

The business models of large interconnected banks and the lessons from the financial crisis

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3 main lessons from the crisis

- The system is too interconnected with too many banks that cannot be allowed to collapse. This creates an “implicit guarantee” which cannot credibly be denied and encourages high-risk behavior.
- There is too little capital and too much leverage in the system. Local problems too quickly become systemic.
- There are too many perverse incentives. Better governance arrangements are needed.

The major issues are the GSIFIs and how to regulate them

Not to ignore macro issues or structural policy failures.

Crisis has been a “perfect storm”, with many separate driving forces converging and interacting.

But GSIFIs are at the top of the financial food chain:

- Dominant in interbank market
- Derivatives trading
- Prime broker activities
- Central to originate-to -distribute chains

Focus on derivatives

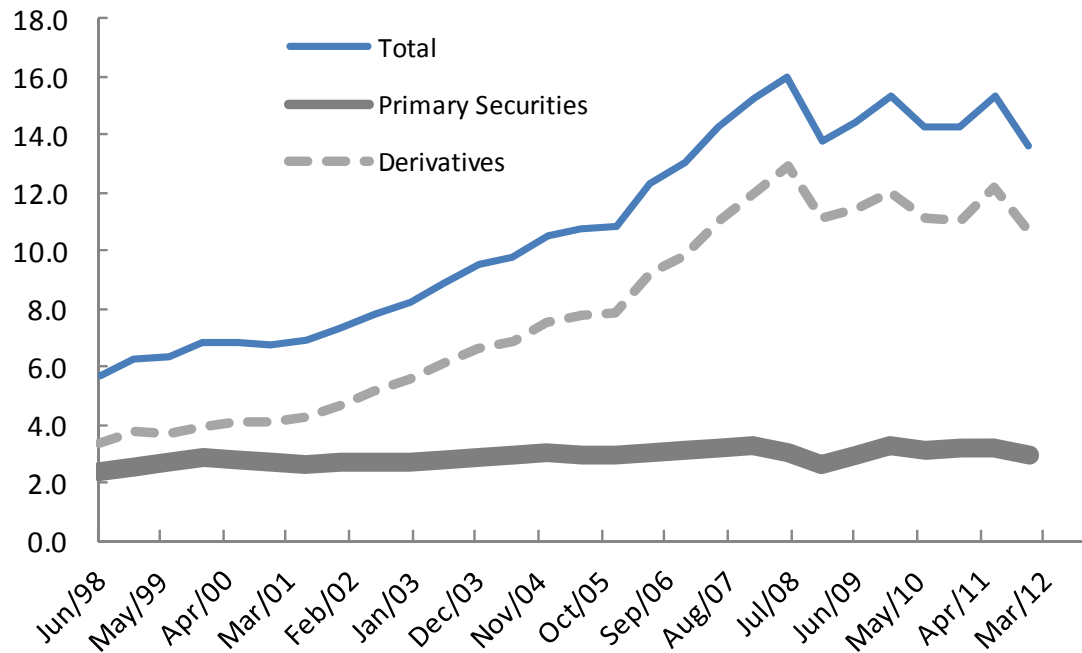
Trading, mostly OTC, dominated by a handful of huge US and European banks .

Major source of leverage:

- Up-front fees and small cash payments can support very large exposures.
- These enable sophisticated structuring of tax-effective products which generate fee income. Fee income drives activity.
- Re-hypothecation of collateral (more about this later) allows leverage to be multiplied.
- Derivatives facilitate arbitrage of Basel capital rules.

How big is the derivative mountain?

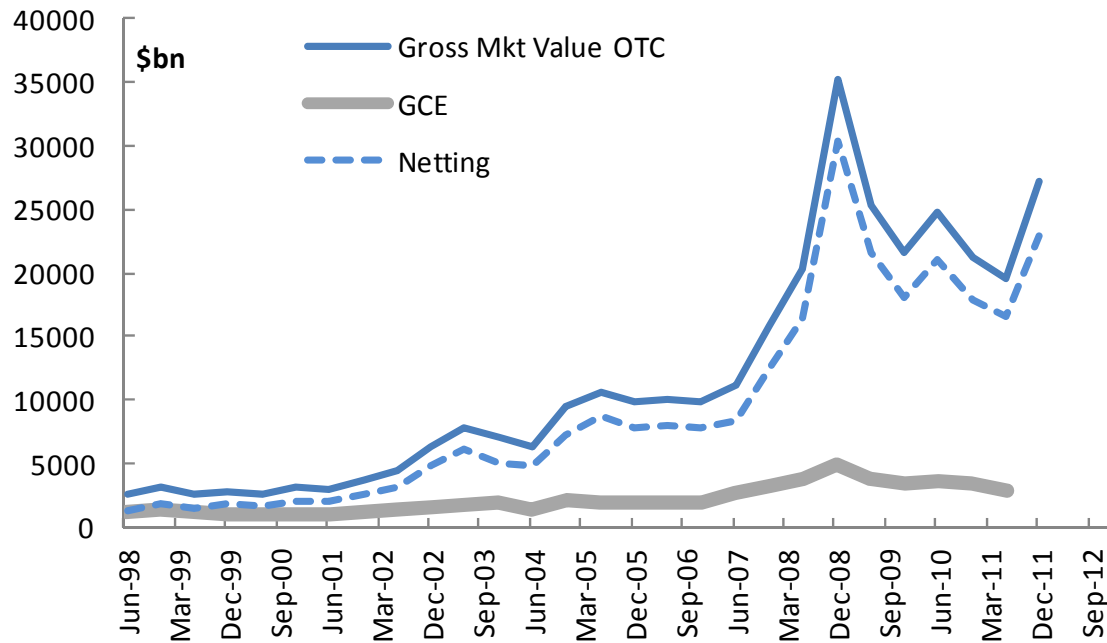
Notional value of derivatives and primary securities worldwide (per cent of world GDP)



But notional values exaggerate. Other measures are much smaller

- Settlement exposure, i.e. gross market value (GMV), can be tiny in comparison: \$16 tn or 2.7% of \$586 tn notional at end-2007.
- Banks hedge most of their positions.
- Most exposure is with a small number of counterparties and for many purposes banks can reasonably net these positions.
- So gross credit exposure (GCE), i.e. non-netted GMV, is smaller still.

Gross market value of derivatives, netting and gross credit exposure



Even valued at GMV derivatives can dominate GSIFI balance sheets (1)

The case of Deutsche Bank

<u>Balance sheet at year-end 2008 on IFRS (no "netting") and GAAP (with "netting") bases</u>						
(billion euros)						
<u>Accounting system</u>		<u>IFRS</u>	<u>GAAP</u>	<u>Difference:</u>		
				<u>IFRS and GAAP</u>		
Trading account assets						
<i>o/w</i>	Derivatives	1224.5	128	1096.5		
	Non-derivative trading assets	247.5	247.5	0		
Reverse repos and borrowed sec.		168	161	7		
Net loans		269.3	269.3	0		
Brokerage, sec-related receivables		104.1	35.1	69		
<u>Other assets*</u>		<u>189</u>	<u>189.1</u>	<u>0</u>		
Total assets		2202.4	1030	1172.4		
<i>n.a. not available, i.e. sources' presentations differ.</i>						
*Includes cash; near-cash; land, prop. and equip.; intangibles; and other as well as unidentified items.						

Even valued at GMV derivatives can dominate balance sheets (2)

The case of 6 US mega-banks

Total Assets, end-Q3 2012		
	(\$ billion)	
	<u>GAAP basis</u>	<u>IFRS-adjusted</u>
BAML	2166	3578
Citigroup	1931	2945
GS	949	1748
JPMChase	2321	3966
MS	765	1738
WFC	1375	1439
Source: Bank reports, authors' calculations		

Aggregated banking system, end-2011			
Tangible assets (\$ billion)			
GAAP accounting		IFRS-adjusted for six large groups	
13,515		20,240	
Source: FDIC, authors' calculations			

GMV is not a measure of market risk

- Derivatives are contracts that normally trade on margins collateralized mainly by cash.
- Price movements in reference securities are reflected in GMVs of derivatives.
- Given the effective leverage, derivative price movements can be huge.
- Essential point: netting, which is about settlement amounts at close-out prices, does nothing to protect against market risk.

Simple derivative interactions

4 period model for CDS,
annual survival
probabilities considered
are 95%, 90%, 70%, 30%.

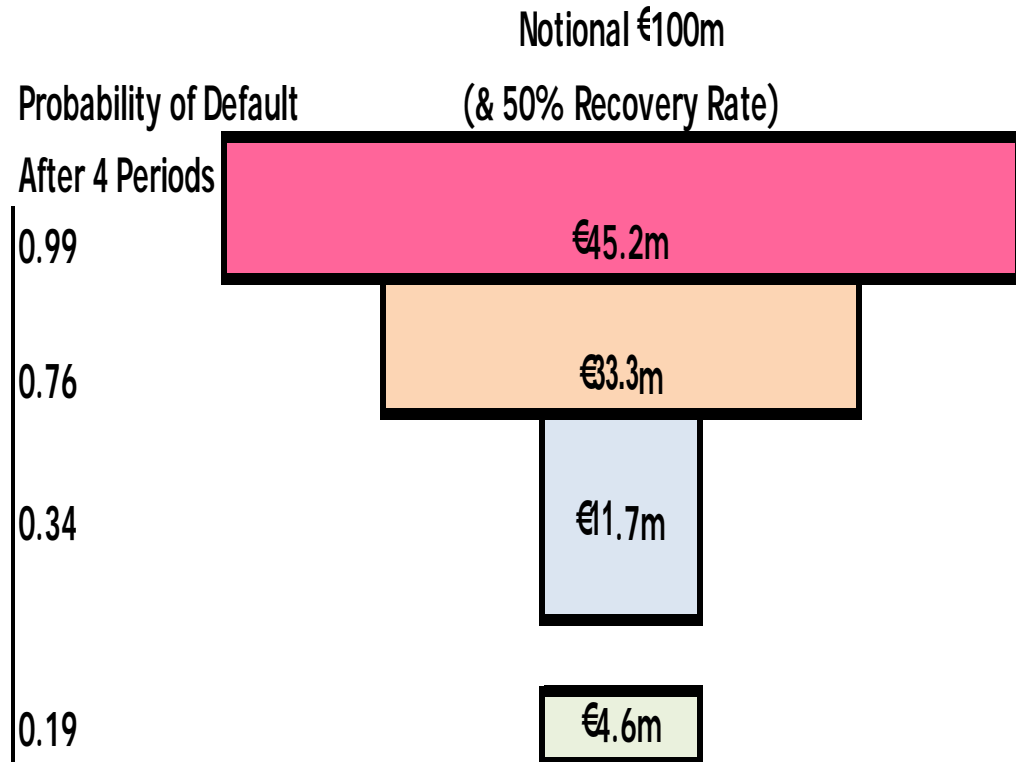
Valuation assumptions:

Recovery rate 50%

Discount rate 6%

Premium 4%

Notional contract of EUR
100 million



Price movements are not trivial

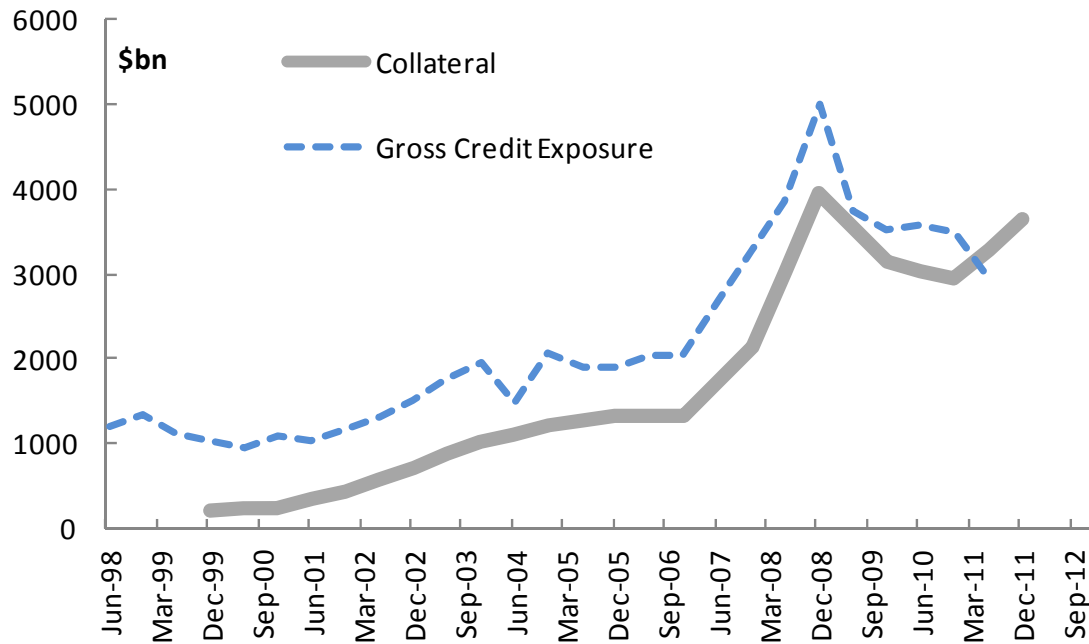
Deutsche Bank asset position, end year (EUR billion)

	<u>2005</u>	<u>2006</u>	<u>2007</u>	<u>2008</u>	<u>2009</u>
Trading account assets	448.4	1104.7	1378.0	1623.8	965.3
Other assets	543.7	479.8	547.0	578.6	535.4
Total assets	992.1	1584.5	1925.0	2202.4	1500.7

Consequences: collateral and margin calls

- Derivatives are risk-transfer instruments whose price movements are zero-sum.
- Price movements generate both winners and losers.
- When prices move, losing parties typically have to meet margin or collateral calls by their winning counterparties.
- These can require large dollar-for-dollar payments in cash or securities at short notice.

Global overview: gross credit exposure (GCE) and collateral for derivatives



Systemic implications (1)

- Re-hypothecation: practice of reusing collateral that has been transferred contractually for new derivative trades.
- This is common. ISDA puts it at more than 90% for the (predominant) cash portion.
- Where banks are well-hedged as market values move, gains will match losses. With re-hypothecation normal cash calls can be absorbed smoothly.

Systemic implications (2)

- Where hedging is imperfect, large net winners and losers emerge.
- Losers face large net cash calls.

Q. Where do losers find the cash once collateral is no longer being re-hypothecated to them?

A. Interbank market (incl. non-bank GSIFI winners) or the central bank.

Systemic implications (3)

- Who will lend? Market price movements have implication for balance sheets. Issue is not just liquidity.
- Net losers facing huge cash demands have potentially large balance sheet holes making them unattractive credit risk.
- Perceptions are important here. Lack of transparency can lead to defensive behavior.
- So pressure on central banks become intense.
- Without support, collapse is inevitable.

Epicer of crisis 2008: Fed payouts to AIG counterparties

Institution	In USD billion			As a share of capital ^{c)} at end-2008
	Collateral postings for credit default swaps ^{a)}	Payments to securities lending counterparties ^{b)}	Total	
Goldman Sachs	8.1	4.8	12.9	29.1%
Société Générale	11	0.9	11.9	28.9%
Deutsche Bank	5.4	6.4	11.9	37.4%
Barclays	1.5	7	8.5	20.0%
Merrill Lynch	4.9	1.9	6.8	77.4%
Bank of America	0.7	4.5	5.2	9.1%
UBS	3.3	1.7	5	25.2%
BNP Paribas	...	4.9	4.9	8.3%
HSBC	0.2	3.3	3.5	5.3%
<i>[memo: Bank of America after its merger with Merrill Lynch]</i>			12	<i>[18.1%]</i>

a) Direct payments from AIG through end-2008 plus payments by Maiden Lane III, a financing entity established by AIG & the New York federal reserve Bank to purchase underlying securities.

b) September 18 to December 12, 2008.

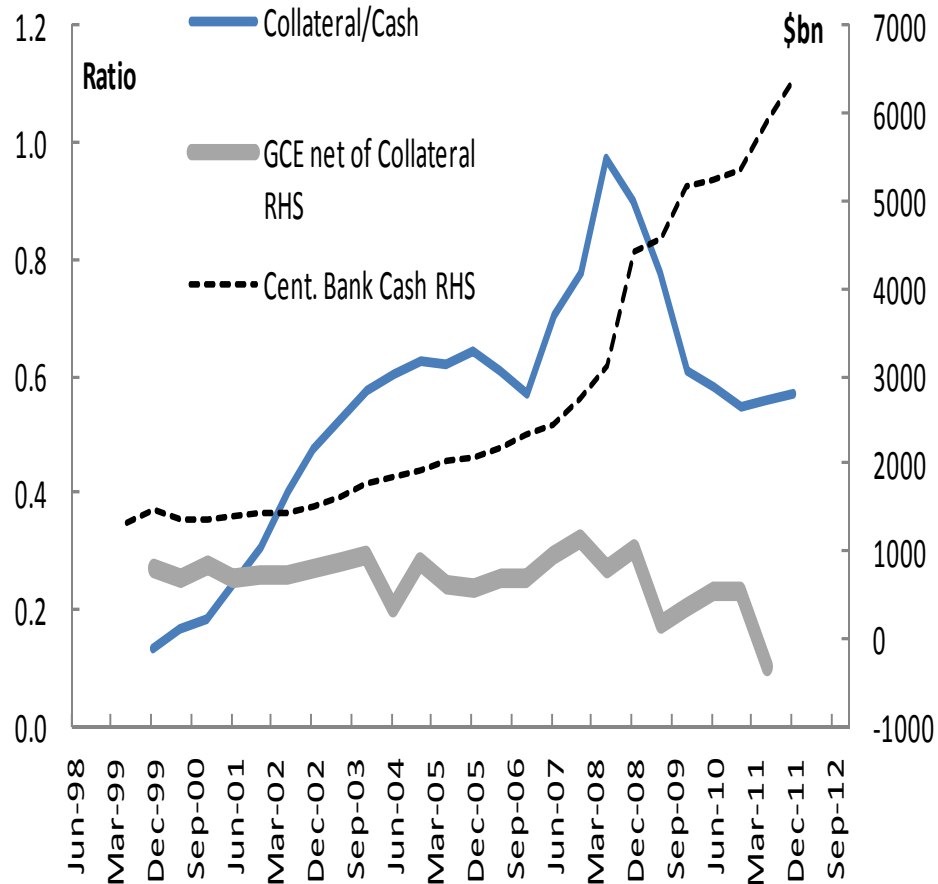
c) Common equity net of goodwill; net of all intangible assets for Merrill Lynch and HSBC.

Most recent GSIFI collapse: Dexia

- Summer 2011, sharp fall in long term interest rates led to a EUR 15 billion cash collateral call.
- Downgrade by Moody's 3 October, unsecured funding and deposit drain.
- Increased resort to ECB, rescue by Belgium, France and Luxembourg governments 10 October.
- Losses for 2011 amounted to EUR 11.6 billion, wiping out its net worth.

Going forward: 2 obvious concerns

Collateral and central bank money



1. Can the ocean of central bank money safely be removed?
2. Basel 3 high quality liquid assets (to meet LCR) must be unencumbered except during “stress”. Cash for LCR cannot be used as collateral.

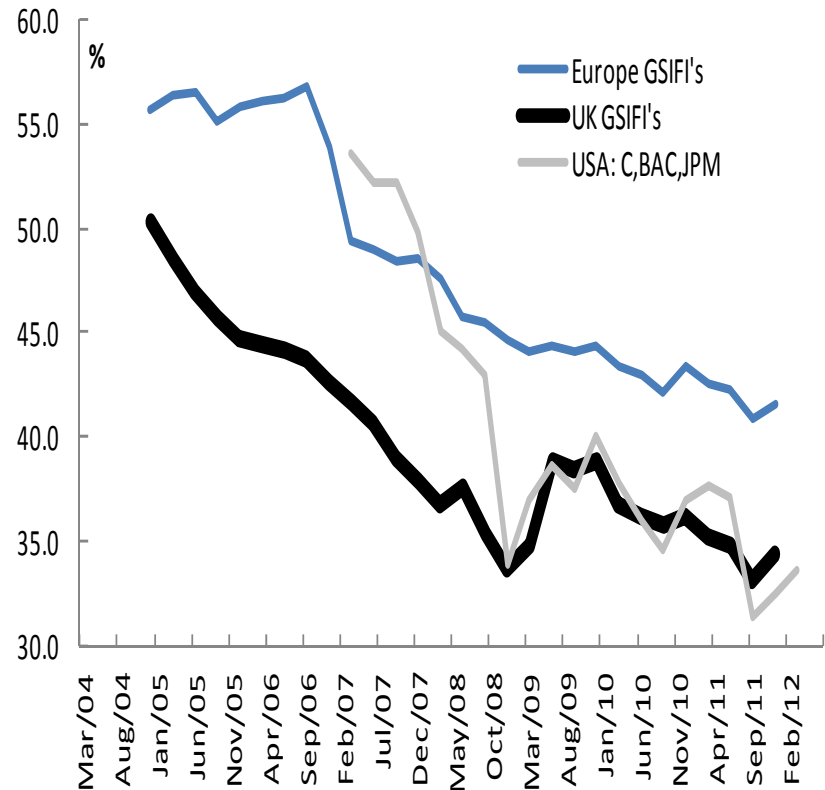
What needs to be done?

- Simplify the system
- Insist on meaningful capital levels in banks and other regulated financial institutions
- Find ways to minimize or eliminate the implicit guarantee in order to end TBTF
- Strengthen incentive structures and improve governance of banks

Simplify

- Basel is too complex (c.f. Haldane, Jackson Hole). Regulatory arbitrage defeats purpose of capital rules. Derivatives play a major role.
- Tax complexity invites arbitrage via structuring of products

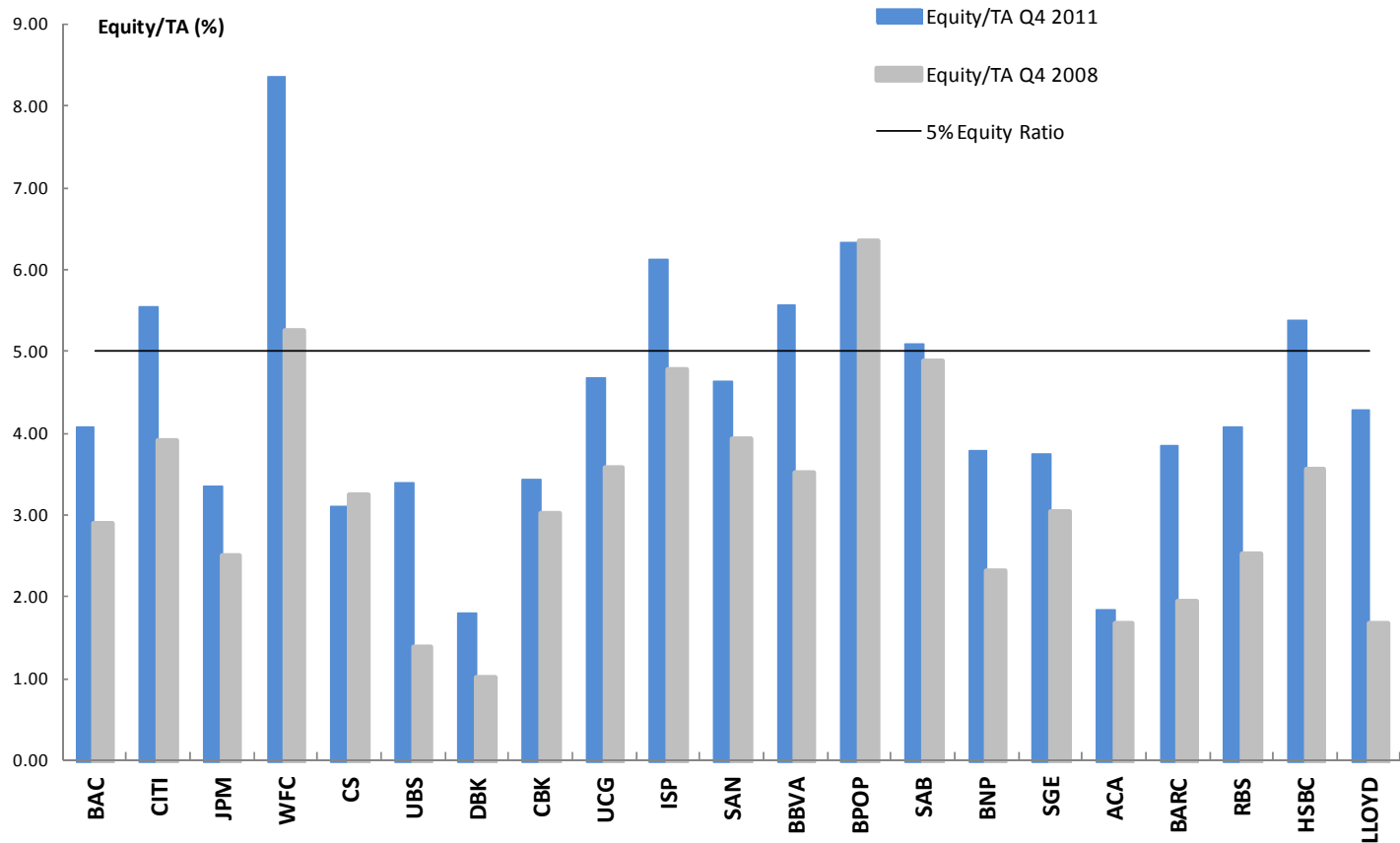
Ratio of RWA/TA for GSIFIs



Insist on meaningful capital levels

- Given scope for arbitraging Basel required regulatory ratios achieve little.
- Simplest way around this is a leverage ratio.
- Set a minimum for an all-equity measure of capital – Basel 3 Core tier 1 is fine – as a share of total assets (net of goodwill).
- Use IFRS accounting for derivatives.
- US FDIC 5% “well capitalized” standard, implying leverage of equity as high as 20, seems like a minimum.
- Could look for ways to reward diversification.

Equity (net of goodwill) to total asset ratios, end 2008 and 2011



Ending the implicit guarantee and TBTF

Requires changing business models

- Privilege separating retail banking from investment banking, notably OTC derivative trading.
- Various proposals on the table: Volcker, Vickers, Liikanen.
- We favor an NOHC structure, much in common with Vickers. Avoids restrictions on competition, while ending cross-subsidization of capital costs for derivatives trading.

Other elements:

- Where guarantees cannot be avoided, make them explicit and fund them.
- Begin prompt corrective action at an early stage, while banks are still solvent.
- Design effective resolution regimes.
- Allow some large creditors to lose some money when they make mistakes

Incentive structures and governance

- Find alternatives to “issuer pays” model for auditors and rating agencies.
- Assure independence of Boards acting in shareholders’ interest: separate roles of Chairman and CEO; no role for CEO in choosing Board members.
- Chief risk officer to have direct access to Board, independence from CEO.
- Transparent compensation arrangements for mgt. based on long-term performance
- Clearly-defined fiduciary duties for Board members, without multiple- or cross-directorships.

Thank you for your attention.

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