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# SYSTEMIC RISK AT US BANKS DURING 1974–2010

Armen Hovakimian, Baruch College

Edward J. Kane , Boston College

Luc Laeven, IMF

# TO CONTROL ANYTHING PRESUPPOSES THE EXISTENCE OF A COMPREHENSIVE DEFINITION OF IT THAT LEADS TO A VERIFIABLE METRIC

## Official Definitions of Systemic Risk Fail Both Tests

They focus on a subjectively perceived **potential for substantial spillovers** of institutional defaults across the financial sector and from this sector to the real economy

## This Definition Has a Missing Element

Substantial Spillovers of actual defaults have remained largely **hypothetical.**

Why? Because prospect of spreading defaults scares authorities into choosing to shortcircuit the default process by supporting the credit of “systemically important “ (SI) firms that allow themselves to become economically insolvent: This **Rescue Reflex** lets difficult-to-fail and unwind (DFU) zombies exercise a loss-shifting “**taxpayer put.**”



“When it comes to haircutting creditors and counterparties in firms like AIG, I wish our Regulators had the Courage of our Monster Banks”

# BECAUSE ACCEPTING BLAME IS UNCOMFORTABLE, BLAME AVOIDANCE DISTORTS PUBLIC POLICY DEBATES

- Official definitions of systemic risk lead naturally to the self-serving diagnosis that systemic risk is caused almost entirely by defective risk management at DFU firms.
- This diagnosis supports a treatment plan that would: toughen capital requirements; redraw the boundaries of regulatory jurisdiction; and extend new powers to regulators (e.g., over executive compensation, derivatives & proprietary trading, and insolvency resolution).
- This diagnosis and the treatment plan it implies are incomplete in that they do not directly address the endogenous role that safety-net subsidies play in incentivizing firms to take political, economic, and organizational action to attain and strengthen DFU status.

# Motivation: Macroprudential Risk is a Portfolio Risk: *Not* simply the sum of Microprudential (i.e., stand-alone) Risks

- ▣ We contend that macroprudential risk comes from a combination of industry risk-taking and authorities' selective exercise of a "Rescue Option" and that the rescue option **shifts** considerable risk to taxpayers and small banks.
- ▣ Large banking organizations turn this option into a **conditioned "Reflex"** by finding ways to make themselves harder and scarier for authorities to fail and unwind. They do this by increasing their size, complexity, leverage, and/or maturity mismatch.
- ▣ The FDIC is accountable for Microprudential Risk. But Safety nets subsidize "systemic" risk creation in good times partly because the accounting frameworks used by banks and government officials do not make anyone directly accountable for reporting or controlling safety-net subsidies until and unless markets sour.

- ▣ The per-period flow of safety-net benefits that a particular bank enjoys can be defined as a “fair” annual insurance premium percentage (IPP) expressed per dollar of the institution’s debt.
- ▣ We interpret a firm’s systemic risk as the value of its option to “put” potentially ruinous losses and loss exposures to taxpayers. Its managers’ ability to trigger forbearance for capital shortages and stand-alone “tail-risk” (i.e., losses that exceed taxpayers’ value-at-risk supervisory protection) **increases the value of the safety-net benefits it receives**. This creates an incentive for managers to search out, to lobby for, and to exploit weaknesses (i.e., loopholes) in risk-control arrangements.

- ▣ Treasury Efforts to Convince the Public that Ex Post the Heavily Subsidized TARP and Fed Rescue Programs “Made Money” Dishonor Government Service and Disgrace the Economics Profession. Bailout deals left taxpayer money on the table that should in principle be acknowledged and defended. Our opportunity-cost methods for measuring systemic risk help to assess how large the subsidies were.
- ▣ All US and EU **safety nets include implicit and explicit guarantees for bank creditors** whose opportunity-cost value grows with a bank’s size complexity and political clout. By engaging in cosmetic accounting, undertaking regulation-induced innovation and exerting lobby pressure, important financial firms can and (we find) do keep these guarantees from being fully priced.

# Bank and Regulatory Accounting Surface only the Tip of an Iceberg of Taxpayer Cost





# Economic Reporting Principles be Damned



# Modeling Safety-Net Benefits as a Function of the Volatility of Asset Quality and Capital Controls

- Our modeling procedure follows Merton (1977) in portraying taxpayer credit support as a one-year European put option on the bank's assets. Merton portrays safety-net access as an option that allows bank owners to put the bank to safety-net managers for the face value of the bank's debt. We allow authorities to refuse to exercise taxpayer's side of the put (Kane, 1986).
- As observable input variables, our models use the book value of debt ( $B$ ), the market value of a bank's or bank holding company's equity ( $E$ ), the standard deviation of the return on equity ( $\sigma_E$ ) and the fraction of bank assets distributed yearly as dividends to stockholders ( $\delta$ ). The synthetic variable IPP expresses the fair annual premium for stand-alone safety-net support per dollar of debt.
- Merton (1977, 1978) shows that **the IPP increases both with a bank's leverage and with the volatility of its return on assets**. In Merton's model, leverage is measured as the ratio of the market value ( $B$ ) of deposits and other debt to the market value of a bank's assets ( $V$ ). Volatility is defined as the standard deviation of the return on bank assets ( $\sigma_V$ ).

- ▣ No reason to expect either disinformational capacity or political clout and (therefore) proportionate Safety-Net Benefits to be the same **at all times** or at **small versus large banks**.
- ▣ Unique features of our analysis: We distinguish a bank's **stand-alone risk** from its **systemic risk** and we recognize that mischaracterizing **insolvency issues** as **liquidity problems** allows a flow of zombie-institution dividends to continue.

- ▣ We conceive of IPP as **the dividend** that taxpayers would be paid on their **contingent equity stake** in a given firm if information asymmetries did not exist. The value of a bank's "taxpayer put" increases with the extent to which creditors and stockholders are confident that they can *scare* authorities into shifting ruinous losses to taxpayers without adequate compensation.
  
- ▣ We develop two different opportunity-cost measures of the costs of taxpayer support:
  - The stand-alone IPP **with prompt resolution**: the IPD
  - The systemic-risk IPP that incorporates an implicit estimate of **likely forbearance**: the IPDS.

# Macroprudential Perspective

- ▣ We measure a bank's contribution to systemic risk relative to the IPP that our model implies quarter by quarter for the **portfolio of sample banks taken together**.
- ▣ A bank's systemic risk (IPDS) is the **difference** between the IPD that arises for the "sectoral portfolio" when that particular bank is and is not included.

# Table 4. Difference in Identity of Top Ten Sample Banks Ranked by Stand-Alone and Systemic Risk, 1974–2010

Panel A. Top 10 banks Ranked by Stand-Alone Risk

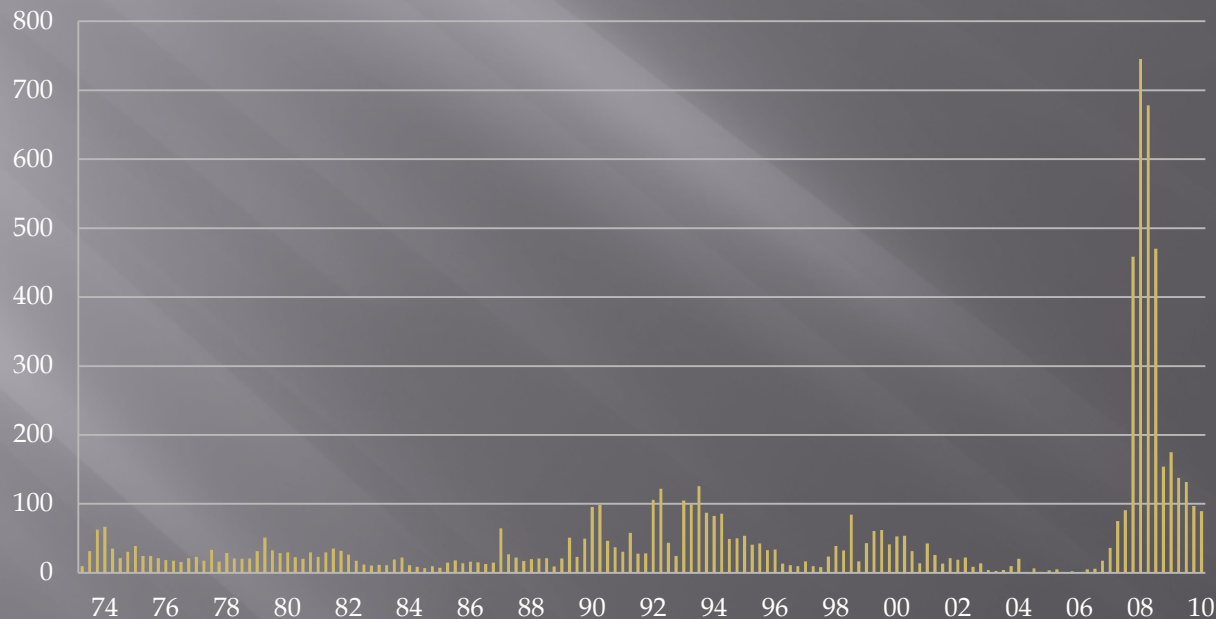
#	Bank	Regulatory or market response
1	1st Pacific Bancorp	Shut down
2	Bay National Corp	Shut down
3	Pacific State Bancorp/CA	Shut down
4	First Bankshares Inc/VA	Acquired
5	Community Shores Bank Corp	Consent order
6	Crescent Banking Co	Shut down
7	Ohio Legacy Corp	Consent order
8	Sun American Bancorp	Shut down
9	Bank of the Carolinas	Consent order
10	Sterling Banks Inc	Shut down

Panel B. Top 10 banks Ranked by Systemic Risk

#	Bank	Fiscal Quarter	Assets (\$ million)
1	State Street Corp	2009 Q1	142,144
2	Wells Fargo & Co	2009 Q1	1,285,891
3	PNC Financial Services Group	2009 Q1	286,422
4	Trico Bancshares	2008 Q3	1,976
5	Regions Financial Corp	2008 Q3	144,292
6	Banctrust Financial Group	2008 Q4	2,088
7	Marshall & Ilsley Corp	2009 Q1	61,790
8	Bank of America Corp	2009 Q1	2,321,963
9	Pacwest Bancorp	2008 Q4	4,496
10	Frontier Financial Corp	2008 Q3	4,245

# Microprudential Perspective: Mean Value of IPD Using the Dividend-Forbearance Model for sample U.S. bank holding companies, 1974-2010 (quarter by quarter in basis points)

## Mean Stand-Alone Risk (IPD) at Sampled Banks



# Using the Dividend-Forbearance Model

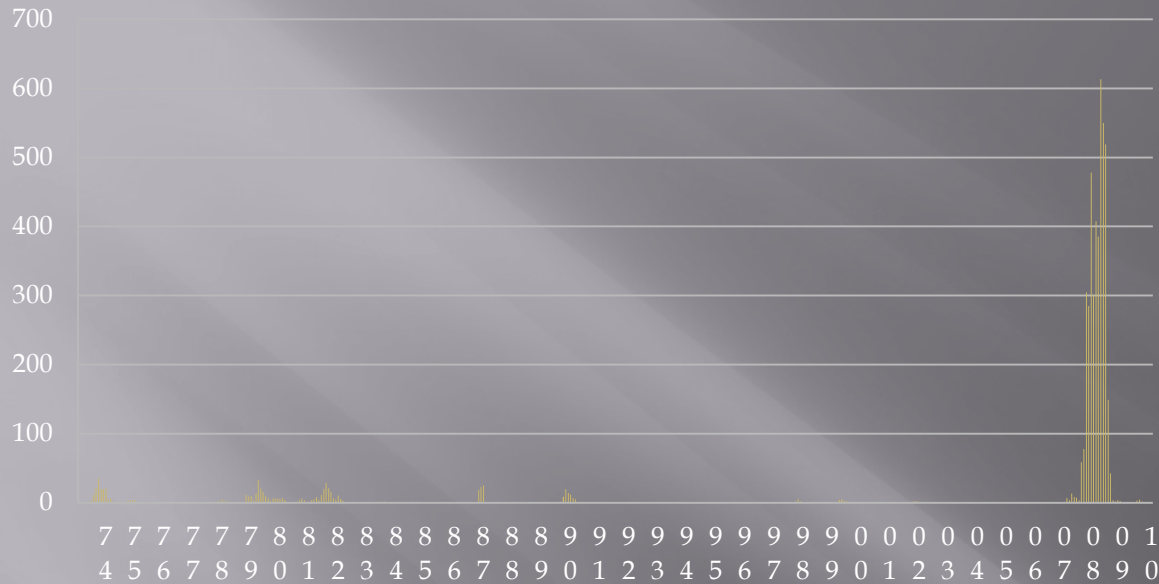
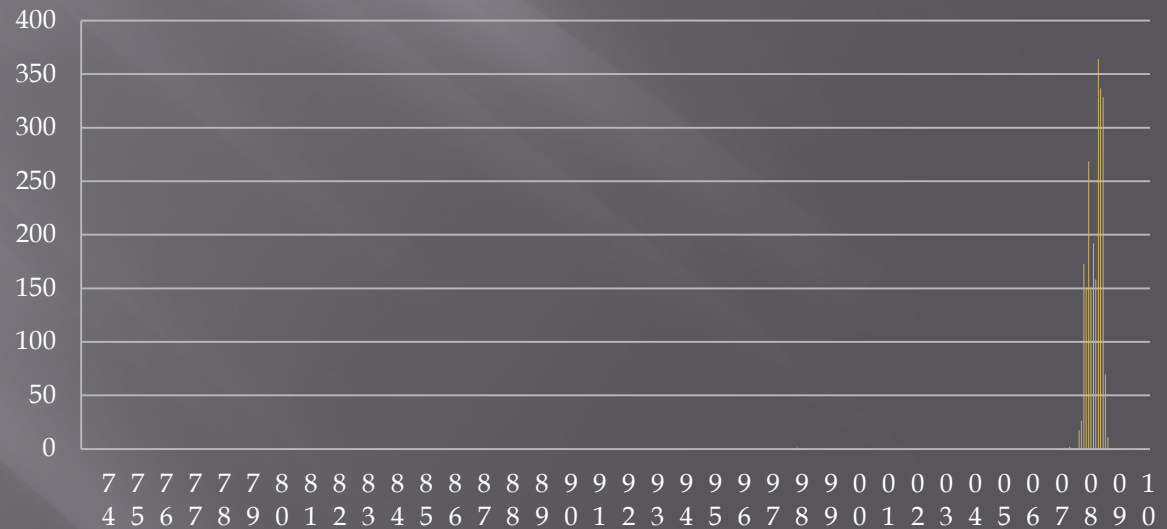


Figure 5. Macro Perspective: Sectoral Stand-Alone Risk Premium (IPD) for Sampled U.S. bank holding companies, 1974-2010 (quarter by quarter in basis points)

# Introducing a Dividend Stopper





# What Lessons Do These Graphs Teach?

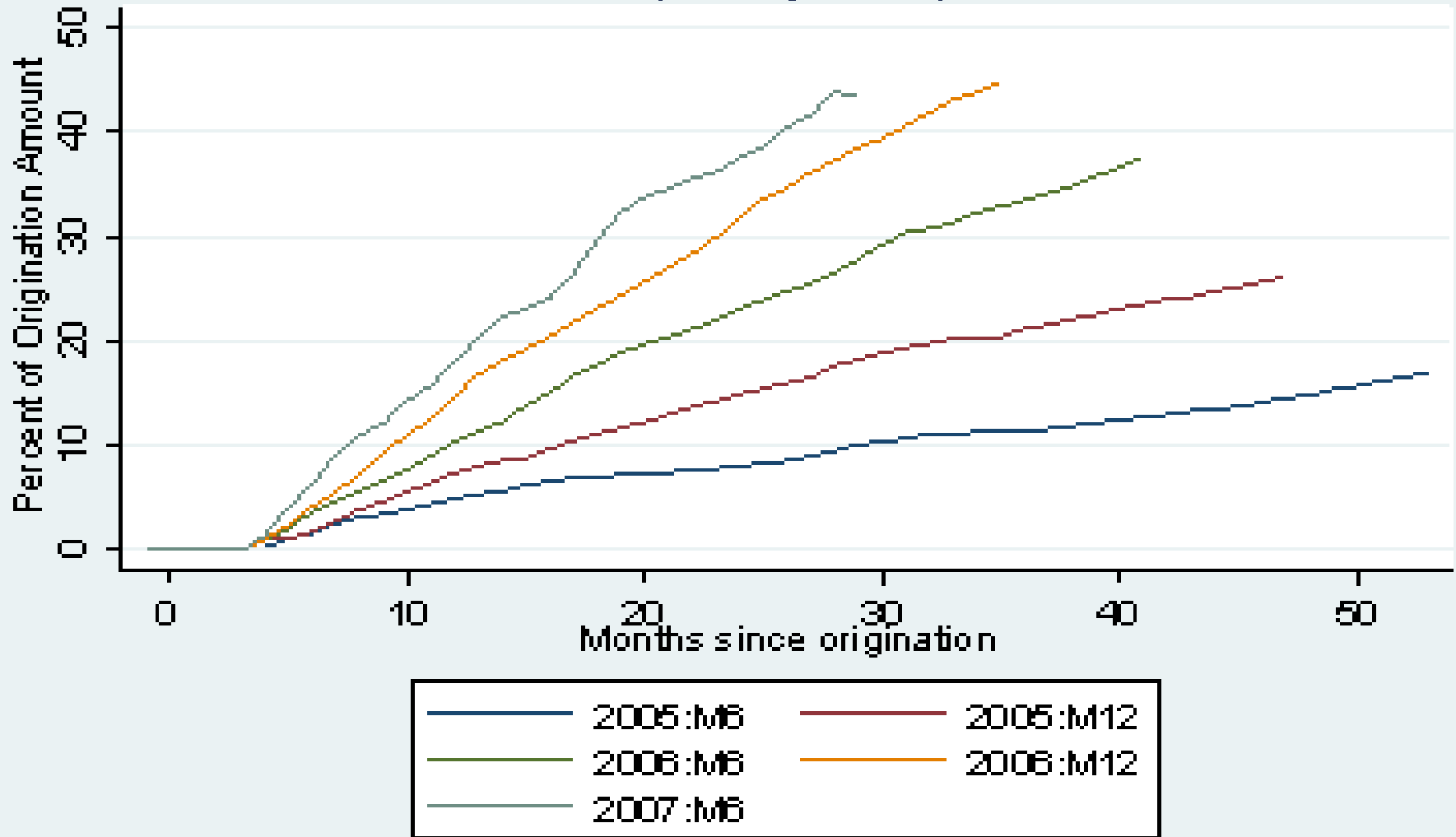
1. Bank risk-taking increases in late booms and gets worked down again as economic recovery takes hold.
2. Bank risk-taking increased markedly after the S&L mess. Megabankers recognized how reluctant authorities were to address a pattern of industry insolvency.
3. The Fed's Pre-TARP reluctance to conduct triage and impose immediate dividend stoppers in their 2007-2008 rescue programs cost taxpayers a lot on average.

# Our Methods also show a Precrisis Buildup of Systemic Risk

- ▣ Although Accounting and Tier-1 Capital Ratios were controlled, the Model-Implied ratio of **market value capital** went down sharply from 2006 on. The Lehman-AIG event merely surfaced longstanding weakness.
- ▣ Our straightforward and easy-to-calculate measures could have been used in potentially “golden moments” to uncover and mitigate the efforts to arbitrage capital requirements.

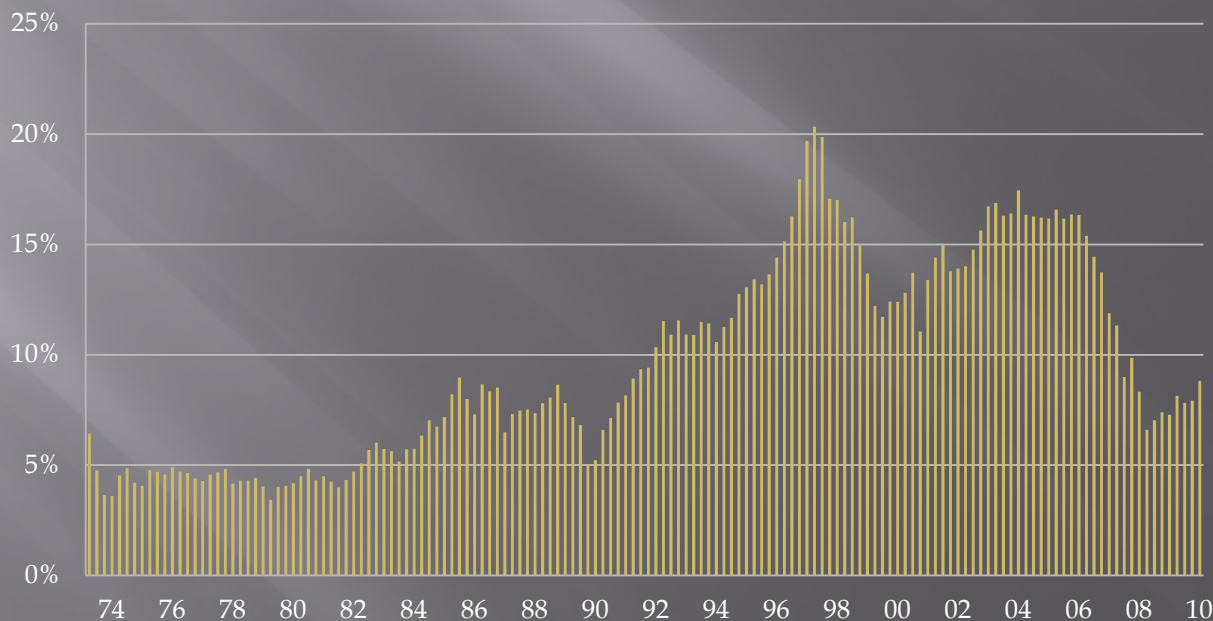
# Golden Moments: Loans Got Worse and Worse As We Neared the Breaking Point

## Serious Delinquency, Subprime 1st lien



# Figure 2. Mean Ratio of Model-Implied Equity Capital to Assets at Sampled U.S. bank holding companies, 1974-2010 (quarter by quarter in percent)

## Implied Ratio of Capital to Assets at Sampled Institutions



# Macroprudential Perspective: Average correlation between returns on an individual bank stock and bank sectoral portfolio, 1974–2000 (by quarter number as a decimal fraction).

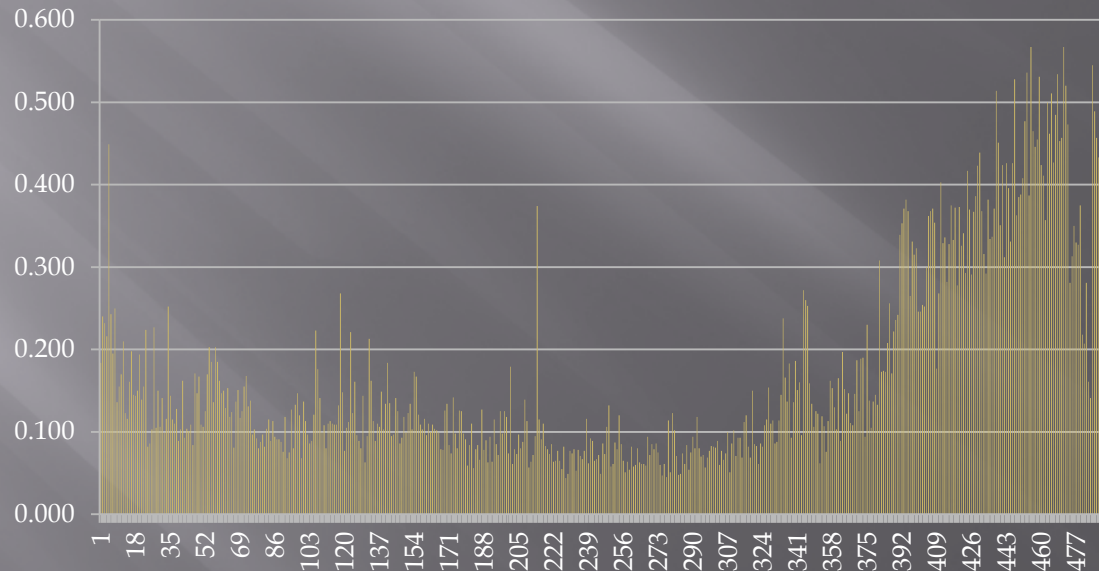


Figure 7. Mean individual-bank systemic risk premium (IPDS) at sampled U.S. bank holding companies using the Dividend-Forbearance Model, 1974-2010 (quarter by quarter in basis points)

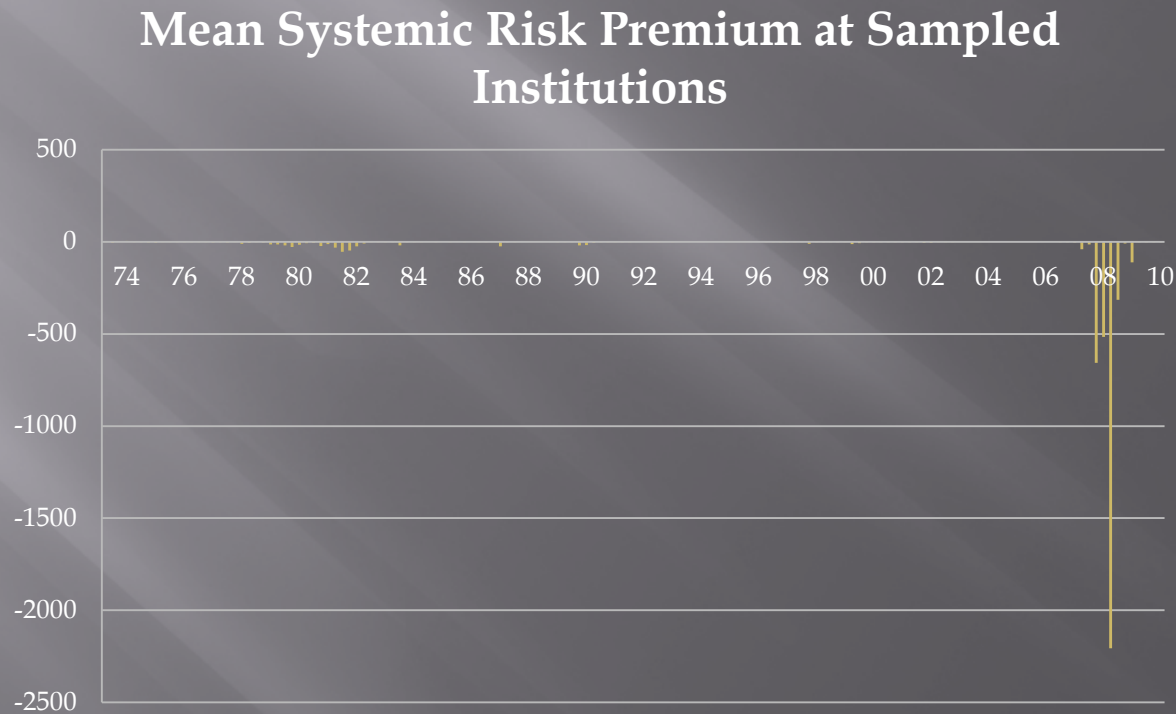
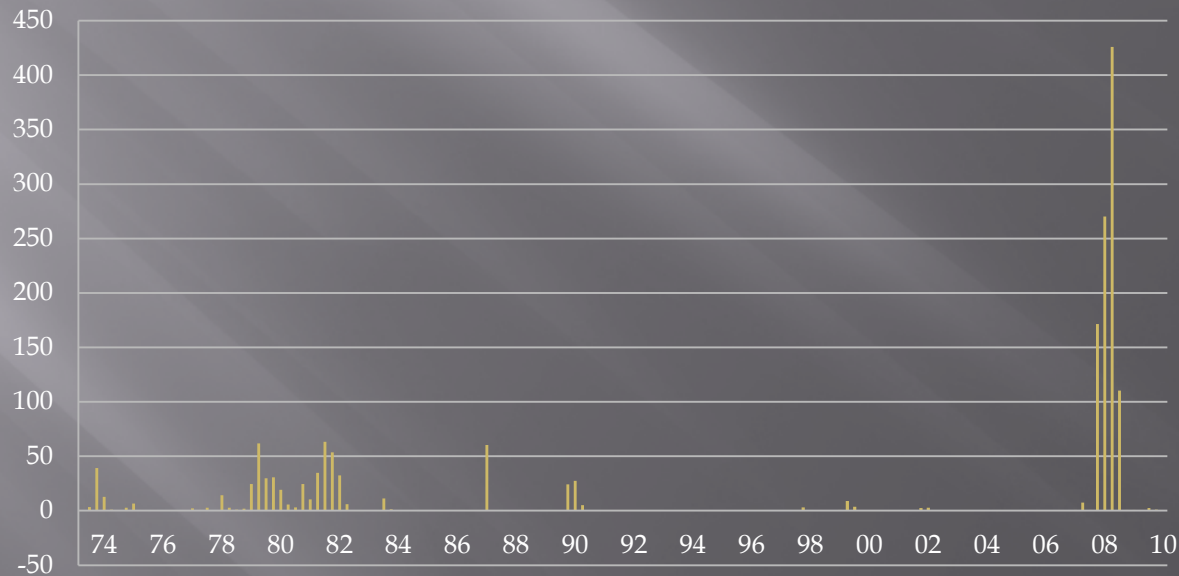


Figure 8. Mean systemic risk premium (IPDS) using the Dividend-Forbearance Model at the top 5% of sampled U.S. bank holding companies, 1974-2010 (quarter by quarter in basis points)

### Mean Systemic Risk Premium for Large Banks Only



## Validation: Comparison of Our Measures of Stand-Alone and Systemic risk with two other measures of capital shortage for 18 of the 19 institutions that the Federal Reserve Subjected to Stress Tests in early 2009

	Other Measures			Our Measures			
	SCAP (\$Bil)	SCAP/Tier1 Capital	Acharya et al. MES (\$Bil)	Value of Stand-alone Support (\$MM)	Stand-alone Risk Premium IPD (bp)	Value of Systemic Risk Support (\$MM)	Systemic Risk Premium IDPS (bp)
Bank of America Corp	33.9	19.57%	15.05	127300	619	40882	199
Wells Fargo & Co	13.7	15.86%	10.57	73645	617	40186	337
Citigroup Inc	5.5	4.63%	14.98	41073	232	37577	212
Regions Financial Corp	2.5	20.66%	14.80	11692	916	2265	177
Suntrust Banks Inc	2.2	12.50%	12.91	12690	800	3986	251
Keycorp	1.8	15.52%	15.44	4662	521	1912	214
Morgan Stanley Dean Witter & Co	1.8	3.81%	15.17	5100	80	8418	133
Fifth Third Bancorp	1.1	9.24%	14.39	34300	3240	3173	300
PNC Financial Services GRP INC	0.6	2.49%	10.55	8249	319	5881	228
American Express Co	0	0.00%	9.75	4489	433	2755	266
Bank New York Inc	0	0.00%	11.09	985	56	-8965	-510
JPMorgan Chase & Co	0	0.00%	10.45	23715	126	16893	90
US Bancorp	0	0.00%	8.54	8302	343	6021	249
State Street Corp	0	0.00%	14.79	4204	297	2109	149
BB&T Corp	0	0.00%	9.57	4491	326	3197	232
Capital One Financial Corp	0	0.00%	10.52	13137	896	2156	147
Goldman Sachs Group Inc	0	0.00%	9.97	2047	25	10407	125
Metlife Inc	0	0.00%	10.28	6960	144	6376	132

Notes: SCAP is the capital shortfall calculated in the supervisory Capital Assessment Program conducted in February 2009 and MES is the Marginal Expected Shortfall calculated by Acharya et al. (2010) from data in periods during which stock-market returns lie below their fifth percentile.



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MYOPIC CENTRAL-BANK ACTIONS VIOLATES  
DUTIES OF LOYALTY, COMPETENCE, AND CARE  
GOVERNMENTS OWE TO ORDINARY TAXPAYERS



# Bailout Policymaking in US & EU

