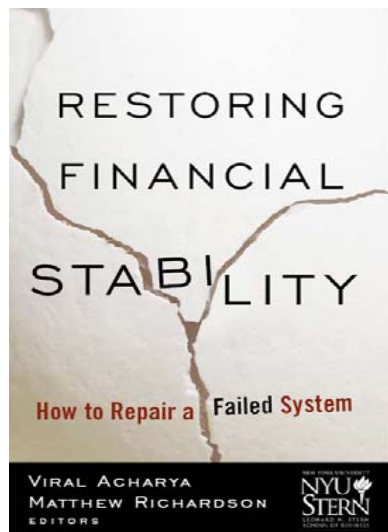




# Restoring Financial Stability: How to Repair a Failed System



Presentation at the  
Bank of Finland

3 June 2009

Viral V. Acharya and Philipp Schnabl

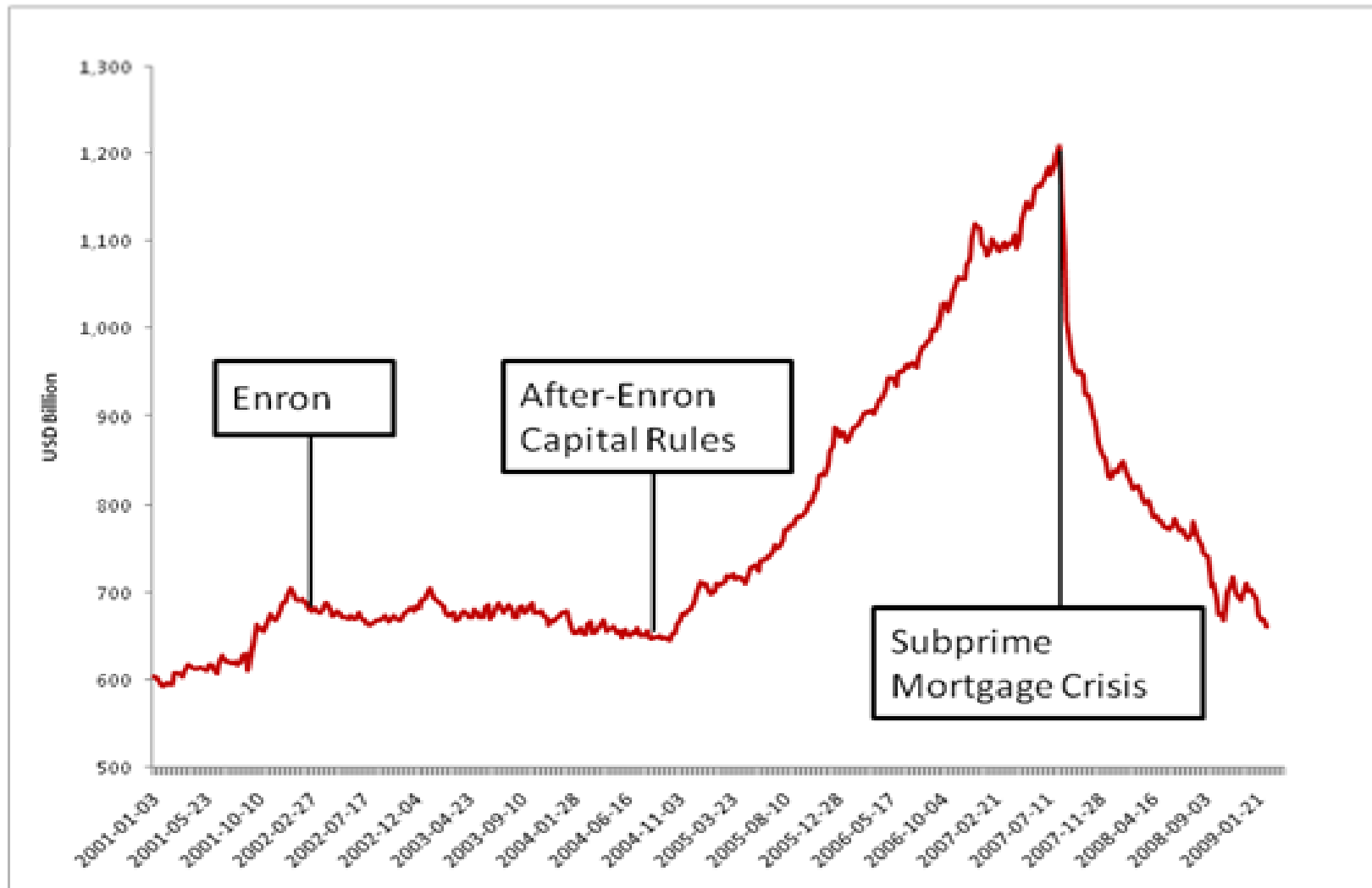
# Idea behind the book

- Joint effort of 33 faculty members at NYU Stern Business School
- Edited by Viral Acharya and Matthew Richardson
- 18 White Papers on Financial Crisis
- Three parts of the presentation
  - Causes of the Financial Crisis
  - Four Principles for Future Regulation (brief discussion)
  - Regulation of Systemic Risk (in afternoon)

# Causes of the Financial Crisis

- Popular explanations
  - Design of subprime mortgages
  - Growth and (lack of) quality mortgages due to securitization
  - Rating agencies rubber stamp of AAA
- But banks did not transfer credit risk down the line
  - Chapter 2 (Acharya-Schnabl: How Banks Played the Leverage “Game”) provides evidence of carry-trade style, tail-risk seeking behavior in banks
    1. ABCP conduits and SIV’s  
(Acharya-Schnabl, 2009 – Securitization *without* Risk Transfer)
    2. AAA tranches of subprime mortgages

# ABCP Growth: Jan 2001 - Feb 2009



# Banks did not transfer credit risk

	Loans	HELOC	Agency MBS	Non-Agency AAA	CDO Subord	Non CDO Subord	Total	
Banks & Thrifts	2,020	869	852	<b>383</b>	90		4,212	39%
GSEs & FHLB	444		741	<b>308</b>			1,493	14%
Brokers/dealers			49	<b>100</b>	130	24	303	3%
Financial Guarantors		62			100		162	2%
Insurance Companies			856	<b>125</b>	65	24	1,070	10%
Overseas			689	<b>413</b>	45	24	1,172	11%
Other	461	185	1,175	<b>307</b>	46	49	2,268	21%
Total	2,925	1,116	4,362	<b>1,636</b>	476	121	10,680	
	27%	10%	41%	15%	4%	1%		

# Old Model: Banks as Delegated Monitors

## Bank Balance Sheet

Assets	Liabilities
Loans	

# Old Model: Banks as Delegated Monitors

## Bank Balance Sheet

Assets	Liabilities
Loans	Deposits
	Capital/Equity

# Old Model: Banks as Delegated Monitors

- Banks specialize in monitoring loans
- Banks act on behalf of depositors
- Financial system directs funds to its most productive use
- Regulator requires minimum capital to ensure that banks have a stake in the game

# New Model: Securitization

## Bank Balance Sheet

Assets	Liabilities
Loans	Deposits
	Capital

## Structured Purpose Vehicle

Assets	Liabilities
Loans	Asset-Backed Securities (ABS)
	Investors

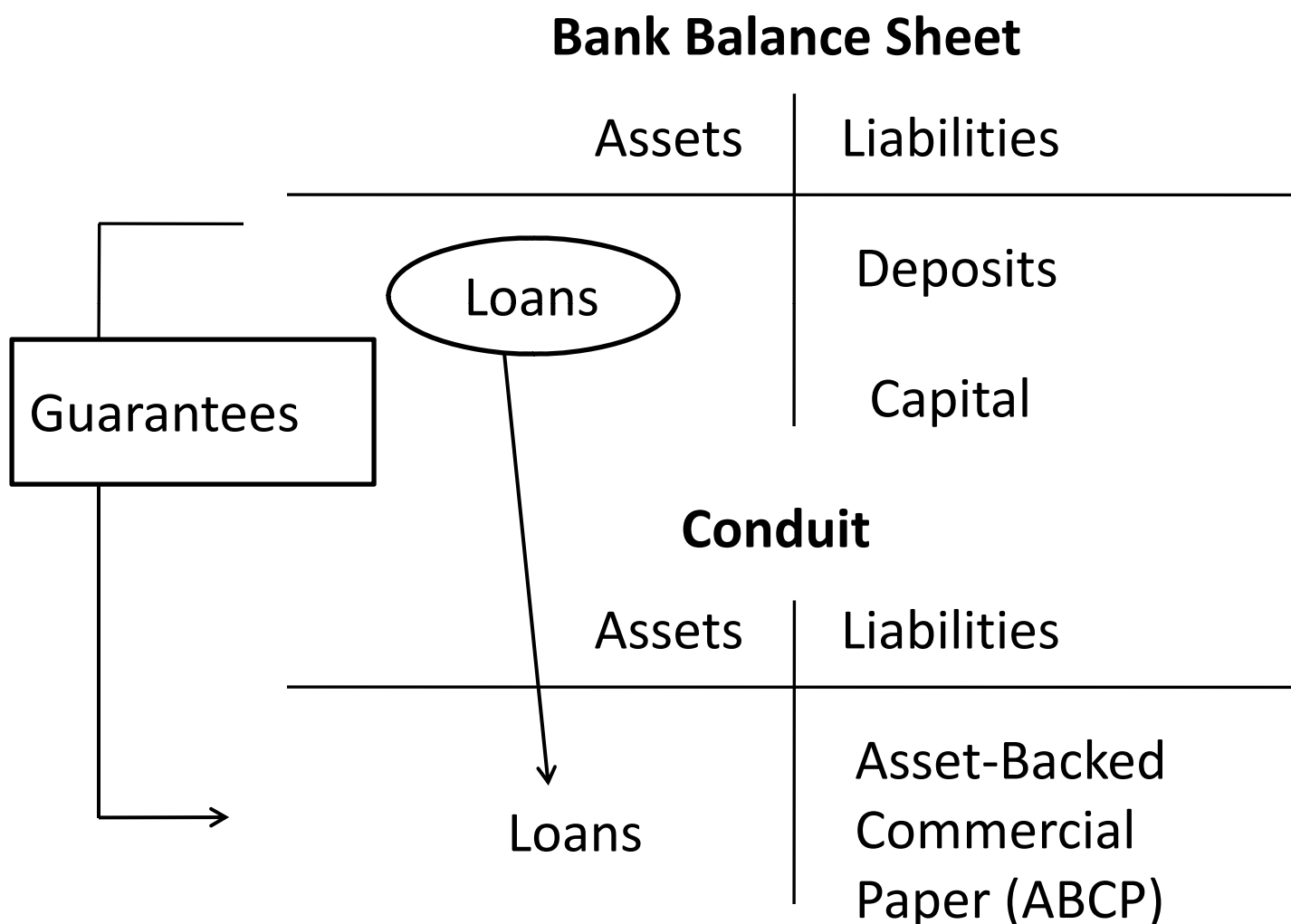
# New Model: Securitization

- Securitization allowed banks to remove risk from their balance sheet (risk transfer)
- Securitization allowed banks to avoid costly capital
- Banks turned into underwriters – originate loans and then sell them off

# New Model: Searching for Yield

- Securitization moves risk off the balance sheet
- Banks do not receive any compensation for holding risk
- Puts downward pressure on profits and left them searching for yield
- Competitive landscape thinned margins
  - Cross-border banking
  - Gradual repeal of Glass Steagall in the United States

# New Model+: Securitization w/o Risk Transfer



# Example: CRC Funding

## CRC Funding (October 2006)

Assets		Liabilities	
Corporate Loans	\$2.5bn	Asset-Backed	\$18.8bn
Auto Loans	\$2.4bn	Commercial Paper	
Consumer Loans	\$2.4bn	(ABCP)	
Mortgage Receivables	\$2.3bn		
Other Assets	\$9.2bn		
Total	\$18.8bn	Total	\$18.8bn

Guarantee from Citigroup

Short-term debt: Average  
Maturity < 1 Month

# New Model+: Less Capital For Guarantees

## Bank

Asset/Commitment	Capital Requirement
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Loans	1.6% - 8%
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Guarantees	0% - 0.8%
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## Conduit

Asset	Capital Requirement
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Loans	0%
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# Example: Old Model

## Bank

	Assets	Liabilities	
Consumer Loans	\$100mn	Equity	\$ 8mn
		Debt	\$ 92mn

# Example: New Model

## Bank

	Assets	Liabilities	
Consumer Loans	\$100mn	Equity	\$ 8mn
		Debt	\$ 92mn

Guarantee

## ABCP Conduit

	Assets	Liabilities	
Consumer Loans	\$100mn	Asset-Backed Commercial Paper	\$100mn

# Example: New Model

## Bank

	Assets	Liabilities	
Cash from ABCP	\$100mn	Equity	\$ 8mn
		Debt	\$ 92mn

Guarantee

## ABCP Conduit

	Assets	Liabilities	
Consumer Loans	\$100mn	Asset-Backed Commercial Paper	\$100mn

# Example: New Model

## Bank

	Assets	Liabilities	
New Investments	\$100mn	Equity	\$ 8mn
		Debt	\$ 92mn

Guarantee

## ABCP Conduit

	Assets	Liabilities	
Consumer Loans	\$100mn	Asset-Backed Commercial Paper	\$100mn

# Example: Assume loss of 8%

## Bank

	Assets	Liabilities	
New Investments	\$100mn	Equity	\$ 0mn
Consumer Loans	\$92mn	Debt	\$ 92mn
		New Debt to repay ABCP	\$ 100mn

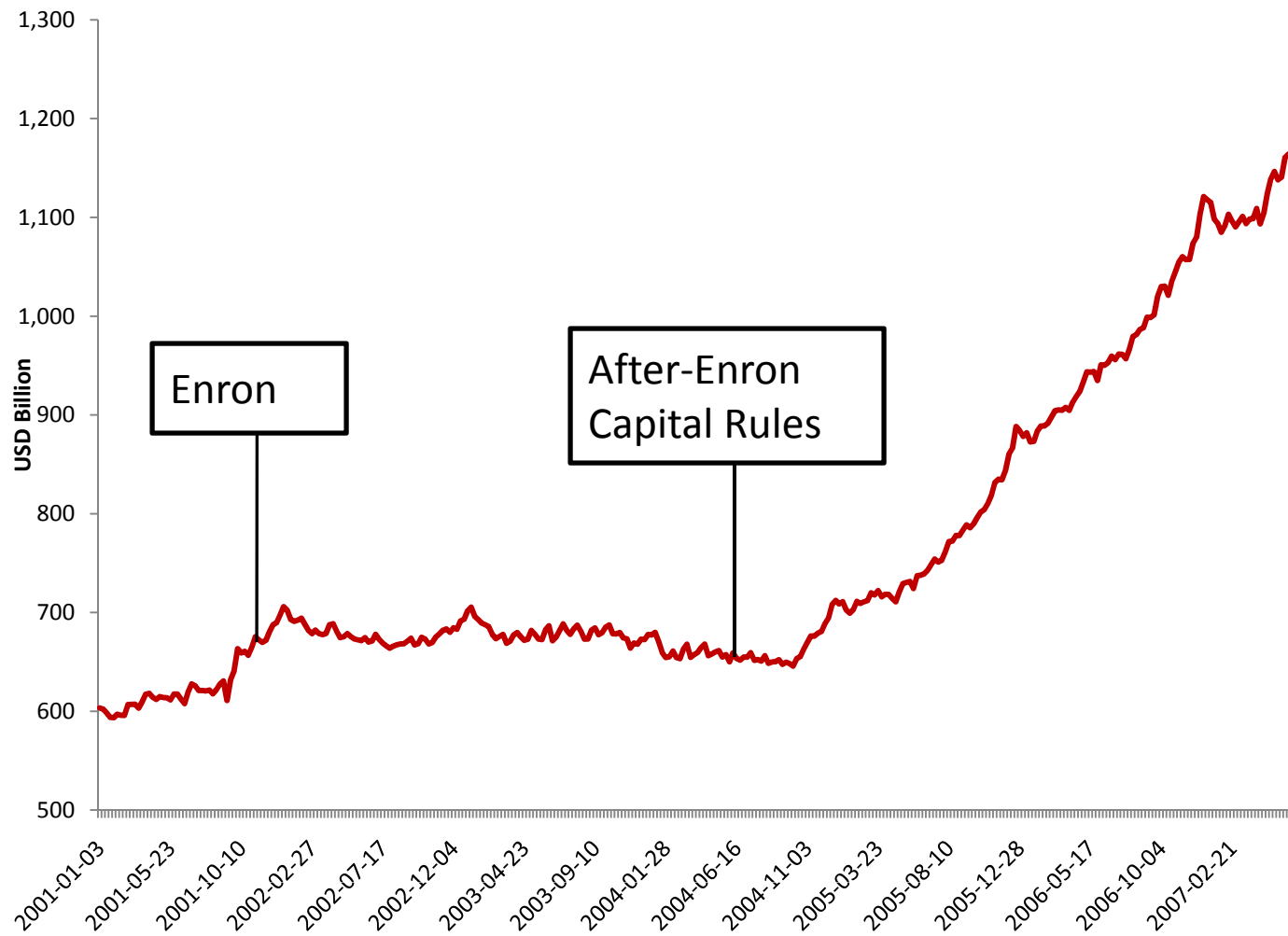
## ABCP Conduit

	Assets	Liabilities	
Consumer Loans	\$0mn	Asset-Backed Commercial Paper	\$0mn

# New Model+: Benefit of Guarantees

- Use of guarantees lowers capital requirements
- Guarantees ensure highest ratings from Rating Agencies
- High ratings allow banks to sell ABCP to Money Market Funds
  - Global imbalances exacerbated this problem (but not the cause)
- Provides funding for banks at short-term interest rates

# ABCP Growth: Jan 2001 - June 2007



# Most conduits were fully guaranteed

	Market Total	
	# Conduits	Size (\$mn)
All Conduits	296	1,235,281
Risk Transfer		
Full Liquidity	159	755,910
Full Credit	55	159,860
Extendible Notes	54	226,866
SIV	28	92,645
Currency		
USD	234	972,977
EURO	33	219,959
YEN	16	22,941
AUD	12	19,253
NZD	1	151

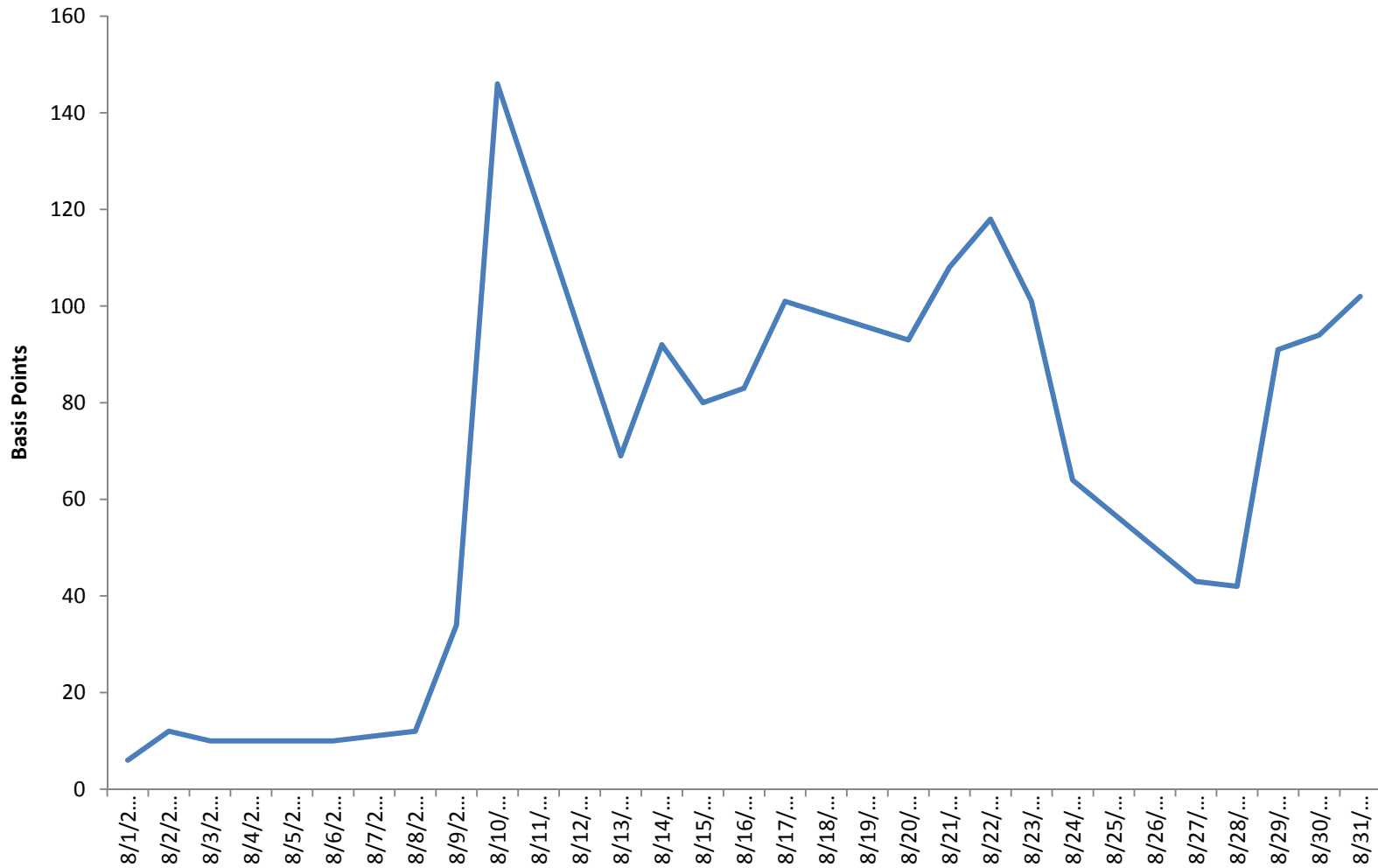
# Commercial banks set up the most

	Market Total	
	# Sponsors	Size (\$mn)
All Programs	126	1,235,281
Sponsor Type		
Commercial Banks	64	903,291
Structured Finance	27	181,739
Mortgage Lender	16	71,120
Insurance & Monoline	3	14,118
Investment Banks	4	11,039
Country of Origin		
United States	68	488,535
Germany	15	204,103
United Kingdom	10	195,678
Japan	5	40,820
Canada	3	38,349
Australia	7	13,390
Other Europe	6	

# Ten Largest ABCP Conduits Sponsors

	ABCP (bn)	Assets (bn)	Equity (bn)	ABCP/Equity
Citibank	93	1,884	120	77.4%
ABN Amro	69	1,301	34	201.1%
Bank of America	46	1,464	136	33.7%
HBOS	44	1,160	42	105.6%
JPMorgan Chase	42	1,352	116	36.1%
HSBC	39	1,861	123	32.1%
Societe Generale	39	1,260	44	87.2%
Deutsche Bank	38	1,483	44	87.8%
Barclays	33	1,957	54	61.5%
WestLB	30	376	9	336.6%

# ABCP spread as the crisis broke out...



# Investors return loans to bank

## Bank Balance Sheet

Assets	Liabilities
Loans	Deposits
	Capital

## Conduit

Assets	Liabilities
Loans	ABCP

Investors

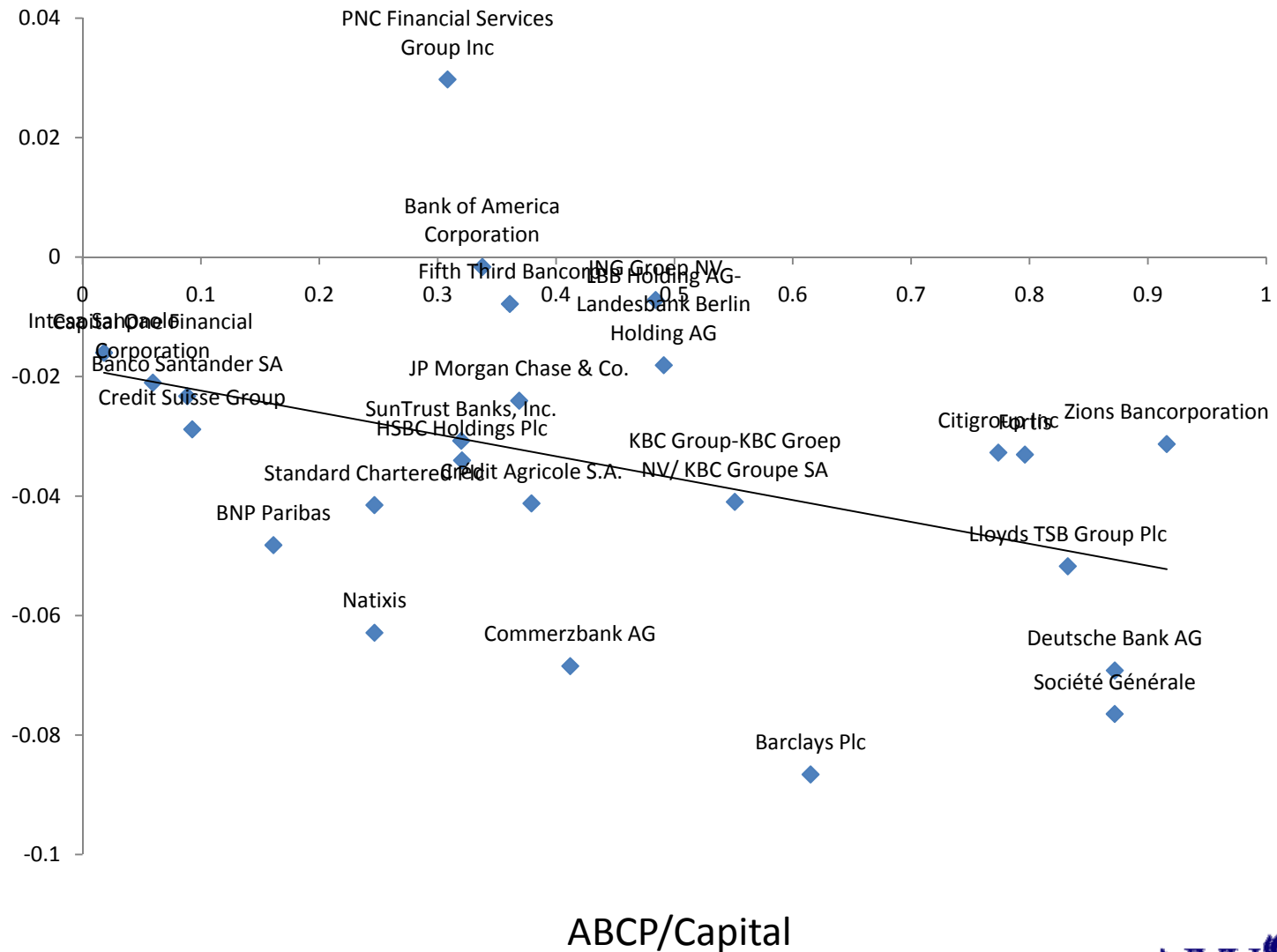
# Banks have to take back assets

Guarantees	ABCP (\$bn)	Assets returned to banks (%)
Full Liquidity	752	100.0%
Full Credit	160	100.0%
Extendible Notes	227	92.3%
SIVs	93	73.8%
All Conduits	1,231	95.7%

# Securitization w/o Risk Transfer

- Some small banks went under
  - IKB and Sachsen Landesbank had provided guarantees more than three-fold their equity
  - Bailed out by the German government
- Some banks took assets back on balance sheet (~ \$600bn)
  - Citigroup was the largest conduit sponsor in the US
  - Exposure of ~ \$90bn from Conduits
  - Government provided guarantees to Citibank for conduit assets
- Some banks extended more guarantees (~ \$800bn)
  - Federal Reserve Funding Facilities support conduits directly
  - Assets should be on the balance sheet

# Large Losses for Banks with Conduits



# Bank performance in August 2007

- Stock and CDS performance related to ABCP Exposure / Equity
- At the extensive as well as the intensive margin
- Relationship absent prior to August 2007
- Consistent with lack of full risk transfer:
  - ABCP spread related to sponsor's CDS spread
  - More so as assets deteriorated
  - More so for conduits with fuller guarantees

# “Missing” capital large for some banks

Name	Equity	AB CP	Missing Capital						
			Total	%					
					Dresdner Bank AG	16.4	23.2	1.9	11.3%
					Fortis	21.9	22.6	1.8	8.3%
					Bayerische Landesbank	14.1	22.4	1.8	12.7%
					State Street Corporation	6.5	21.9	1.6	24.3%
					Crédit Agricole S.A.	39.5	19.5	1.6	3.9%
Citigroup Inc	90.9	92.7	6.7	7.3%	Hypo Real Estate Holding AG	6.1	18.9	1.5	24.8%
ABN Amro Holding NV	31.2	68.6	5.5	17.6%	Lloyds TSB Group Plc	25.2	18.8	1.5	6.0%
Bank of America Corporation	91.1	45.7	3.7	4.0%	Royal Bank of Scotland Plc (The)	52.3	15.8	1.3	2.4%
HBOS Plc	44.0	43.9	3.5	8.0%	Royal Bank of Canada RBC	19.1	15.6	1.2	6.5%
JP Morgan Chase & Co.	81.1	42.7	3.4	4.2%	KBC Group	17.6	12.6	1.0	5.7%
HSBC Holdings Plc	87.8	39.4	3.2	3.6%					103.8
Deutsche Bank AG	31.0	38.7	3.1	10.0%	Sachsen Bank	1.0	12.5	1.0	%
Société Générale	34.1	38.6	3.1	9.1%	BNP Paribas	55.6	11.6	0.9	1.7%
Barclays Plc	45.2	33.1	2.6	5.9%	Banque de Montreal-Bank of Montreal	14.8	11.5	0.9	6.2%
Rabobank Group	34.8	30.8	2.5	7.1%	Wachovia Corporation	39.4	10.8	0.9	2.2%
WestLB AG	9.5	29.9	2.4	25.1%	Sumitomo Mitsui Financial Group, Inc	39.6	9.6	0.8	1.9%
ING Groep NV	42.0	26.4	2.1	5.0%	Landesbank Baden- Wuerttemberg	14.1	8.4	0.7	4.8%
Group Mitsubishi UFJ Financial Group	63.9	26.0	2.1	3.3%			812.		
					Total	1069.8	4	64.1	6.0%

# Profitability of conduits

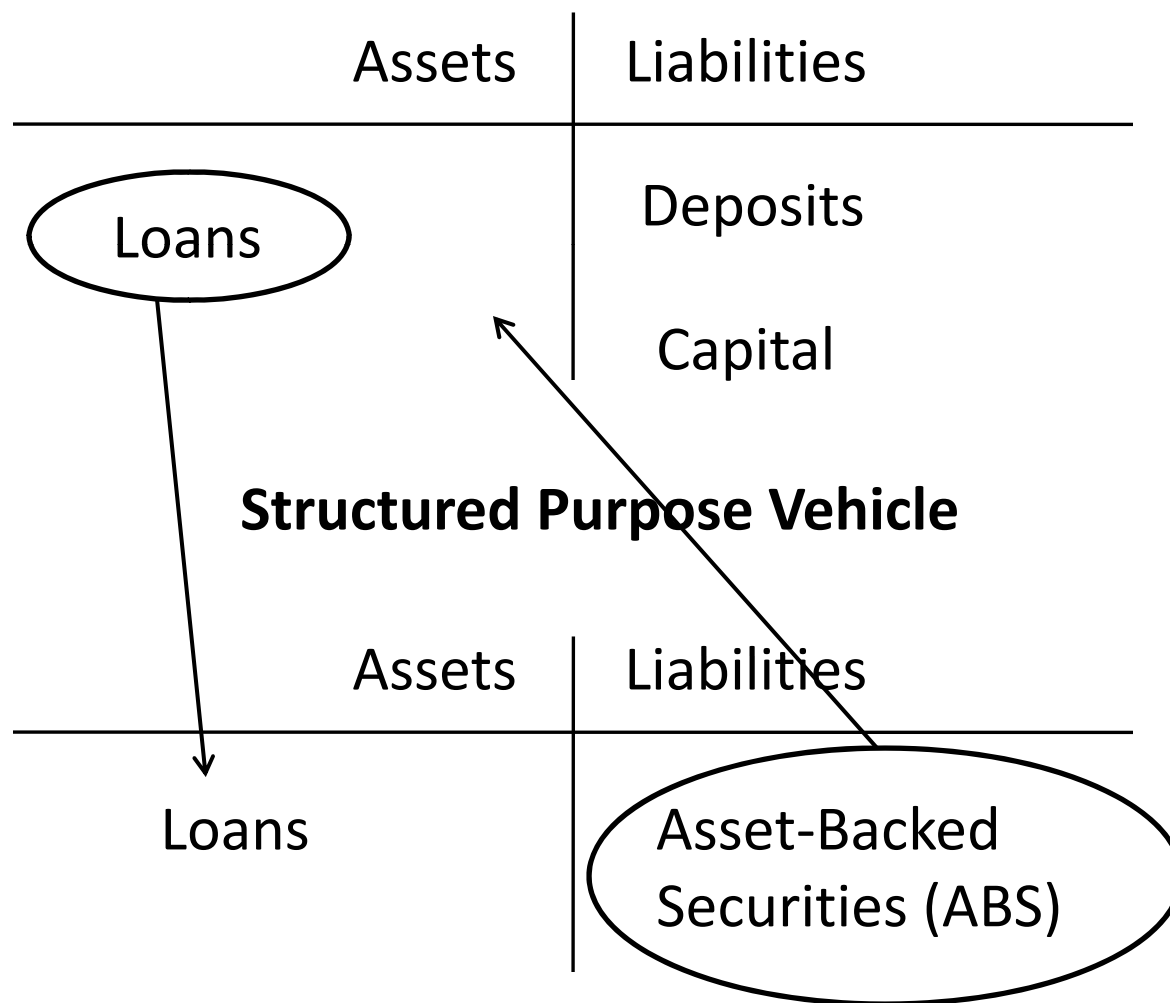
- Conduits supposedly earned 10-30 bps over the ABCP rates
- Suppose cost of equity capital = ABCP + 5%
- Then, with zero capital requirement, conduits are attractive
  - Argument relies on short-termism, limited liability or government put
- With correct capital requirement, cost =  $0.08 * 5\% = 40$  bps!!
- Conduits WOULD NOT have made money: “Regulatory arbitrage”

# Alternative New Model+: Asset Buy Back

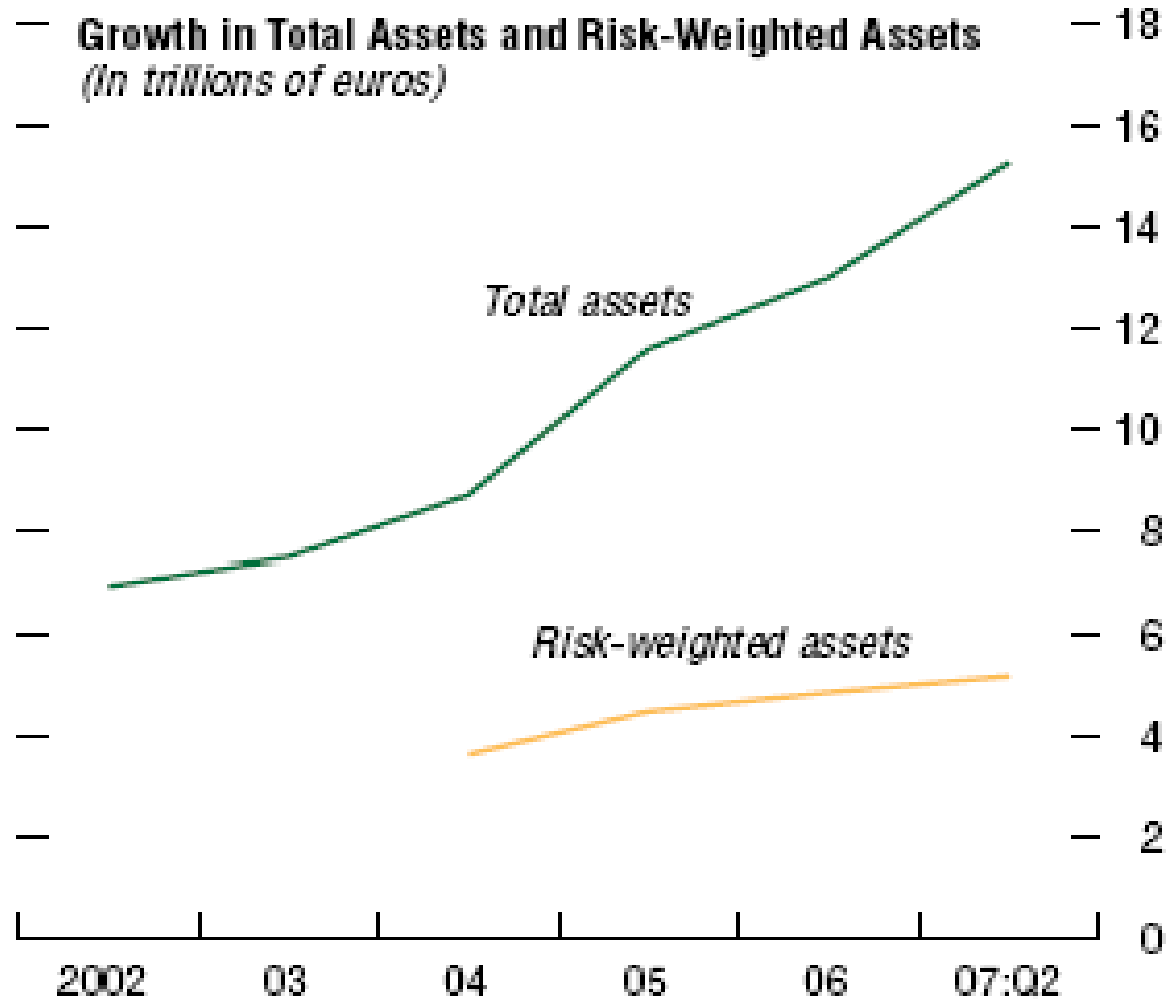
- Move risk off balance sheet using securitization
- Banks buy back AAA-rated Asset-Backed Securities (super-safe tranches)
- Reduce costly capital requirements
- Effectively banks write insurance against economic downturn

# Alternative New Model+: Asset Buy Back

## Bank Balance Sheet



# Low Growth in Risk-Weighted Assets



# Summary: Causes of Financial Crisis

- Popular explanations
  - Design of subprime mortgages
  - Growth and (lack of) quality mortgages due to securitization
  - Rating agencies rubber stamp of AAA
- Banks effectively maintained credit risk and increased leverage
- It seems important to understand what caused bank/bankers' incentives to take on
  - Highly-levered
  - Tail risks
  - Systemic in nature

# Four Principles for Future Regulation

1. Long-term incentives
  - Clawbacks (bonus/malus)
  - Avoid compensation of “fake alpha” trades
2. Efficient pricing of government guarantees
  - Deposit insurance
  - TBTF, GSEs
  - Loan guarantees, LOLR
3. “Tax” for systemic risk (detailed presentation in afternoon)
4. Transparency
  - Centralized clearing
  - Accounting of off-balance-sheet transactions