471, 477–480 (1990).

³⁹ See Greg Niehaus, *Managing Capital and Insolvency Risk via Internal Capital Market Transactions: The Case of Life Insurers* (Dec. 2013, working paper).

⁴⁰ See Herring & Santomero, *supra* note 38, at 480. U.S. bank regulation attempts to address this concern most directly through section 23A of the Federal Reserve Act, which restricts transactions, such as lending, between federally insured deposit-taking banks and their nonbank affiliates. See generally Saule T. Omarova, *From Gramm-Leach-Bliley to Dodd-Frank: The Unfulfilled Promise of Section 23A of the Federal Reserve Act*, 89 N.C. L. Rev. 1683, 1686 (2011).

⁴¹ To be sure, insurance regulations attempt to “ring-fence” insurance companies by requiring disclosure and approval of all material affiliated transactions. New state rules also attempt to enhance the power of regulators to demand information about insurers’ affiliates and also attempt to enhance group supervision by requiring that an ORSA be completed at the holding company level. But it is an open question whether these changes will be enough to reverse the clearly inadequate appreciation that state regulators had pre-2008 of risk to insurers posed by their affiliates. Moreover, all of these approaches to ring-fencing are directed to protecting insurers from risks arising from their affiliates. None of them are directed at the opposite threat: the prospect that distress might spread to an insurance affiliate from an insurer. *Ring-Fencing*, *supra* note 38.

⁴² There also appears to be growing investor interest in debt securities operating as reinsurance of other insurable risks, including mortality and terrorism. See *EdF's Pylon Makes First European Corporate Cat Bond*, 834 EUROWEEK (2003); *Capital Markets Shield AXA from Extreme Mortality Risk*, 978 EUROWEEK (2006).

⁴³ *Regulating Insurance Sales or Selling Insurance Regulation?*, *supra* note **Error! Bookmark not defined.**

⁴⁴ See Christopher M. Lewis & Peter O. Davis, *Capital Market Instruments for Financing Catastrophe Risk: New Directions?* 110 J. INS. REG. 17, 114 (1998) [check cite]; Angelika Schochlin, *Where's the Cat Going? Some Observations on Catastrophe Bonds* 100 J. APP. CORP. FIN. 14, 102-03 (2002) [check cite].

Currently, investment in catastrophe bonds is not significant enough to be systemically risky, amounting to about seven billion dollars a year. But analysts expect that the size of this market could increase substantially in upcoming years and, in fact, recent years have seen exponential growth in these types of financial instruments.⁴⁵ Moreover, catastrophe bonds could well create important linkages between insurance and other financial markets because financial market risk and insurance underwriting risks are not always uncorrelated, as most assume. Various types of events could conceivably simultaneously trigger instability in financial markets and insurance markets. Consider, for instance, a global pandemic. Such an event would trigger payment on unprecedented numbers of life insurance policies. But it could also trigger financial panic by, for instance, triggering mass withdrawals of deposits or a collapse in stock markets due to sharp reductions in consumer consumption. And even otherwise uncorrelated financial and underwriting risks might, over a large period of time, simultaneously occur simply as a matter of chance.

Another type of insurance-linked security that could potentially create important interlinkages between insurance markets and other financial markets are life insurance and annuity-backed securities. Financial firms have recently been purchasing rights under life insurance policies and annuities from policyholders.⁴⁶ In some (and perhaps many) cases, policyholders have actually purchased life insurance or annuities after being contacted by a firm that has offered to fund this insurance purchase. However these rights are acquired, financial firms repackage the rights into securities that are then sold to investors.⁴⁷ Just as with mortgage-backed securities in the financial crisis, there are various conceivable channels through which securities backed by these insurance rights could trigger systemic risk. For instance, widespread devaluation of these securities through insurer insolvencies or unanticipated and substantial changes in mortality rates could expose investors in these securities, as well as the financial firms that acquire, repackage, and sell the securities, to serious losses.

Insurance as a prerequisite to Credit: Insurance plays a crucial role in secured lending of all types. When lenders take a security interest or mortgage in collateral, they generally require the borrower to maintain insurance on the property throughout the duration of the loan. On a superficial level, the reason that lenders require such insurance is obvious: they want their collateral protected so that, in the event of default, they can look to that collateral for repayment. An important component of this explanation is that insurers are comparatively well-situated relative to investors to measure and manage the

⁴⁵ Rodd Zolkos, *Catastrophe Bond Market Poised for Record Issuance in 2013*, Report, BUSINESS INSURANCE (May 9, 2013).

⁴⁶ NY Times Article (“The bankers plan to buy “life settlements,” life insurance policies that ill and elderly people sell for cash — \$400,000 for a \$1 million policy, say, depending on the life expectancy of the insured person. Then they plan to “securitize” these policies, in Wall Street jargon, by packaging hundreds or thousands together into bonds. They will then resell those bonds to investors, like big pension funds, who will receive the payouts when people with the insurance die.... Goldman Sachs has developed a tradable index of life settlements, enabling investors to bet on whether people will live longer than expected or die sooner than planned....some in the industry predict the market could reach \$500 billion.”).

⁴⁷ As above, one of the draws of this type of financial product to investors is the perception that the risk of non-payment is not substantially correlated with other forms of market-wide risk.

risks associated with the prospect of damage to property. Indeed, this is the core business of property insurers.

If disruptions in property insurance markets suddenly made unavailable property insurance of various types – such as homeowners, commercial property, auto collision and comprehensive, commercial auto – the result could be substantial disruptions in the credit markets that rely on these forms of property to extend credit.⁴⁸ Financial institutions that specialize in evaluating credit risk would not be equipped to merely lend without insurance on the collateral, as it would be nearly impossible for them to appropriately price this risk and manage the prospect of moral hazard.

B. Vulnerabilities of the Insurance System to Tail-End Events Arising Outside of the Financial System

As noted above, insurers' various existing and potential linkages to the broader financial system have the potential to generate systemic risk even in the absence of widespread instability within the insurance industry itself. But, of course, many of the linkages between insurers and the rest of the financial system described above create the prospect of systemic risk only to the extent that the insurance industry itself is subject to the prospect of widespread instability. We suggest below that the insurance industry is indeed subject to such tail-end risk. In doing so, we emphasize tail-end risk that could arise outside of the financial system as an initial matter. Importantly, however, insurers can also be impacted by tail-end risk that could arise from other segments of the financial system itself, including investment risk, inflation risk, and interest rate risk. Because the mechanisms for insurers to be impacted by this risk involve the interconnections between insurers and the remainder of the financial system discussed above, we do not focus on these issues here.

(1) Catastrophe Risk

Catastrophe risk arises when individual policyholder losses are correlated, resulting in large numbers of policyholder claims being made within a short period of time. In many cases, insurers actively strive to limit their exposure to catastrophe risk precisely because they face substantial limitations in their ability to raise sufficient funds to pay unexpectedly large numbers of policyholder claims within a short period of time. Some of the most important mechanisms by which they attempt this include excluding catastrophe risk exposure in their insurance policies, diversifying their exposure to catastrophes, and transferring some of their catastrophe risk to reinsurers.

Despite these efforts to manage catastrophe risk, insurers' exposures to catastrophe risk can conceivably be quite large. Some insurers, for instance, do surprisingly little to mitigate catastrophe risks that have not occurred in the recent past, consistent with the commonly-understood behavioral bias, the availability heuristic.

⁴⁸ Cummins and Weiss argue that small insurers would fill in gap and note that large corporations have many insurance substitutes. But this depends on how large of a disruption there was in the underlying insurance markets.

Consider, for example, the risk of a global pandemic on the order to the Flu of 1918, which killed between 20 to 40 million people within a single year. Such an event could result in massive losses to life insurers who would owe immediate payment on their life insurance policies. But unlike property insurance policies, life insurance policies do not contain coverage exclusions for such a tail-end event.

In other cases, insurers fail to properly limit their exposure to catastrophes because they do not even consider the possibility of the catastrophe occurring until it does. The best illustration of this point involves terrorism insurance. Prior to 9/11, commercial property insurance policies did not contain any explicit exclusions for terrorism insurance and insurers did not even include this risk in their calculations of premiums. After 9/11, insurers insisted that the terrorism risk was so large and incalculable that they could not provide coverage at all, at least without an explicit federal backstop. Although the massive losses that insurers incurred in connection with 9/11 did not substantially destabilize the industry, insurers' sudden and dramatic shift in their willingness to provide this coverage suggests that they might well have had events transpired differently. Moreover, although it is rarely framed as such, the resulting Terrorism Risk Insurance Act – which provided an immediate federal reinsurance backstop for terrorism risk – essentially amounted to a federal bailout of the industry: without any charge to carriers, the federal government now reinsures most commercial terrorism risk.

It is obviously difficult, if not impossible, to predict what future catastrophes might occur that the industry has failed to adequately anticipate or guard against. One potential example, though, involves the burgeoning market of cyber insurance, which protects firms against various risks associated with data breaches, network damage, and cyber extortion. Interestingly, these policies generally do not contain any exclusions for cyber terrorism or mass and widespread cyber-instability. Given the increasing and unpredictable threat of cyber terrorism, it is not difficult to imagine that this type of risk exposure could produce massive correlated losses for a large segment of the insurance industry. Notably, such an event would almost certainly independently and simultaneously trigger wider financial instability.

2. Reinsurance Opacity and Interconnectedness

One of the most important ways that insurers attempt to mitigate their exposure to catastrophe risk is by ceding much of that risk to reinsurers, who are comparatively well situated to diversify catastrophe risk around the globe. Both property/casualty and life insurers rely extensively on reinsurance to mitigate their catastrophe risk.⁴⁹ For instance, U.S. insurers ceded slightly more than 100 billion in premiums to unaffiliated reinsurers in 2009. This amount roughly approximates the expected recoverable catastrophe cost to reinsurers in a single given year: the potential recovery from reinsurers in the event of a massive catastrophic event or series of such events is obviously much larger. This value of reinsurance is reflected not only in insurers' business operations, but also in their

⁴⁹ [cite]

regulatory treatment: insurers are generally able to avoid accounting for policyholder risk through reserves and capital requirements when that risk is transferred to a reinsurer.

At the same time that reinsurance reduces insurer risk, it also introduces new risk due to the prospect that reinsurers will be unable to follow through on their reinsurance obligations. Insurers are forced to bear this risk, because they are legally obligated to pay policyholder losses even if the underlying risks were transferred to reinsurers who failed to make good on their own obligations. Of course, if insurers themselves are unable to pay claims due in part to reinsurer failure, then policyholders will indeed ultimately bear the consequences.

Reinsurer counterparty risk exposes the insurance industry to substantial vulnerabilities that, in many ways, resemble the counterparty risk that investment banks were exposed to as a result of their derivative activities. First, the concentration of the reinsurance industry creates deep and substantial interconnections, such that the failure of one or two major reinsurers could simultaneously impact a substantial segment of the insurance industry at once.⁵⁰ The reinsurance industry is extremely concentrated in a few massive firms, such as Swiss Re, Munich Re, and Berkshire Hathaway.⁵¹ In 2009, for instance, five reinsurance groups provided approximately 60% of the world's reinsurance capacity. Concentration in the reinsurance industry, moreover, is only trending upwards due to mergers and acquisitions as well as organic growth.⁵²

In addition to generating substantial interconnections within the insurance industry, reinsurer counterparty risk is incredibly opaque – as were the derivative markets that contributed to the financial crisis.⁵³ Because reinsurance is an international business – the largest companies are located in Europe and Bermuda – there is a lack of uniformity about the ways in which these companies are regulated.⁵⁴ Not only does this mean that it is hard to know how much regulation directly limits default risk through tools such as reserve and capital requirements, but is also means that it is hard to acquire consistent financial data on different firms. As an important 2006 G-30 report explained, “[t]he risk information published by reinsurers varies significantly across firms in both frequency and scope” resulting in a “widespread perception that publicly available information

⁵⁰ Cummins & Weiss, [cite] (“Reinsurance is the primary source of interconnectedness within the insurance industry.”); Acharya, et al., [cite] (2009), (“The reinsurance market increases the interconnectedness of the system exponentially and therefore might increase the systemic risk in the overall market” because of the “bilateral [relationship] in nature and [the lack of] adequate risk controls due to the opacity of bilateral markets”).

⁵¹ Although regulators have downplayed the risk posed by reinsurers, they admit that “high degrees of market concentration in the reinsurance sector could *everything else being equal* raise sector interconnectedness and limit the degree of substitutability . . . [and thus] potentially raise intra-industry concerns.” International Association of Insurance Supervisors, *Reinsurance and Financial Stability* 16 (July 2012) (emphasis in original).

⁵² J. David Cummins & Mary A. Weiss, *Systemic Risk and the U.S. Insurance Sector* 26-27 (2011).

⁵³ Park & Xie, [cite]. There is a serious lack of transparency associated with the risk of reinsurance transactions due to the international nature of reinsurance companies and lack of standardized prudential supervision. Cole & McCullough, [cite] (2006); Rossi & Lowe, [cite] (2002); Acharya, et al., [cite] (2009).

⁵⁴ M.-L. Rossi & N. Lowe, *Regulating Reinsurance in the Global Market*, 27 THE GENEVA PAPERS ON RISK AND INSURANCE – ISSUES AND PRACTICES 122 (2002).

about both the financial state and the risk profile of reinsurance companies is in many cases inadequate.”⁵⁵

Complicating matters further is the fact that reinsurers are subject to a number of deeply complex risks. Because they rely extensively on catastrophe models to price coverage, reinsurers face a substantial amount of model risk.⁵⁶ Yet catastrophe models are not notoriously difficult to assess and controversial. Moreover, as with all models, they rely on historical data to predict future risk, which (as reliance on historical housing data showed) is inherently risky.⁵⁷

All of this makes it very difficult for anyone – including insurers, creditors of reinsurers, credit rating agencies, regulators, and even reinsurers themselves – to accurately gauge reinsurer default risk. To be sure, two quite limited stress tests have found that, despite the various factors above, the failure of a major reinsurer would not substantially impact primary insurers. First, a stress test by the G30 conducted in 2006 concluded that the failure of a major reinsurer, representing 20% of the global market, would expose primary property/casualty insurers to losses of only 2 to 2.5% of global non-life premiums. This conclusion was driven by the fact that only 11% of such premiums are ceded to reinsurer world-wide. Meanwhile, the report speculated that any shortage of reinsurance would likely be short lived given low market entry barriers and the capacity of remaining reinsurers to make up lost capacity. Second, a more recent, post-financial-crisis, analysis similarly concluded that the failure of a major reinsurer would not have a massive impact on primary insurers, resulting in only a small number of primary carriers (approximately 30) experiencing their own rating downgrades.

These simulations may, however, do not establish that reinsurance cannot contribute to or cause systemic risk. Both simulations model the impact on primary insurers of an exogenous shock on reinsurers. But, of course, insurer and reinsurer results are deeply correlated: both insurers and reinsurers are deeply impacted by underwriting cycles, financial market conditions, and catastrophic losses. Thus, any instability to insurers arising from reinsurance counter-party risk would almost certainly be paired with other sources of stress to insurers. Additionally, both simulations implicitly assume that instability at one reinsurer would not be correlated with instability of other reinsurers. This may also not be a realistic assumption: even ignoring the fact that reinsurers rely on similar risk models and are exposed to similar catastrophe risks and market conditions, the industry is subject to the prospect of correlated instability among reinsurers due to the prospect of a retrocession spiral.

⁵⁵ G30 at 6.

⁵⁶ See, e.g., *Regulating Complexity in Financial Markets*, *supra* note 18, at 217 (discussing model risk).

⁵⁷ Reinsurers are subject to liquidity risk. G30 report at 24. Additionally, reinsurers face their own form of counterparty risk due to their practice of purchasing reinsurance from other reinsurers (a process known as retrocession). This process can result in “retrocession spirals,” wherein the failure of one reinsurer exposes other reinsurers to loss, potentially compromising their ability to pay as well. This possibility was vividly displayed in the 1990s when a chain of Lloyds syndicates failed as a result of having passed risk back and forth among them. London XL SPiral

Much more importantly, these analyses assess the vulnerability of the reinsurance system at a specific point in time. Our point here, and the relevant point for assessing systemic risk (at least from the perspective of designing an overarching regulatory architecture) is whether the structure of the underlying system is capable of becoming systemically significant in the future. Our point here is not necessarily that the reinsurance industry could or would collapse in the event of a series of tail-end catastrophic events. Rather, it is that the structure of that industry makes it intrinsically susceptible to the possibility of such a collapse in the future.

3. Policyholder Runs and Guarantee Fund Structure

The insurance system may also be vulnerable to policyholder runs, a risk that could well increase in the future depending on developments in insurance policy design. In many types of insurance, insureds “only have a right to demand payment on the occurrence of a contractually specified event. This minimizes the risk of a “run” on an insurer.”⁵⁸ But this is not true of many life insurance products. Life insurance products often allow policyholders to borrow against their policy or cash out their savings.⁵⁹ As a result, policyholders who become concerned about their carriers’ solvency can demand withdrawals, producing a downward spiral analogous to those found in classical bank runs—in which some bank depositors panic, converging on the bank in a “grab race” to withdraw their monies first.⁶⁰

Although the risk of a run on a life insurer is well understood, it has historically been downplayed because of the substantial fees typically associated with a policyholder deciding to surrender or borrow against a policy.⁶¹ But there is good reason to believe that this barrier to withdrawal is currently changing and will continue to change. Recently, life settlement companies have offered policyholders the option of selling their policies to investors for much larger sums than the surrender value (the opposite side of the insurance-backed securities market, described above). As this industry becomes more and more sophisticated and prevalent result, insurers will increasingly face market pressures to allow policyholders to cash out of their policies at amounts approaching their net present value. This is because insurers decidedly do not want policyholders selling their policies to investors: unlike policyholders, investors never let policies lapse when they no longer need or can afford coverage, which is precisely how investors make money from purchasing such policies in the first place.

While there is limited historical evidence of policyholder runs at one insurer triggering defaults at other insurers, the existence of state-by-state, rather than federal, guarantees of policyholder payment increases the risk that a run on one institution will

⁵⁸ *Regulating Insurance Sales or Selling Insurance Regulation*, *supra* note **Error! Bookmark not defined.**, at 1753.

⁵⁹ Weber, *supra* note **Error! Bookmark not defined.**, at 47.

⁶⁰ See, e.g., Jonathan R. Macey & Geoffrey P. Miller, *Bank Failures, Risk Monitoring, and the Market for Bank Control*, 88 COLUM. L. REV. 1153, 1156 (1988) (linking bank runs and depositor collective action problems).

⁶¹ See, e.g., Scott Harrington, *Beyond Basel; Plantin and Rochet, When Insurers Go Bust: An Economic Analysis of the Role and Design of Prudential Regulation* 90-93 [cite] (2007).

cause runs at other institutions. This is because state guarantee funds are much less reliable and complete than FDIC insurance. State guarantee funds are not generally pre-funded, they limit payouts to amounts that are often well below the face value of insurance policies, and they certainly are not (explicitly) backed by the full faith and credit of the federal government. Moreover, state-based guaranty funds are premised on the capacity of non-troubled insurers to cover the obligations of failing insurers. As such, their capacity to handle several major insolvencies concurrently is highly doubtful. Indeed, attempting to force surviving carriers to shoulder the burden created by several large insolvencies could actually endanger the health of otherwise solvent insurers, thus generating a downward spiral in insurance markets.

IV. Conclusion

The analysis above suggests that insurance law and regulation must be attuned to the prospect of systemic risk in insurance. Moreover, lawmakers and regulators must avoid regulatory structures that are premised on narrow understandings of this risk, whether this is linked to “non-traditional” insurance defined only to encompass CDS and financial guarantee insurance, or whether it is focused exclusively on “too big to fail” insurers. Rather, the increasing complexities and interconnections of insurance and finance effectively create a single interconnected system, making it likely that systemic risk will continue to arise in new and distinctive guises. The very nature of insurance regulation needs to adapt in response to these changes.