

Nontraditional Insurance and Risks to Financial Stability

Do insurance companies pose a threat to financial stability? Historically, the answer has been no. But the insurance industry's expansion into nontraditional activities has prompted reconsideration.

Yaron Leitner is a senior economist at the Federal Reserve Bank of Philadelphia. The views expressed in this article are not necessarily those of the Federal Reserve.

BY YARON LEITNER

When we think of the U.S. insurance business, we usually think of companies that sell life, auto, or homeowner policies. The conventional wisdom is that these traditional insurance activities are regulated by the states largely to protect individual policyholders and should not be a concern to the Federal Reserve, whose regulation of banks is intended to protect the nation's overall financial stability.

However, as became clear during the emergency bailout of the insurer American International Group (AIG) during the financial crisis in 2008, some insurance companies also engage in nontraditional activities, such as selling credit default swaps or lending securities, that could pose a threat to financial stability. The AIG episode has led some to suggest that the Fed should become involved in the regulation of large insurance companies.

How could an insurer pose a threat to financial stability? While there are many reasons that an institution could pose a threat to financial stability, two factors seem key. First, the institution's activities leave it vulnerable to large losses that it cannot handle. Second, those losses are capable of spreading to the rest of the financial system via a domino effect, or contagion.¹ As we will see, traditional insurance activities do not satisfy these criteria, but nontraditional activities do.

To examine more closely why they could pose a threat to the nation's financial system, we will explore some of the nontraditional activities that insurance companies currently engage in and discuss what role, if any, the Fed should play in regulating these companies. But before we do that, it will help to understand why insurers' traditional activities do not pose such a threat.

Traditional Insurance Risk

A traditional insurance company providing, say, auto insurance, collects premiums from policyholders and in return promises to pay for part or all of their loss when an accident occurs. So the insurance company incurs the risk that accidents will occur.

With another traditional insurance product, a life annuity, the policyholder pays a premium in return for periodic payments later—usually beginning in retirement and lasting until the policyholder dies. Here, the insurance company incurs the risk that the policyholder will live long enough to more than break even on what he or she paid in premiums.

However, these traditional activities do not expose the insurance company to large losses that it cannot handle. From the insurance company's perspective, these risks are pretty much diversifiable. When an insurance company sells many insurance policies, losses are more predictable and are unlikely to depend on overall economic conditions. The insurance company can then use the premiums it collects from policyholders to make investments that mature when it expects to need to pay claims. To the extent that losses are not completely predictable, insurance companies also set aside money to cover unexpected losses. So unless insurance companies deliberately leave themselves underprepared, they are not expected to experience losses that they cannot handle.²

Moreover, in the traditional model, insurance companies do not offer deposit contracts and so are not as subject as banks are to *runs*, in which an unusually large number of depositors try to withdraw their money simultaneously. Bank runs can be triggered if depositors learn about some negative shock—say, a news report that the dominant local industry is shuttering its plants, which could mean deep losses for a bank heavily exposed to commercial real estate. If the shock casts doubt on the soundness of the bank's portfolio and undermines public confidence in its ability to meet its obligations, a run may ensue.

While withdrawals are a normal part of the business of banking, in the case of a run the bank's cash reserves may be insufficient to meet the sudden demand. The fundamental reason that nations regulate their banks is that banks' unique mixture of assets and liabilities is inherently unstable. Banks are in the business of holding illiquid and long-term assets that they fund largely with deposits and other short-term liabilities. Banks

typically keep only a small percentage of their deposits on hand as cash and use most of the money they take in to make loans and invest in financial assets. And many of their assets—such as commercial and industrial loans or commercial real estate loans—can't be easily sold on short notice. A surge in simultaneous withdrawals could force the bank to sell off those assets quickly at prices that are significantly below normal, lowering their value to the point that they are insufficient to pay off the bank's liabilities, causing it to go bankrupt.

For a traditional insurance company, by contrast, even if it does suffer losses that it cannot handle, they are unlikely to spill over to the rest of the economy, for two reasons. First, traditional insurance activities do not significantly expose the rest of the financial system to insurers.³ Second, the unpredictable losses the insurance industry might face from traditional activities (after, say, a hurricane) are typically uncorrelated with overall economic conditions, and so the financial system is likely to be stable enough to absorb them. In contrast, large losses that occur when overall economic conditions are bad and many other financial institutions are experiencing losses at the same time are a concern to financial stability because the financial system might not be able to absorb them. As we will explore next, some of insurers' nontraditional activities expose them to such losses.

Risks from Insurers' Nontraditional Activities

Credit Default Swaps

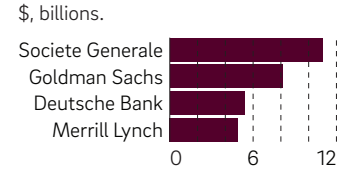
A prominent example is AIG's credit default swaps (CDS) operations before it failed in 2008. AIG sold these financial instruments to other financial institutions as protection against losses resulting from mortgage defaults. So AIG was essentially betting against a decline in real estate prices, offering protection against risks that it could not diversify and exposing it to potentially large losses. Indeed, as home prices started to decline, AIG was required to post cash collateral with its CDS counterparties to guarantee that it could fulfill its contractual obligations.⁴ Since AIG was unable to come up with all the money, its credit rating was downgraded, which required it to post even more collateral, making its situation even more precarious.⁵

AIG's losses could have spread to the rest of the financial system. One channel through which they could have spread was that a number of money market mutual funds had invested in AIG's commercial paper—short-term loans used to raise immediate cash—exposing them to AIG.⁶ Money market mutual funds are considered a safe and liquid investment, and until regulatory changes were implemented after the crisis, the share price of a dollar invested in the funds remained constant at \$1.⁷ However, as AIG's need for cash grew, its connection with money market investors raised concerns that if it declared bankruptcy and defaulted on its commercial paper, the money market funds could “break the buck,” potentially triggering runs on them and other money funds. Indeed, following Lehman Brothers' failure the day before AIG was bailed out, a money market mutual fund with more than \$60 billion in assets, the Reserve Primary Fund, broke the buck. The value of the company's \$785 million in holdings of Lehman Brothers dropped to zero, which triggered

large withdrawals from the fund, leading the value of a share in the fund to fall to 97 cents per \$1 invested. Such an unanticipated drop in the value of what was supposed to be a safe investment created panic and led investors to withdraw their money from other money markets funds, even ones that had not invested in Lehman or AIG.

The CDS that AIG sold also created links between it and the large financial institutions that bought the swaps. Absent a bailout, the failure of AIG, or even the anticipation of such a failure, could have led to large losses for these institutions, as they would have lost the protection offered by the CDS contracts. Losses could then have spread to other large institutions connected to these institutions. One indication for the potential losses to AIG's counterparties is the amount of government aid (\$49.5 billion) that went to AIG's CDS counterparties, including Societe Generale (\$11 billion), Goldman Sachs (\$8.1 billion), Deutsche Bank (\$5.4 billion), and Merrill Lynch (\$4.9 billion).⁸

FIGURE 1
Aid to AIG's CDS Counterparties



Securities Lending

Another nontraditional activity that contributed to AIG's failure was securities lending. In securities lending, a financial institution such as an insurance company lends a security to another financial institution in exchange for collateral, typically cash. The borrower generally can return the borrowed security to the lender and receive its collateral back on short notice, without penalty.⁹ As long as the lender, in this case the insurance company, invests the cash collateral in conservative short-term assets, there is no risk to financial stability, because the insurance company is able to return the cash collateral to the borrower on a short notice. However, a risk arises when the securities lender invests the cash collateral in long-term and less-liquid assets such as corporate bonds or mortgage-backed securities. The AIG case illustrates this risk.

AIG loaned securities, primarily corporate bonds, to banks and broker dealers. Between 2005 and 2007, rather than invest the cash collateral it received from the borrowers in conservative, short-term securities, without notice AIG changed the direction of its investment strategy and invested a substantial portion of the cash collateral in long-term illiquid assets such as mortgage-backed securities, other asset-backed securities, and collateralized debt obligations, whose payoffs depended on the health of the housing market. At the end of 2007, 65 percent of AIG's securities lending collateral was invested in such securities, and only 16 percent was in cash or other short-term investments.¹⁰ As the value of these securities dropped, and as AIG's losses on its CDS portfolio mounted, the borrowers in AIG's securities lending portfolio wanted to reduce their exposure to AIG, and so they began to return the borrowed securities to AIG and demand the return of their cash collateral. Between just September 12 and September 30, 2008, securities lending counterparties

demanded that AIG return approximately \$24 billion in cash.¹¹ In other words, AIG experienced a run.

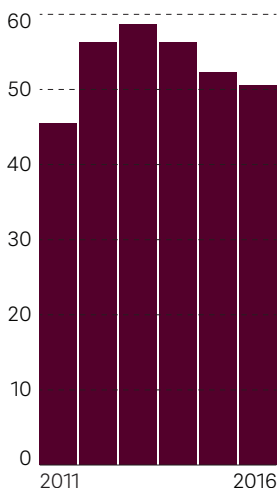
A run triggered by securities lending is a concern to financial stability because it forces the insurance company to sell its assets quickly at fire-sale prices, leading to losses for the insurance company.¹² Other financial institutions that hold the same class of assets may then have to mark down the value of their assets, which could force them to sell assets quickly to ensure that their capital does not fall below the minimum level required by the regulator. As more companies sell assets, the reduction in asset prices is amplified, which can affect the whole economy. For instance, when the value of their assets drops, financial institutions may be reluctant to make loans to businesses and consumers.¹³

Securities lending also creates direct links between the insurance company and other financial institutions, which can further spread losses to the rest of the financial system. The borrower faces a counterparty risk that the insurance company will be unable to return the collateral. So the failure of the insurance company may spread to the borrower and other firms that are connected to the borrower. Indeed, \$43.7 billion of AIG's government aid went to AIG's securities lending counterparties.¹⁴

Insurance companies, mostly life insurers, continue to engage in securities lending. Moreover, life insurance companies continue to invest a large portion of the cash collateral received in potentially illiquid long-term assets, such as corporate bonds and private-label asset-backed securities (Figures 2 and 3). Empirical evidence suggests that securities lending by life insurers is at least partially driven by a desire to take on more risk.¹⁵ Insurance companies also sell other financial products that could expose them to runs.¹⁶

FIGURE 2
Life Insurers Remain Involved in Securities Lending

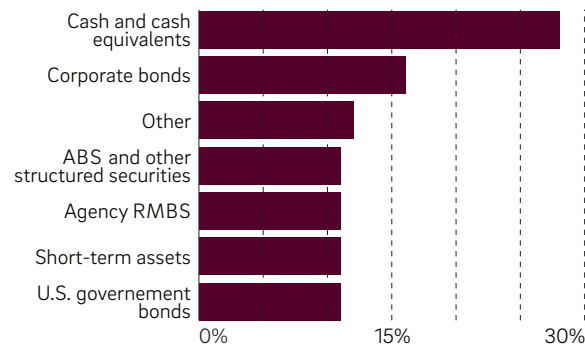
U.S. life insurance industry securities lending.
\$, billions



Source: SNL Financial.

FIGURE 3
Much Collateral Is Reinvested in Illiquid Assets

% of total collateral reinvested, 2015

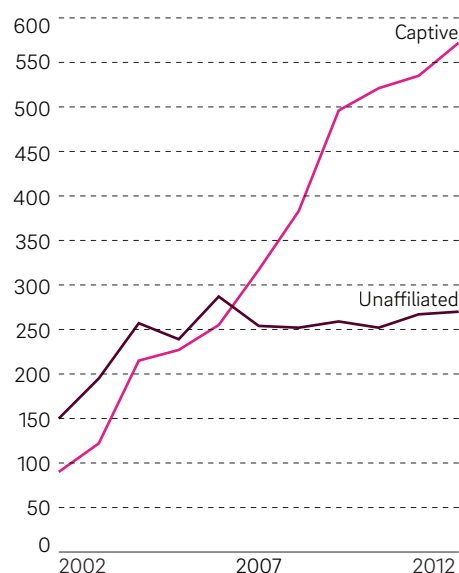


Source: National Association of Insurance Commissioners, http://www.naic.org/capital_markets_archive/160909.htm.

Note: Life insurance industry, as of December 31, 2015.

FIGURE 4
Rapid Growth in Captive Reinsurance

Total life and annuity products.
\$, billions



Source: Kojien and Yogo, 2016.

Captive Reinsurance

A final example of a nontraditional activity that could pose risks to financial stability is captive reinsurance. In a typical captive reinsurance transaction, the insurance company obtains insurance from an affiliated (“captive”) company that is subject to lower reserve and capital requirements and that in most cases is not required to file public financial statements or follow the same regulatory accounting practices as primary insurers. Thus, captive reinsurance allows the insurance company as a whole to hold less capital, even though there is no reduction in risk. (The company that purchases reinsurance is called the ceding company: It cedes its liabilities to the reinsurer.)

Captive reinsurance grew rapidly from \$90 billion in 2002 to \$572 billion in 2012 (Figure 4).¹⁷ Initially, the growth in captive reinsurance was mainly in life insurance products and was probably triggered by a new regulation requiring insurance companies to hold more reserves against these products.¹⁸ New state laws after 2002 allowed life insurers to establish captives to circumvent these new reserve requirements. Since 2007, captive reinsurance for annuity products has also grown rapidly, even though reserve requirements for these products were not changed.

Particularly worrisome is the rapid growth in shadow insurance, in which the captive is not supervised by the ceding company's state and has not been rated by an insurance rating agency.¹⁹ Shadow insurance grew from \$11 billion in 2002 to \$370 billion in 2013 (Figure 5). States compete for captive business to increase employment and tax revenue. The state where the captive is located does not directly bear risk, because when a captive fails, the liabilities revert to the operating company and, ultimately, to the guarantee associations operated by the states in which the policies were sold. Since 2009, the growth of shadow insurance has slowed, partly because of more

regulatory scrutiny in states such as California and New York.²⁰

When a captive reinsurer is unauthorized in a state, the ceding insurer may reduce its statutory reserves, and hence boost its capital, only if the reinsurer posts collateral or receives a third-party guarantee such as a letter of credit from a bank. However, as noted in a New York State Department of Financial Services report²¹, in many cases the collateral was just a “contractual parental guarantee” in which the parent company was responsible to cover losses. So, the insurance company boosted its capital artificially without reducing risk.²²

Captive insurance, and in particular, shadow insurance, poses concerns for financial stability. First, there is no real reduction of risk, yet the company as a whole holds less capital. This means that the company might be exposed to losses that it cannot handle. Second, the use of bank letters of credit as collateral exposes the insurance company to the risk that the bank will not renew its letter of credit; usually, these letters of credit have shorter maturities than the insurer’s liabilities do. So, the banks issuing the letters of credit may run on the insurance company. Third, these letters of credit create links with banks, exposing banks to potential losses from the insurance industry.

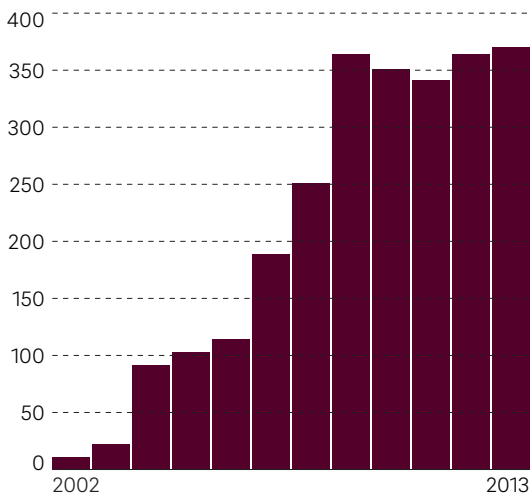
Should the Fed Help Regulate Insurers?

Under the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010, the Fed can impose

FIGURE 5

Surge in Shadow Insurance Is Particularly Worrisome

\$ billions



Source: Kojien and Yogo, 2017.

Note: Shadow insurance refers to a subset of captive insurance.

Risks from Variable Annuities with Minimum Guarantees

Another nontraditional activity that has received much attention from policymakers and economists is the sale of variable annuities with minimum guarantees. This activity does not create direct links between insurers and other financial institutions, but it could expose insurers to large losses in the event of a deterioration in overall economic conditions.

A variable annuity is a hybrid of a traditional life annuity and a mutual fund. Variable annuities are long-term saving products. But in contrast to traditional annuities, policyholders’ money is invested in mutual funds that fit their risk appetite. Their investment accounts are kept separate from the company’s general account, and payments are drawn only from these separate accounts. So, while this product is riskier for the annuity holder, it poses no financial stability concerns.

However, things change when the variable annuity is joined with a minimum guarantee. A particular concern are the guaranteed living benefits, which are optional riders that policyholders can obtain for an additional fee, guaranteeing they will receive some minimum income (or be able to withdraw some minimum amount) regardless of how well their mutual fund investments actually perform. These guarantees, which are backed by the insurance company’s general account assets, are a concern to financial stability because the insurance company provides protection against risks arising from worsening conditions in the overall economy. For example, these guarantees may kick in during an economic downturn, as when equity prices drop, adding stress to an already-stressed economy.

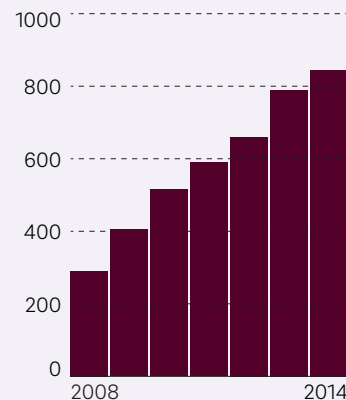
Indeed, as Ralph Kojien and Motohiro Yogo have documented, during the financial crisis in 2008, the variable annuity business experienced significant losses because of failing stock prices, high volatility, and low interest rates, with two companies, Hartford Life and Manulife Financial, losing about half of their capital and surplus. Across the industry, life insurers with variable annuity guarantees lost 9 percent of their capital and surplus, while those without guarantees gained 1 percent.

Since the crisis, the estimated total outstanding account value of all variable annuities with guaranteed living benefits has risen rapidly, from \$292 billion in 2008 to \$843 billion in 2014 (Figure 6). Rapid growth of an activity is a particular source of regulatory concern because it suggests that risks may not have been fully priced in.

FIGURE 6

Fast Rise in Variable Annuities with Minimum Guarantees

Dollar value of variable annuities with guaranteed living benefits.



Source: Financial Stability Oversight Council 2015 Annual Report/ LIMRA.

Note: Data based on a survey of domestic insurance companies.

stricter regulations on insurance companies and other nonbank financial institutions that the Financial Stability Oversight Council designates as systemically important (SIFI). A company can be designated as systemically important if material financial distress at the company, or the nature, scope, size, scale, concentration, interconnectedness, or mix of its activities could pose a threat to the financial stability of the United States.²³

There have been calls to repeal the council’s authority to designate firms as SIFIs.²⁴ One concern is that the council has too much discretion in designating an institution as a SIFI, which could result in arbitrary and inconsistent designations. Another concern is that market participants might interpret a SIFI designation as a signal that the government considers the institution too big to fail and will bail it out if it gets into trouble and the threat of contagion arises, which could create moral hazard by undermining market discipline. That is, if everyone expects the Fed to bail out a systemically important insurer, it will take excessive risks, and its policyholders and counterparties will have no incentive to monitor it closely or take steps to reduce that risk.

Another set of concerns involves the principle of state control. Some argue that Fed involvement is unnecessary because state regulation is adequate. Indeed, since the financial crisis, state regulators, in particular the National Association of Insurance Commissioners (NAIC), have taken steps to reduce risks in the insurance industry. Some proponents of state oversight see some role for the Fed, but only insofar as nontraditional activities that pose systemic risk, and support leaving the rest of insurers’ activities to state regulators.²⁵

The question for policymakers is how to weigh these concerns

against the risk to financial stability from insurers’ nontraditional activities. The Fed’s mission includes guarding the stability of the U.S. financial system, and insurance companies are large institutions that play a large role in the economy. As we have seen, they engage in nontraditional activities that could pose a threat to financial stability, and there is evidence of their having engaged in risk-taking and regulatory arbitrage—which make their potential threat to financial stability even larger. A quantitative measure of systemic risk, SRISK,²⁶ that estimates a financial institution’s capital shortfall during a crisis, ranks insurance companies among the most systemically risky financial institutions in the U.S.²⁷ Interestingly, since 2008, SRISK has declined significantly for large banks but has increased for large insurance companies except AIG (Figure 7).

Those who argue that federal regulation is necessary note that an individual insurance company does not take into account the negative consequences of its failure on the rest of the economy. Likewise, an individual state does not take into account the consequences of its actions for other states. Individually or collectively, the states are not responsible for the stability of the U.S. financial system. The aforementioned desire to preserve states’ longstanding role in insurance regulation has led to a search for a middle ground that would feature federal regulation of insurers’ nontraditional activities and state regulation of traditional insurance activities. Unfortunately, state-federal regulation may prove difficult in practice, as nontraditional and traditional insurance activities are deeply intertwined. For example, insurers use general account assets to back both

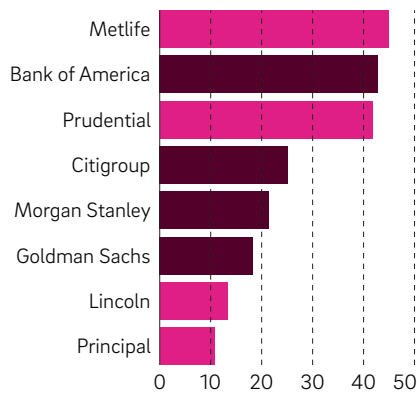
See *Risk-Taking and Regulatory Arbitrage in the Insurance Industry.*

FIGURE 7

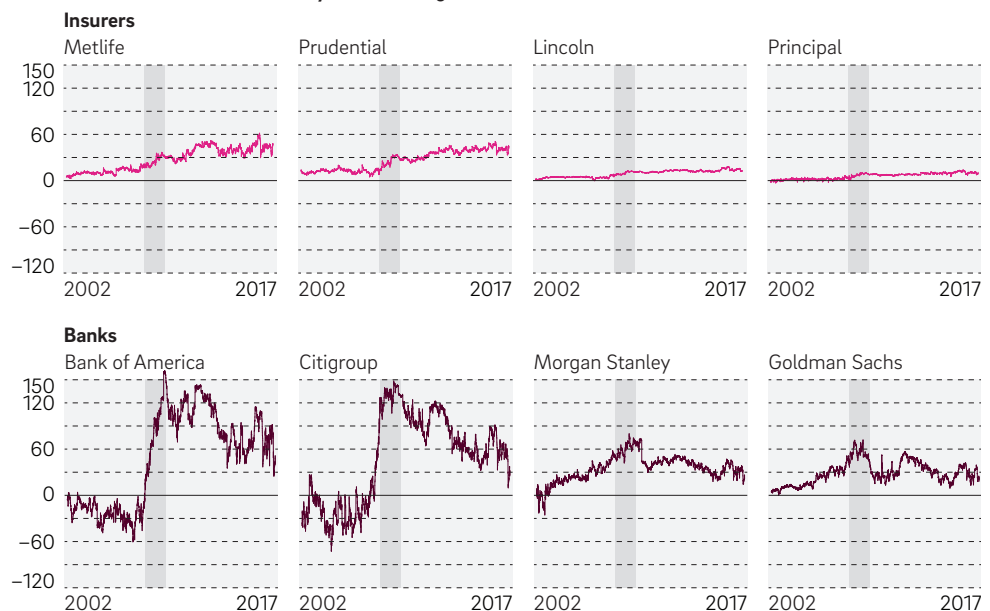
Insurers Among Most Systemically Risky U.S. Financial Firms

SRISK capital shortfall if the S&P 500 index falls more than 40 percent over the next six months, \$ billions.

SRISK measurements on August 18, 2017



SRISK measurements January 2, 2002–August 18, 2017




Source: New York University Stern School of Business V-Lab, <https://vlab.stern.nyu.edu/en/welcome/risk/>. (Select 8 percent capital target ratio, no simulation.)

Note: More recently, V-Lab has ranked additional firms that do not appear in the ranking above.

minimum guarantees for variable annuities and traditional insurance policies. Similarly, insurance companies lend securities from their general accounts.

Proponents of retaining the council's authority to designate firms as SIFIs maintain that discretion is necessary because assessing systemic risk is too complicated to be captured by fixed rules. Indeed, one benefit of discretion is that it allows decisions to be made based on information that applies to the case at hand.

But will SIFI designations undermine market discipline? The concern that an inferred bailout will relax attitudes about risk is widely shared. Yet, market participants may already expect any large financial institution to be bailed out, regardless of whether it is formally designated a SIFI. The best solution from a social point of view might be to not completely rule out bailouts but instead to monitor and regulate SIFIs closely to reduce moral hazard. The Fed could also shift more of the onus onto systemically important institutions by taxing SIFIs to account for the risk they pose to the economy and the costs of potential bailouts.²⁹ An example of such a tax is the SIFI capital surcharge rule.³⁰

A final potential concern that is less often raised is whether the Fed should focus only on large insurance companies. As we saw earlier, they are not the only ones that engage in nontraditional activities that could pose a threat to financial stability. The aggregate potential threat to financial stability from the nontraditional activities of numerous small insurers could be of the same magnitude as the threat from the activities of a single large company. 

Risk-Taking and Regulatory Arbitrage in the Insurance Industry

Captive insurance is an example of regulatory arbitrage: A company is able to hold less capital without having to actually reduce its risk. There is other evidence that insurance companies have engaged in risk-taking and regulatory arbitrage.

One study by Ralph Koijen and Motohiro Yogo showed that around December 2008, insurance companies took actions that created losses to make them look good for regulatory purposes. Life insurers were able to make accounting profits by selling policies at prices that were far below actuarial fair values because the amount of reserves they had to record on their balance sheets to cover the future liabilities created by the new policies was less than their selling price. So, insurance companies sold policies that technically lost money but made accounting profits.²⁸

In another study, Bo Becker and Victoria Ivashina showed that within a group of bonds with the same credit rating, insurance firm portfolios tended to hold the riskier ones.

Another sign of regulatory arbitrage comes from evidence by Becker and Markus Opp that insurance companies invested more in mortgage-backed securities following new regulations that substantially reduced capital requirements on such investments.

Notes

1 To learn more about some of the channels of contagion, read my *Business Review* article on financial contagion and network design.

2 In a catastrophic disaster such as a hurricane, the property-casualty insurance industry can suffer large losses that it cannot handle on its own, and so the government might need to intervene.

3 Note, however, that insurance companies provide an important source of funding for banks through the corporate bond market. A reduction in their supply of funding to banks could lead to liquidity problems for banks, at least in the short run.

4 In CDS contracts as in most derivative contracts, counterparties post collateral, often in the form of cash. The larger one party's obligation to the other, the more collateral it will be required to post.

5 Robert McDonald and Anna Paulson discuss AIG's credit default swaps operations in more detail. They document that the amount of cash

collateral that AIG needed to post increased rapidly, from \$15.8 billion at the end of June 2008, to \$33.9 billion on September 16, the day the Fed stepped in. The difference between the amount of collateral that AIG was required to post and the amount it actually posted increased from \$2.5 billion to \$11.4 billion during that same time.

6 Note that under the traditional insurance model, insurance companies do not need to borrow short term, so there should not be much exposure between money market funds and insurers.

7 Under new SEC regulations, in money market funds used by institutional investors, the daily price can fluctuate along with changes in the market-based value of the fund assets. See more details at <https://www.sec.gov/news/press-release/2014-143>.

8 See the documentation of AIG's payments to counterparties accompanying the 2009 *New York Times* article by Mary Williams Walsh.

- 9** The main lenders of securities are institutional investors, such as retirement and pension plans, mutual funds, and insurance companies, the last of which accounted for roughly 5 percent of total lending in 2014. The main borrowers are hedge funds, broker-dealers, derivative traders, and market makers. Borrowers may use the borrowed security as part of a short-selling strategy or to deliver a particular security to a customer when they do not have the security on hand.
- 10** Nineteen percent was invested in corporate bonds.
- 11** See p. 45 of the Congressional Oversight Panel Report.
- 12** For evidence of fire sales in the insurance industry, see the papers by Andrew Ellul, Chotibhak Jotikasthira, and Christian Lundblad and by Craig Merrill, Taylor Nadauld, René Stulz, and Shane Sherlund.
- 13** For theoretical models that analyze this issue in more depth, see the papers by Kiyotaki and Moore and by Brunnermeier and Pederson. In a 2017 working paper, Nathan Foley-Fisher, Stefan Gissler, and Stephane Verani demonstrate another side effect of the collapse of AIG's securities lending programs in 2008: a substantial and long-lasting reduction in the market liquidity of corporate bonds that were predominantly held (and hence lent) by AIG.
- 14** See the interactive documents accompanying the 2009 *New York Times* article.
- 15** In their 2016 paper on securities lending, Foley-Fisher, Borghan Narajabad, and Verani show that insurers that engaged aggressively in maturity transformation with respect to the cash collateral they received from securities lending tended to switch to repo financing—a form of short-term collateralized borrowing—when borrowers' demand was low for the securities loaned (typically corporate bonds).
- 16** One example is extendible funding agreement-backed notes that insurance companies sell to institutional investors. See the 2016 paper on self-fulfilling runs by Foley-Fisher, Narajabad, and Verani. See also the Chicago Fed Letter by Robert McMenamin, Zain Mohey-Deen, Anna Paulson, and Richard J. Rosen.
- 17** See Ralph Koijen and Motohiro Yogo's 2016 paper.
- 18** In January 2000, the National Association of Insurance Commissioners (NAIC) adopted Model Regulation 830, commonly referred to as Regulation xxx. This was followed by Actuarial Guideline 38 in January 2003, commonly referred to as Regulation Axxx.
- 19** Specifically, by A.M. Best Company, which is a rating agency that focuses on the insurance industry.
- 20** In their 2017 book chapter, Koijen and Yogo show that in 2013, captive insurance was \$617 billion, and shadow insurance was \$370 billion. We do not have more recent data at this point.
- 21** See the report by Benjamin M. Lawsky.
- 22** The report mentions another way in which shadow insurance allows insurers to boost their capital artificially: The reinsurer pays a commission to the original insurer, which can then boost its capital artificially by recording these commissions as "retained earnings." So the company increases its capital by essentially paying itself.
- 23** Dodd–Frank also specifies some of the factors that the council needs to consider, including leverage, off-balance-sheet exposure, relationships with other significant companies, the company's liabilities and its degree of reliance on short-term funding, and the importance of the company as a source of credit for households, businesses, and state and local governments, and as a source of liquidity for the United States financial system.
- 24** For example, the Financial Choice Act of 2017 has called for the abolition of the SIFI designation.
- 25** See, for example, the paper by Scott Harrington.
- 26** Specifically, SRISK estimates how much capital a firm will be short, relative to some target level of capital (8 percent) if a broad market index falls by more than 40 percent over the next six months. SRISK is updated weekly on New York University Stern School of Business's V-Lab website: <https://vlab.stern.nyu.edu/en/welcome/risk/>.
- 27** SRISK applies only to publicly traded companies and hence does not include some large U.S. life insurers such as TIAA-CREF, New York Life, and Northwestern Mutual Life.
- 28** See Koijen and Yogo's 2015 article.
- 29** This idea is formulated in the paper by Viral V. Acharya, Lasse H. Pedersen, Thomas Philippon, and Matthew Richardson.
- 30** For more details on the SIFI capital surcharge rule, see <https://www.federalreserve.gov/newsevents/pressreleases/bcreg20150720a.htm>.

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