# Systemic Risk and the Insurance Industry

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# My Research on Systemic Risk

- Cummins, J. David and Mary A. Weiss, 2013, "Systemic Risk and the Insurance Industry," forthcoming in Georges Dionne, ed., *Handbook of Insurance*, 2d ed. (Springer).
- Chen, Hua, J. David Cummins, Krupa Viswanathan, and Mary A. Weiss, 2013, "Systemic Risk and the Inter-Connectedness between Banks and Insurers: An Econometric Analysis," forthcoming, *Journal of Risk and Insurance.*
- Chen, Hua, J. David Cummins, Krupa Viswanathan, and Mary A. Weiss, 2013, "Systemic Risk Measures in the Insurance Industry: A Copula Approach," working paper, Temple University, Philadelphia
- Cummins, J. David and Mary A. Weiss, 2013, "Systemic Risk and the Regulation of the U.S. Insurance Industry," working paper, Temple University, Philadelphia.
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# What Is Systemic Risk?

- The risk that an event will trigger a loss of economic value or confidence in a substantial segment of the financial system serious enough to have significant adverse effects on the real economy. Group of 10 (2001).
- Systemic financial risk involves
  - A system-wide financial crisis . . . accompanied by a sharp decline in asset values and economic activity
  - The spread of instability throughout the financial system (contagion)
  - Sufficient impact to adversely affect the real economy
    World Economic Forum (2008).

# Systemic Risk: Primary Indicators and Contributing Factors

- The Question: How to identify systemically risky markets and institutions?
- Primary indicators: Factors used to identify systemic markets and institutions
- Contributing factors: Determine the vulnerability of an institution or market to systemic events
  - An institution may be potentially systemic in terms of primary indicators but not vulnerable in terms of contributing factors

# Systemic Risk: Primary Indicators

- Size
  - Size not limited to conventional measures, e.g., assets
  - Volume of transactions, exposure to off-balance sheet positions, and derivatives also play a role
- Interconnectedness – degree of correlation and potential for contagion among institutions
- Lack of substitutability
  - Are there effective substitutes for an institution's products?
  - Are those products critical to the functioning of the financial system?

# Systemic Risk: Contributing Factors

- Leverage
  - High leverage increases vulnerability to financial shocks
- Liquidity risk and asset-liability mismatches
  - Liquidity crisis brought down Lehman and AIG
- Complexity – aggravated by opacity
- Government policy and regulation
  - Government can help resolve crises but
  - May take actions that create crises

# Primary Indicators – Size: How Big Are Insurers?

- Insurers have $6.8 trillion in assets
  - Less than half as large as commercial banks
  - Hold only about 8% of total US financial assets
  - Insurers do not have large share of any asset market
  - Insurer insolvencies resolved gradually so even a large insolvency would not lead to liquidity problems
- Insurers not very important source of GDP (< 3%)
- Therefore, as a sector insurers do not pose systemic risk due to their size alone

# Primary Indicators: Interconnectedness

- Reinsurance creates interconnectedness but this is intra-sector risk – not likely to spill over
- Insurer non-core ("banking") activities can create interconnectedness and systemic risk, e.g.,
  - Credit derivatives transactions
  - Asset lending programs
  - Financial guarantees and other off-balance sheet commitments
  - Reliance by insurers on short-term financing
  - Subsidiaries with high exposures relative to capital
- Improved regulation needed to prevent crises

# Primary Indicators: Substitutability – Do Insurance Products Have Substitutes?

- Life Insurance
  - Mostly asset accumulation products rather than mortality/longevity risk bearing
  - Many non-insurance substitutes for asset accumulation and investment products
  - Many insurers available to fill coverage gaps resulting from insolvency of one or a few firms
  - Therefore, lack of substitutes not a problem for life insurance

# Primary Indicators: Substitutability – Do Insurance Products Have Substitutes?

- Property-Casualty (P-C) Insurance
  - Mainly provide risk management and risk-bearing
  - No real substitutes for individual buyers (e.g., auto insurance) and small-medium commercial customers
    - But many insurers available to fill coverage gaps resulting from one or a few insolvencies
  - Large corporate buyers have substitutes – self insurance, captives, securitization
  - Therefore, lack of substitutes not a problem for P-C insurance

# Primary Indicators: Substitutability – Is Insurance Critical to Functioning of Economy?

- Insurance clearly enables the economy to function more smoothly by enabling individuals and businesses to take more risk
- However, it is difficult to argue that insurance is as important as banking, the payments system, or the settlement system
- Various insurance markets regularly experience availability crises (underwriting cycles) without significantly affecting real economic activity
- Therefore, unavailability of insurance unlikely to create a systemic crisis

# Contributing Factors: Insurer Leverage & Solvency

- US regulated insurance companies highly solvent
  - Insolvency rates are low
  - Guaranty fund costs are low
  - Financial crisis had little impact on insurer insolvencies
- Life insurers give some cause for concern
  - Appear to be over-leveraged
  - Adverse performance during crisis is danger signal
  - More interconnected than PC insurers (susceptibility to affiliates)
  - Stocks harder hit by crisis than PC insurers
- Inter-connectedness does not pose serious solvency threat for PC insurers based on past experience
- Monolines are a different story – not traditional insurance

# Contributing Factors: Complexity

- AIG prime example of complexity
  - Complicated group structure
  - Geographically dispersed
  - Complex, new financial products
- Large multi-national insurers common in insurance industry
- Life insurance more complex than P-C
  - Most life products have embedded derivatives
- Conclusion: Complexity is a problem for the large, multi-product, multi-national insurers

# Contributing Factors: Do Guaranty Funds Create Moral Hazard?

- In theory, mis-priced guaranty fund coverage provides incentives for excessive risk-taking
- In practice, guaranty funds do not seem to be a problem
  - No solvency crisis for US regulated insurers
  - Guaranty fund assessments have been very low
- Possible rationale:
  - Risk-based capital (introduced in 1994) blunts insurer incentives for excessive risk-taking
  - GF protection is incomplete (low maximums, etc.)

# Why Property-Casualty Insurance May Not Create Systemic Risk

- "Runs" are not possible
  - To obtain funds, it is necessary to have a claim
  - Unlike bank deposits, which are instantaneously "puttable"
- Insurance not involved in liquidity creation, payments system, or business or consumer lending
- Insurers hold only small proportion of total invested assets in the economy
- Insurance claim payments not a major financial asset for any economic sector
- However, intra-sector reinsurance exposure could cause "reinsurance spiral" spreading across the insurance industry
  - Not clear if this would be a true systemic event, i.e., not likely to spread to other financial institutions or the real economy

# Could Life Insurance Pose Systemic Risk?

- Why LI may pose systemic risk
  - Life insurance investment products are susceptible to “runs” (withdrawals and/or suspension of premium payments/annuity considerations)
  - Life insurers are thinly capitalized
  - Life insurers hold large amounts of mortgage-backeds and private placements relative to surplus
  - Insurance guaranty fund system probably not adequate for a major run or liquidity crisis
  - Life insurers owned by banks (and vice versa) could add to fragility of banking system

# Could Life Insurance Pose Systemic Risk?

- Why LI may NOT be systemically risky
  - Life insurance sector not involved in payments system, liquidity creation, credit creation, etc.
  - Life insurers own only small proportion of stocks and bonds in the economy (about 6%)
  - Life insurance is a small proportion of household financial assets (about 3%)
  - Many substitutes exist for life insurance policies
  - Life insurers not major employers (< 2% of non-farm civilian labor force)
  - Disappearance of the entire sector would be tragic but sustainable

# Systemic Risk In Insurance: Non-Core Activities

- As AIG debacle shows, the main systemic risk posed by the insurance industry comes from insurer participation in “banking” activities, e.g., credit default swaps (CDS) and other derivatives
- Swiss Re data shows that insurers and reinsurers accounted for 33% of CDS market in early 2000s
- As with AIG, most insurers are not adequately capitalized to sustain large CDS meltdown
- Insurance groups should be more closely regulated when conducting CDS operations

# Systemic Threats to Insurance Industry

- Future AIG-style episodes – conducting high risk derivatives operations out of non-insurance subsidiaries
  - Reveal need for better regulation and regulatory coordination
- Other non-core activities
- Toxic asset problems – investing in risky or inaccurately rated structured securities
  - Not clear that regulators have enough information on insurer investments in such assets

# Chen, et al. (2013): Purpose of Our Paper

- Develop and implement a robust systemic risk measure for insurance
- Investigate interconnectedness between banking and insurance during financial crisis
- We use CDS quotes and intra-day equity returns to estimate systemic risk in the insurance and banking industries

*"Are insurers a source or a victim of systemic risk?"*

# Chen, et al. (2013): Findings

- Banks create significant systemic risk for insurers but not vice versa
  - Based on linear and non-linear Granger causality tests correcting for heteroskedasticity

- Therefore, insurers seem to be victims of systemic risk rather than instigators

# Chen, et al. (2013): Policy Implications

- Regulators should focus on banks to prevent/ameliorate systemic shocks from banks
- Regulators should focus on non-core rather than insurance activities of large insurers
- Insurance regulators should focus on mitigating effect of shocks from banks (e.g., investment restrictions and tighter capital requirements for life insurers)

# Overall Regulatory Implications

- Regulators need to improve capabilities in group supervision
  - Regulation of non-insurance subsidiaries to head off future AIG-type crises
  - Improved measures of group level solvency risk
- Regulators need to improve international coordination of insurance supervision for multi-national insurers
  - Coordinate national regulators & the International Association of Insurance Supervisors