

# Why Are Some Banks Systemically Important? What Do We Do About It?

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The views expressed here are my own and do not necessarily represent the views of the Federal Reserve Bank of New York or the Federal Reserve System.



# Introduction

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- Before trying to identify systemically important financial institutions (SIFIs), need to understand why they are systemically important and how to influence that
- What is a systemic event?

“shocks to one part of the financial system lead to shocks elsewhere, in turn impinging on the stability of the real economy”

Bordo, Mizrach, and Schwartz, 1998



# Systemic risk as an externality

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- Externalities
  - Impact of a transaction on an agent not involved in the transaction
  - Wedge (positive or negative) between private and social effects
- Systemic risk as a negative externality like pollution
  - Negative byproduct of productive financial intermediation
  - Old idea – at least since Santomero and Watson (1977)
- Suggests a broader “macroprudential” view with different policy implications
  - Need more intrusive supervision and regulation for some firms
  - Need to “internalize the externality”
- Other implications
  - Laissez faire level of systemic risk not socially efficient
  - Optimal level of systemic risk is not zero
  - One rationale for existence of the safety net and too-big-to-fail (TBTF) policies



# Financial market externalities

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Externalities are “by far the most important reason why banks, and other key financial intermediaries and markets, need regulation”

“Geneva Report” (Brunnermeier et al., 2009)

- Negative externalities in financial markets
  - Information contagion
  - Lending relationships
  - Linkages and counterparty exposures
  - Fire-sale effects
  - Credit provision
  
- Feedback effects
  - Negative externalities  $\Rightarrow$  TBTF  $\Rightarrow$  broader safety net  $\Rightarrow$  moral hazard  $\Rightarrow$  increased risk
  - Amplifies initial impact of externality
  - Requires greater intervention

# Public finance solutions conceptually clear

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<u>Solution</u>	<u>Pollution</u>	<u>Examples for Systemic Risk</u>
▪ “Pigouvian” tax	Tax on carbon emissions	Tax on bank leverage
▪ Activity restrictions	Ban dumping pollution	Restrict proprietary trading
▪ Subsidize actions	Tax credits for insulation	Subsidize bank capital
▪ Tradable permits	Cap-and-trade	Trade right to breach capital requirement (Kashyap and Stein, 2004)
▪ Reduce externality	Smokestack scrubbers	Exposure limits
▪ Clean up ex post	Pollution superfunds	Asset guarantees

# Practical challenges

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- Measurement and calibration
  - Can you measure externalities
  - What is the socially efficient level?
  - Is it time-varying and state-dependent?
  - How does it evolve with financial innovation?
  - What specific activities create externalities and what policies efficiently constrain them?
- Potential unintended consequences
  - Activities shift to unregulated sector
  - Regulatory arbitrage and growth in less transparent risks (Rajan, 2005)
  - Reduced franchise value leads to greater risk-taking (Keely, 1990)
  - Weaker market discipline



# Moving from activities to firms

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- Externalities are produced by certain activities, not necessarily by certain firms
- Ideally, the official sector intervention would constrain the externality-producing activity or reduce the externality itself
  - PD / LGD framework for evaluating impact of activities
- But, difficult to do
  - Uncertainty about precise transmission mechanism
  - Financial innovation
  - Regulatory arbitrage
  - Data gaps





# SIFIs as a “second-best” solution

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- Certain firms seem more likely to undertake activities that generate the externalities
  - Rationale for SIFI discussion rather than activity-focused policy discussion
- Still need to determine which firms and gauge relative systemic importance
  - Focus on things correlated with activities that create externalities
- IMF/BIS/FSB (2009) identified three characteristics that, in principle, one can observe directly
  - Size
  - Interconnectedness
  - Substitutability
- Alternative approach is look at market prices and infer systemic importance
  - Covered later in the conference



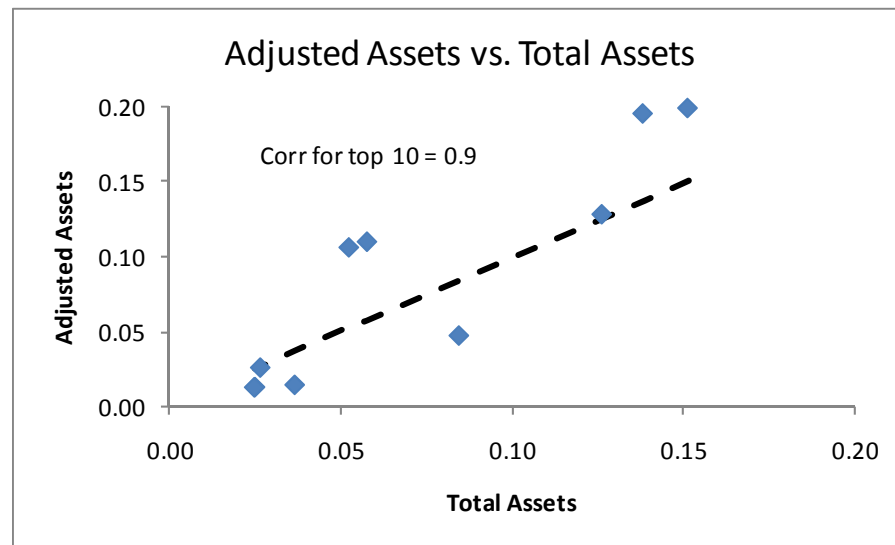
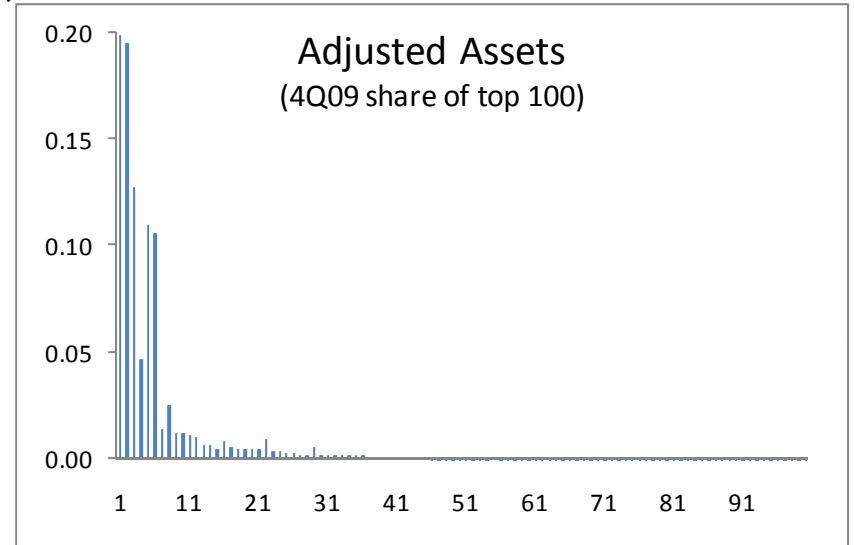
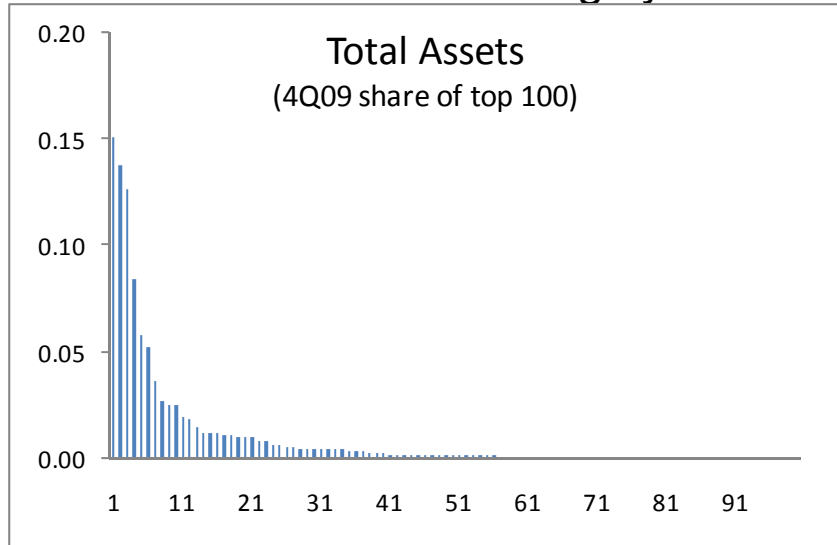
# Size

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- Rationale
  - Impact of failure increases with scale and scope of financial firms
  - Larger externalities associated with lending, linkages, fire-sales, and credit provision
- Measurement issues
  - Include off-balance sheet items?
  - Adjust size for riskiness (GAAP v. RWA)?
  - Absolute or relative scale?
  - If relative, relative to what – economy, specific market or service?

# Size

- Two basic measures are highly correlated, but different



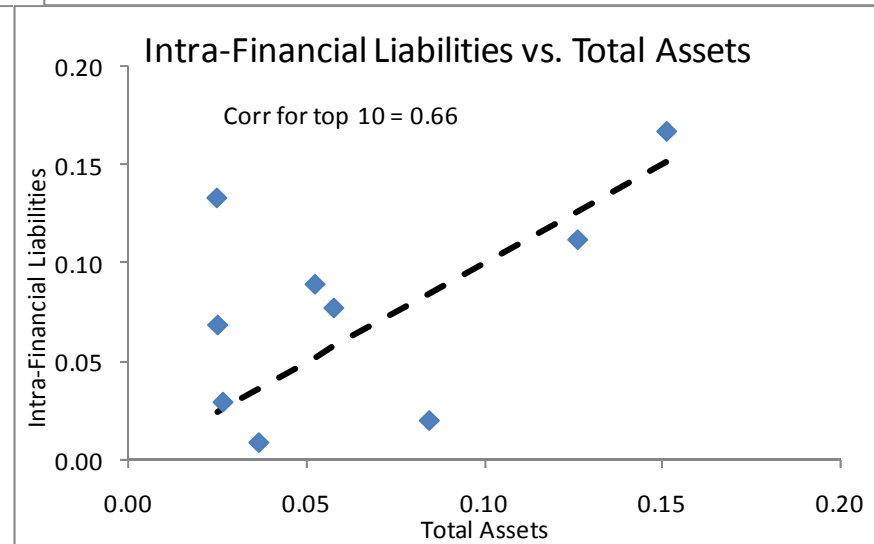
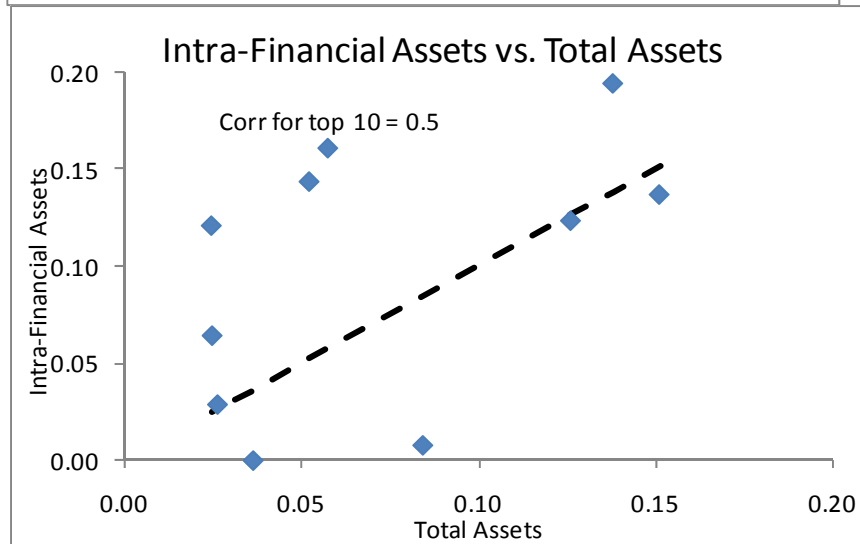
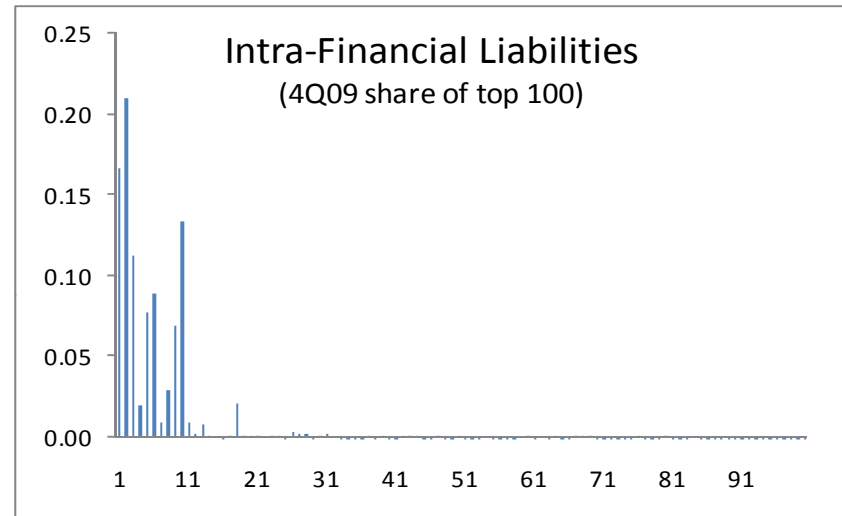
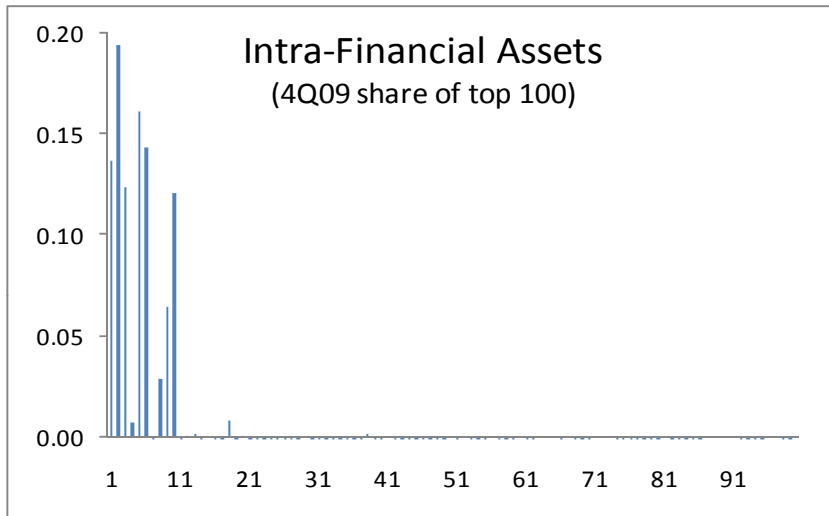
# Interconnectedness

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- Rationale
  - Direct links between firms transmit and amplify shocks
  - Larger externalities associated with linkages and counterparty exposures
- How do you measure?
  - Balance sheet
    - Intra-financial assets and liabilities
  - Direct data
    - Collect data on counterparty credit, derivatives, repo etc. directly from firms
    - Core to microprudential supervision, but may have additional policy benefits
  - Market-implied
    - Correlations of market prices

# Interconnectedness

- Less correlation with total assets



# Substitutability

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- Rationale
  - Impact on others if market is disrupted
  - Larger externalities associated with credit and lending
- How do you measure?
  - Requires detailed analysis of specific markets, e.g., league tables or market surveys
  - Cetorelli et al. (2007) examined wholesale credit and capital markets:
    - Most markets are only moderately concentrated
    - Concentration trends are mixed

# Substitutability

- Wide range of outcomes across markets

Trends in Financial Market Concentration								
Securities Underwriting and Financial Services			Interest Rate and Foreign Exchange Derivatives			Primary Dealers		
	Average HHI	Growth in HHI (%)		Average HHI	Growth in HHI (%)		Average HHI	Growth in HHI (%)
Securities Underwriting			US Interest Rate Derivatives, Global			Treasury Securities		
Initial public offerings	1,149	4.3	Forward rates	843	4.6	Bills	515	4.9
Seasoned offerings	854	4.9	Interest rate swaps	591	8.2	Coupons	596	3.4
Investment grade bonds	1,122	-3.4	Options	908	0.8	TIPS	1,826	11.4
High-yield bonds	1,144	-1.5						
			Foreign Exchange Derivatives			Other Securities		
M&A advisory services	1,160	9.4	Forwards and swaps	420	5.3	Mortgage-backed	954	0.4
Syndicated loans	1,391	-2.0	Options	544	2.3	Corporate	1,336	-5.8
						Federal agency	694	1.2
Period	1990-2004		1998-2004			1995-2004		

Source: "Trends in Financial Market Concentration and their Implications for Market Stability," Nicola Cetorelli, Beverly Hirtle, Donald Morgan, Stavros Peristiani and Joao Santos, Economic Policy Review, March 2007.

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# Aggregation

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- Measures are imperfectly correlated (which is good), but how do you aggregate?
- In principle, estimate factor loadings from historical relationships

*M arginal Contribution to Systemic Risk = f (Size, Interconnectedness, Substituability)*

- But, what goes on the left-hand side?
  - Distressed insurance premium (Huang, Zhou, Zhu)
  - CoVaR (Adrian and Brunnermeier)
  - Marginal Expected Shortfall (Acharya et al.)
  - Shapley Value (Tarashev et al.)
- Allows out-of-sample estimates and smoothed measures
- Preliminary work suggests these measures not highly correlated



# Intervention

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- Once a SIFI is identified, what do you do?
  - Need to change the behavior of the firm
  - Policy must be more intrusive than for microprudential purposes, by definition, if negative externalities
  
- Range of possible policy tools
  - Capital surcharge
  - Liquidity surcharge
  - Levies
  - Activity restrictions
  - Enhanced supervision
  
- Can any one policy address all potential externalities?
  - How do you know?
  - How do you measure success?
  - What is the sensitivity of the externality to the policy tool?

# Other Issues

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- Moral hazard
  - Less external monitoring and discipline if known to be identified as SIFI
  - Potentially offset by credible resolution authority
- Disclosure
  - Do you disclose information to the public? To the firms?
  - Information on firm identities or methodologies?
  - How do you induce behavioral changes if firms don't know the rules?
  - Securities law?
- Authority
  - Is there legal authority to intervene for an externality?

# Conclusions

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- Goal is not just to identify SIFIs, but to change behavior to reduce systemic risk
  - Reduce potential externalities
  - Lower probability of failure or reduce the impact on others if failure occurs
- Systemic risk is a dynamic problem that evolves with market conditions, financial innovation and firms' response
  - Identifying and influencing SIFIs must be equally adaptive
- Seem clear (to me) that considerable judgment will be needed to identify, monitor and influence SIFIs to reduce systemic risk