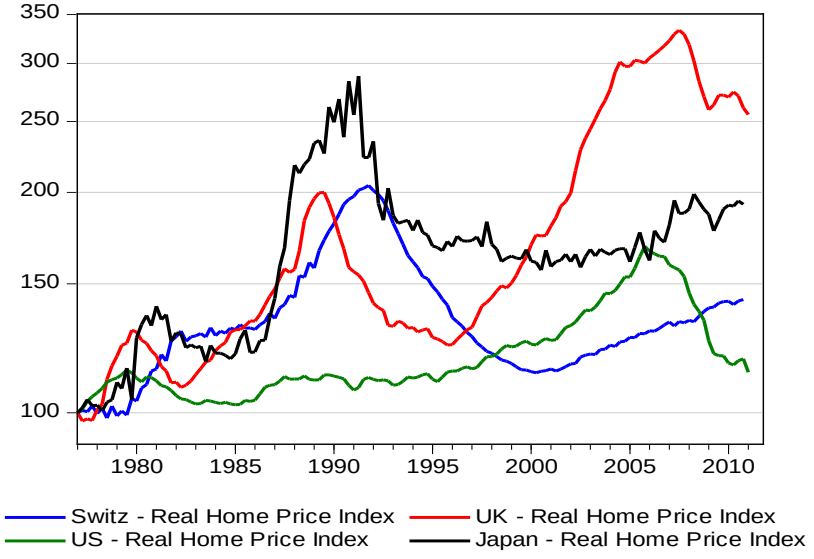
BANKS AND MARKETS
AFTER THE FINANCIAL CRISIS

Antonio Foglia

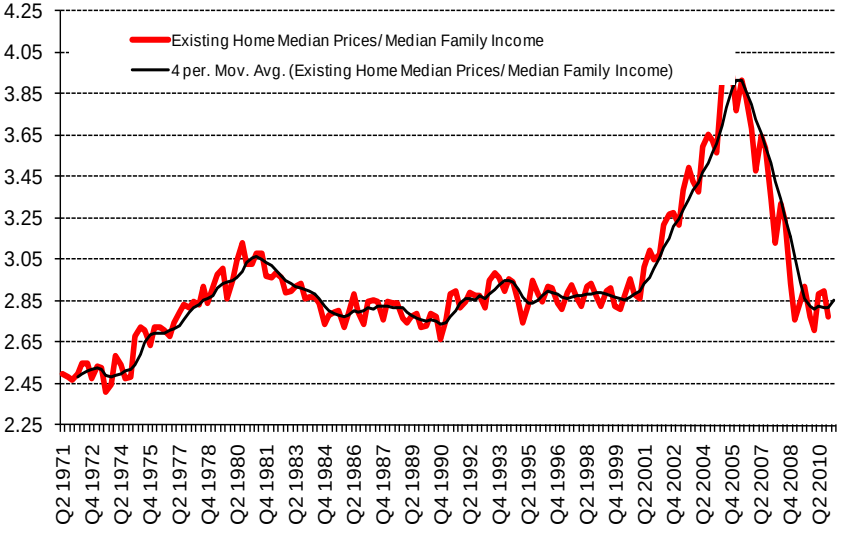
FINANCIAL CRISIS : FALSE CAUSES

US housing bubble was modest in international comparisons.



US housing prices rose markedly between 2000 and 2006, but their increase was much smaller than what happened in Japan during the '90s and in UK since 1995.

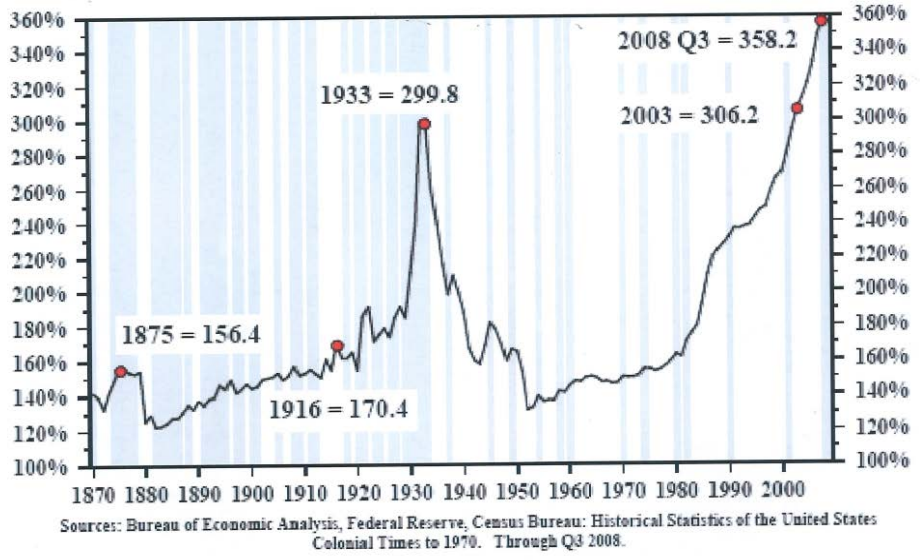
Anyway, any excess has been fully absorbed by the end of 2009.



FINANCIAL CRISIS : FALSE CAUSES

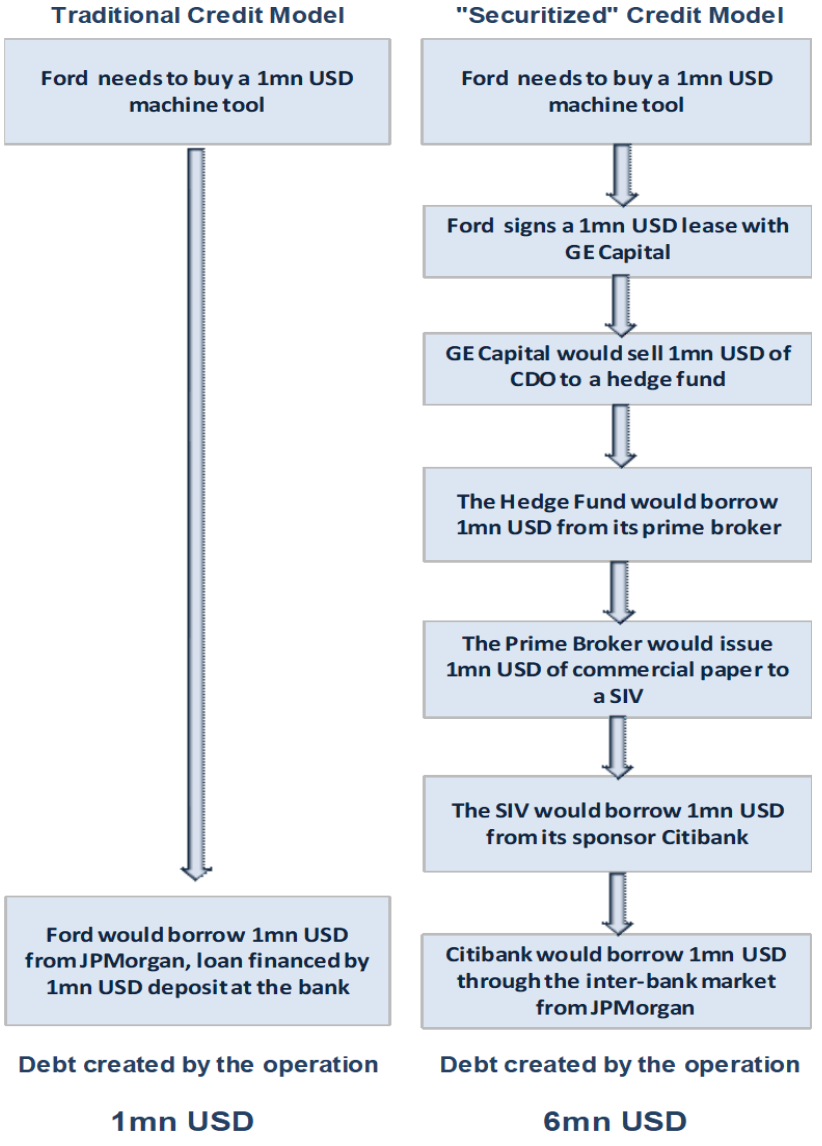
The debt level in the US economy is over-estimated.

Total US Debt as Percent of GDP



Sources: Bureau of Economic Analysis, Federal Reserve, Census Bureau: Historical Statistics of the United States Colonial Times to 1970. Through Q3 2008.

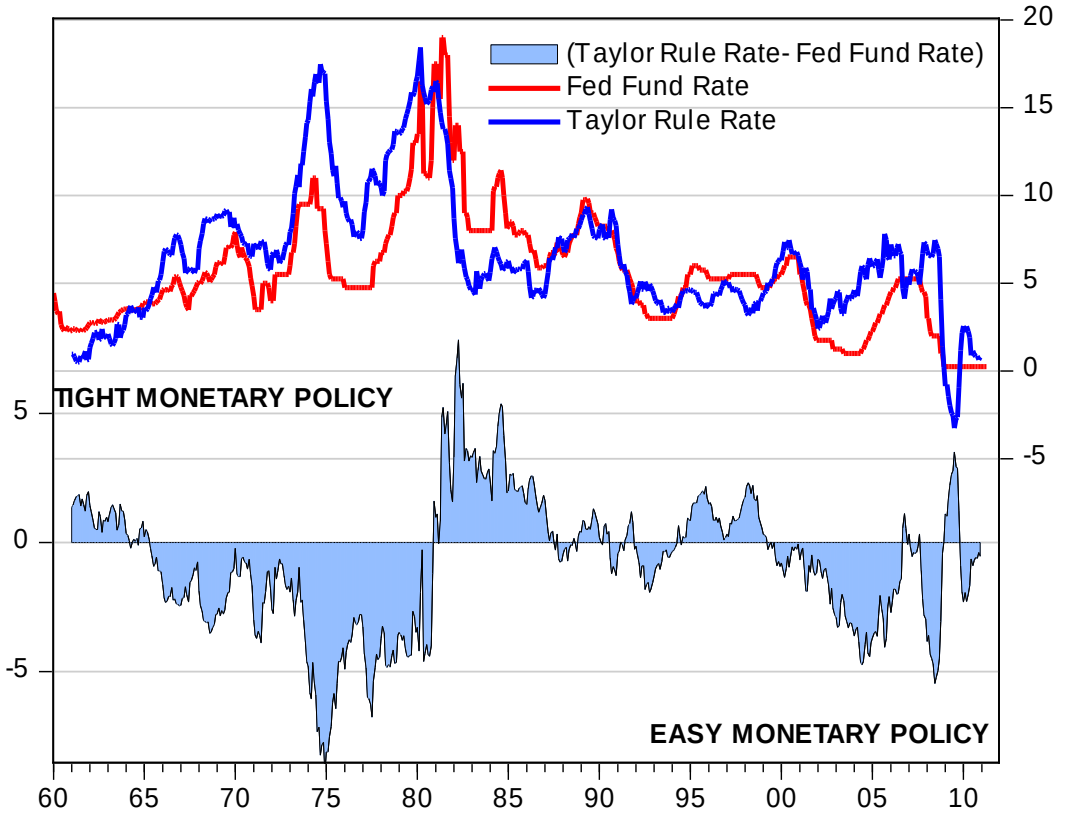
The Debt/GDP ratio in the United States has reached historical highs, but it is worthy to note that, over the years, the credit system has been specializing and fragmenting, setting a fake ballooning of the reported debt.



Source: Gavekal

FINANCIAL CRISIS : FALSE CAUSES

US monetary policy in the 2000s was not exceptionally easy.



Taylor Rule:

$$i_t = \pi_t + r^* + 0.5(\pi_t - \pi^*) + 0.5(y_t)$$

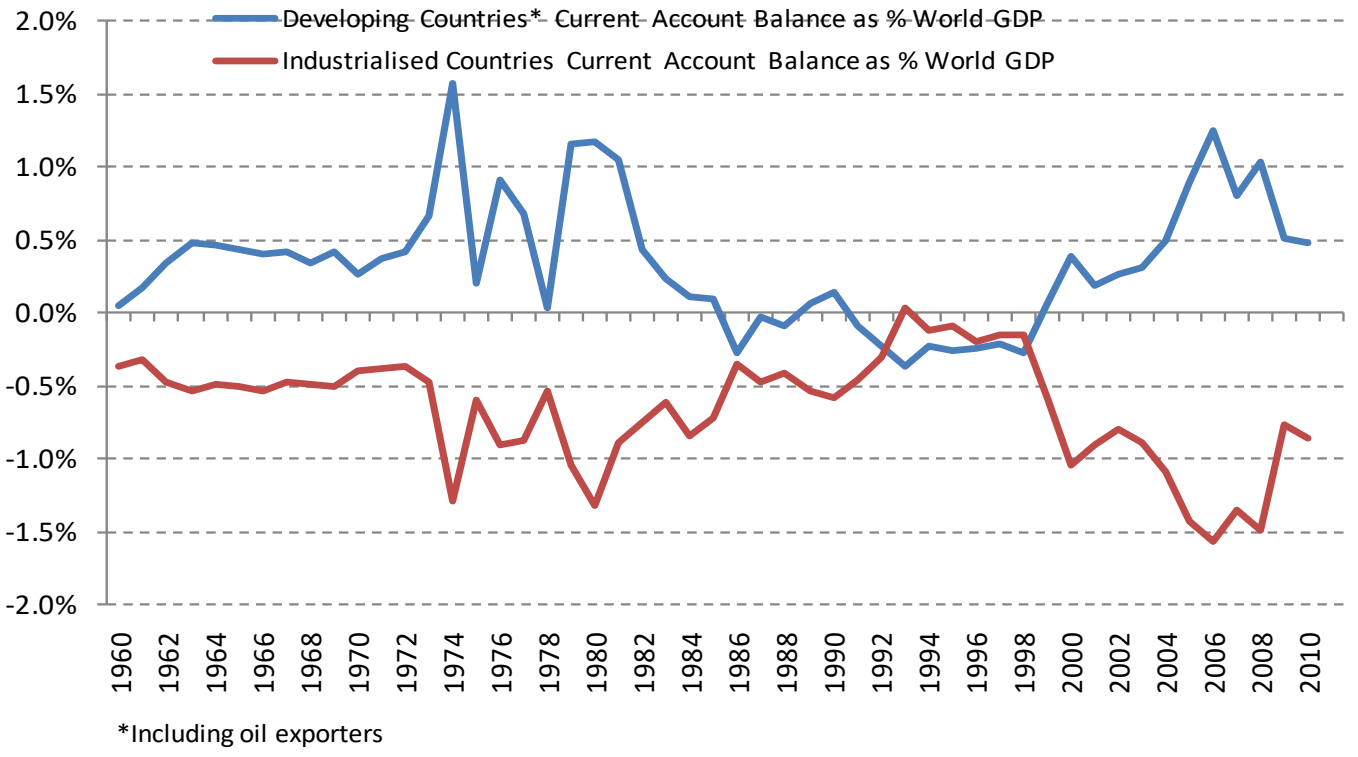
where i = federal funds rate,
r^* = equilibrium real federal funds rate,
π = average inflation rate over the contemporaneous and prior three quarters (GDP deflator),
π^* = target inflation rate
y = output gap
% Deviation of actual GDP from potential GDP

The US monetary policy in the 2000s was not extremely accomodative, in particular if compared to the '60s-'70s.

Source: Datastream, BdC calculations.

FINANCIAL CRISIS : TRUE CAUSES

International imbalances have played a primary role.

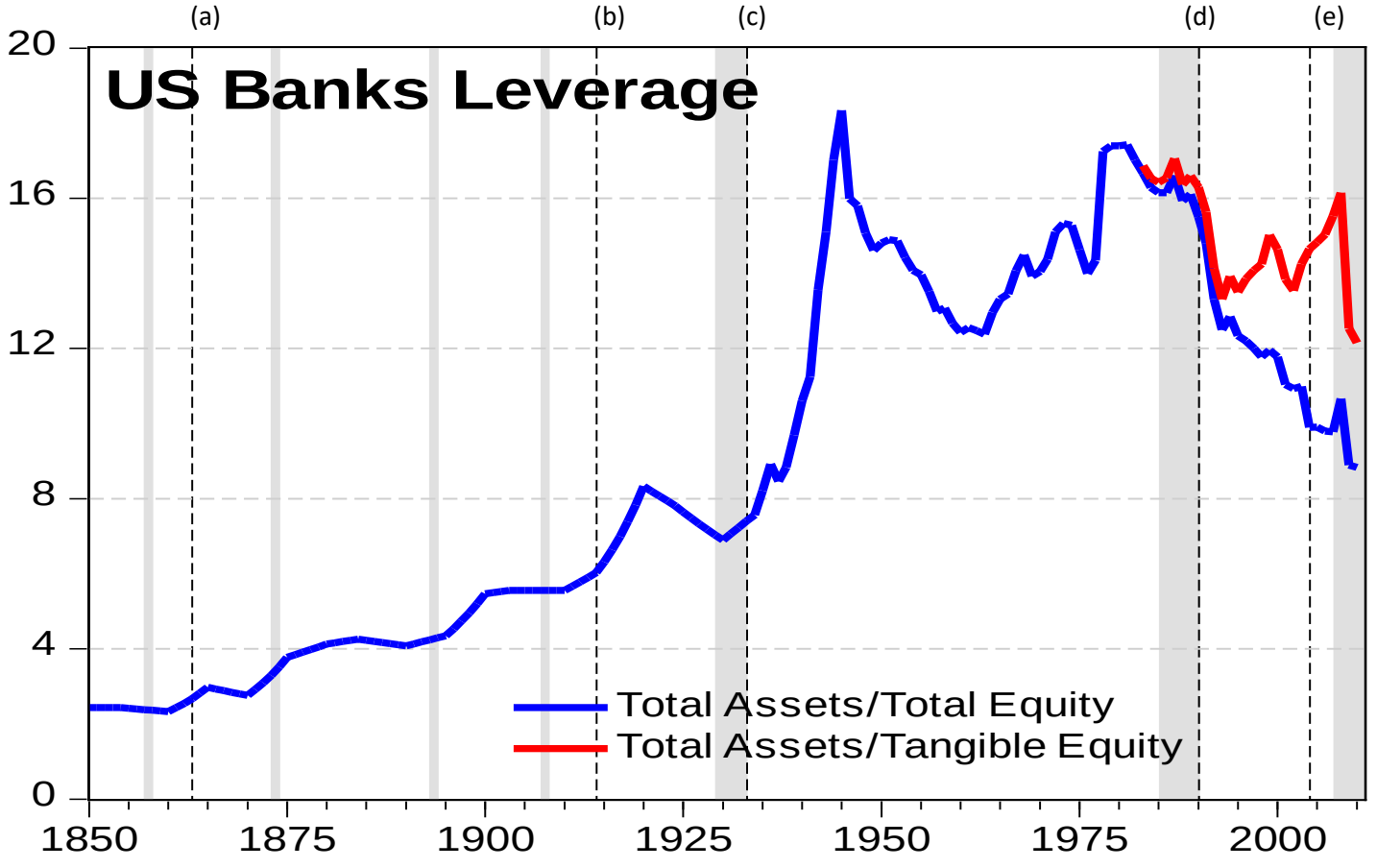


As before the banking crisis of 1982, that led to the Basel I regulations, international trade imbalances had created vast pools of savings that had to be recycled through the financial system. In the period leading to the 1982 crisis American banks, limited in their national ambitions by US regulations, recycled petro dollars into Latin America. Before the current crisis, banks where crowded out of the best credit markets (US Treasury and corporate AAA) by SWF and moved into riskier investments.

But why are banks always getting into troubles?

FINANCIAL CRISIS : TRUE CAUSES

The Western banking system took on the risk involved in the intermediation of imbalances.



(a) National Banking Act – 1863
(b) Creation of Federal Reserve – 1914
(c) Creation of Federal Deposit insurance Corp – 1933
(d) Implementation of Basel risk-based capital requirement – 1990
(e) Implementation of Basel II risk-based capital requirement – 2004

Shaded Areas point out US banking crisis
Source: Federal Deposit Insurance Corporation

FOUR YEARS INTO THE BANKING CRISIS

- Big banks' balance sheet have been deleveraged but probably not enough.
- Big banks probably need 2 to 3 times the capital they currently have to sustain their current businesses lines of both lending and securities/derivatives under more reasonable prudential regulation.
- If OTC securities and derivatives are brought off big banks' books and onto regulated exchanges, the freed up capital would be enough to sustain banks' lending activities under such higher capital requirements.
- Increasing overall capital requirements while asking more capital to be set aside for similar risks when they are not traded on regulated exchanges could ensure a smooth transition to sounder banks and better financial markets without curtailing the availability of credit to the economy.
- The structure of regulated markets need careful analysis as evidence of problematic phenomena surfaces after years of hands-off approach.
- Proposed new prudential regulations fall far short of what would be needed.

HOW MUCH CAPITAL SHOULD BANKS HAVE?

We estimate capital adequacy for banks top down through 3 independent criteria:

1. Capital required for normal reasonable bank ROE under a more normal compensation structure than they have.
2. Capital required to make banks' stock prices volatility similar to that of hedge funds that, unlike banks, have not been regulated into holding too low an equity base.
3. Capital that common sense financial analysis would indicate as necessary given the risk profile of banks' balance sheet.

BANK CAPITAL AND EXCESSIVE COMPENSATIONS

- The problem of excessive compensations in big banks can be read as one of insufficient capital which leads to unreasonably high pre bonus ROE (due to both fat "R" and too small "E") which managements reduce to publishable ROE by pocketing the difference
- The "R" is bigger than it should be also due to the "too big to fail" rent position big banks enjoy as OTC market makers in securities and derivatives. There can be no differentiation between front running and market making when dealing with captive clients as in current oligopolistic OTC markets.
- The "E" is too small due to the grossly underestimated minimum capital requirements the banks have been regulated into. This was the devastating result of years of pondering by an internationally coordinated regulatory effort.

2006 COMPENSATION LEVELS AND ROE

Top US Banks	Total employees	Avg Actual Compensation	Actual ROE	ROE if Av. Compensation Fin Sector - (1)	Comm Equity for ROE target/Common Eq. Actual - (2)
Merrill Lynch	56200	300125	21.2%	57.0%	2.8
Goldman Sachs	26467	622473	31.9%	80.4%	4.0
Morgan Stanley	55310	260116	23.5%	55.8%	2.8
Lehman Brothers	25900	334710	23.7%	63.6%	3.2
Wells Fargo	153500	77700	18.6%	19.6%	2.0
JPMorgan	174360	121536	13.0%	20.3%	2.0
Bank of America	203425	89709	16.3%	18.6%	1.9
Citigroup	327000	92590	18.8%	23.8%	2.4
BNY Mellon	22961	114978	26.7%	35.3%	3.5
Wachovia	108238	100732	13.3%	19.5%	1.8
Washington Mutual	49824	79018	13.2%	13.9%	1.4
Average US	109380	199426	20.0%	37.1%	2.5

Top European Banks	Total employees	Avg Actual Compensation (LC)	Actual ROE	ROE if Av. Compensation Fin Sector - (1)	Comm Equity for ROE target/Common Eq. Actual - (2)
Santander	128339	47102	19.0%	16.7%	1.7
HSBC	296196	50642	15.7%	14.1%	1.4
RBS	142600	70367	15.9%	19.6%	2.0
Unicredito	142406	55194	14.8%	15.2%	1.5
IntesaSanPaolo	99891	65171	11.2%	14.2%	1.4
Barclays	131700	92578	24.6%	42.3%	4.2
Societè Generale	119779	69712	20.0%	27.1%	2.7
Credit Agricole	77063	76431	15.0%	20.2%	2.0
DB	68849	181528	19.4%	47.4%	4.7
BNP Paribas	141911	72299	16.2%	21.9%	2.2
Credit Suisse	44871	217283	26.4%	36.4%	3.6
UBS	78140	188156	26.2%	34.2%	3.4
Fortis	59747	75067	22.0%	28.3%	2.8
Average EU	117807	EUR 97041	18.9%	26.0%	2.6
TOT AVERAGE	**113594**	**USD 160627**	**19.5%**	**31.5%**	**2.6**

(1) ROE if Avg compensation was USD 75000 or EUR 54200 or GBP 37000.
(2) ROE of 10% for commercial banks and 20% for investment banks

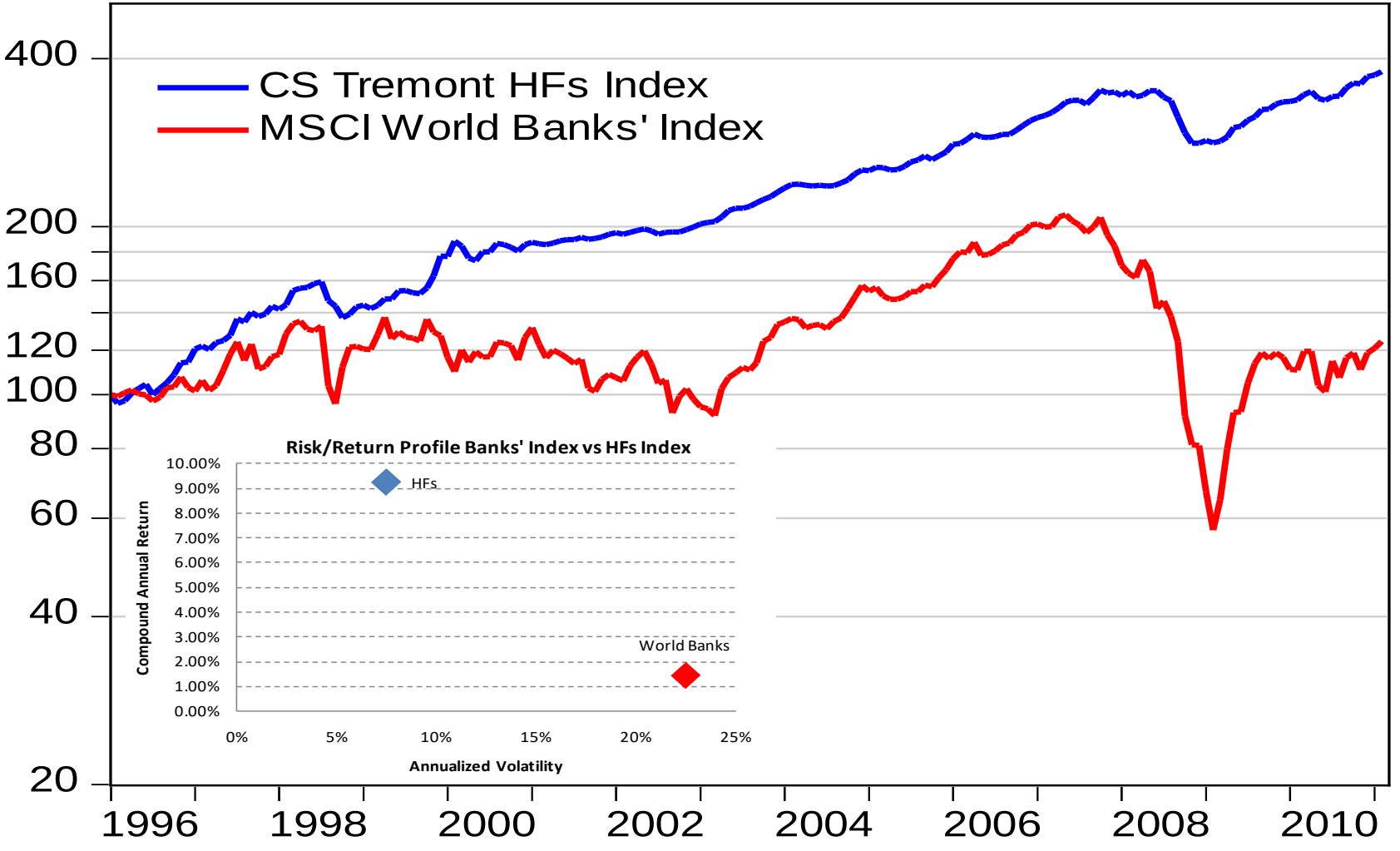
- Had banks paid average compensation in 2006 of USD 75’000 for the financial sector (US Bureau of Labour; average US wages in all sectors were USD 39’200) and EUR 54’184 (Eurostat, vs average of all sectors of EUR 36’125), a sample of the major US and European banks would have reported ROE of 31.5% versus the 19.5% ROE they actually reported given the excessive compensation they actually paid.

- To bring those huge ROE down to arbitrary but more reasonable levels of 10% for banks and 20% for investment banks at normalized compensation level would require an increase in the capital base of about 2 to 3 times.

BANK CAPITAL AND VOLATILITY

- Banks have been regulated into holding too little capital for their business and banks' capital valuation in equity markets has been accordingly very volatile rising rapidly with gains and being almost entirely wiped out in the crisis.
- Hedge funds are unregulated financial intermediaries who have been free to run their business with the capital they deemed appropriate.
- Banks have been 3 times more volatile (risky) than hedge funds suggesting banks should have 3 times more capital they currently have to be as risky as hedge funds.
- Unregulated hedge funds not only turned out to be 3 times less risky than banks but also had far better returns. They had though similarly fat compensations, suggesting again that the problems do not lie in compensation structures but in capital requirements.

HEDGE FUNDS ARE 3 TIMES LESS RISKY THAN BANKS



BANKS' CAPITAL AND COMMON SENSE PORTFOLIOS

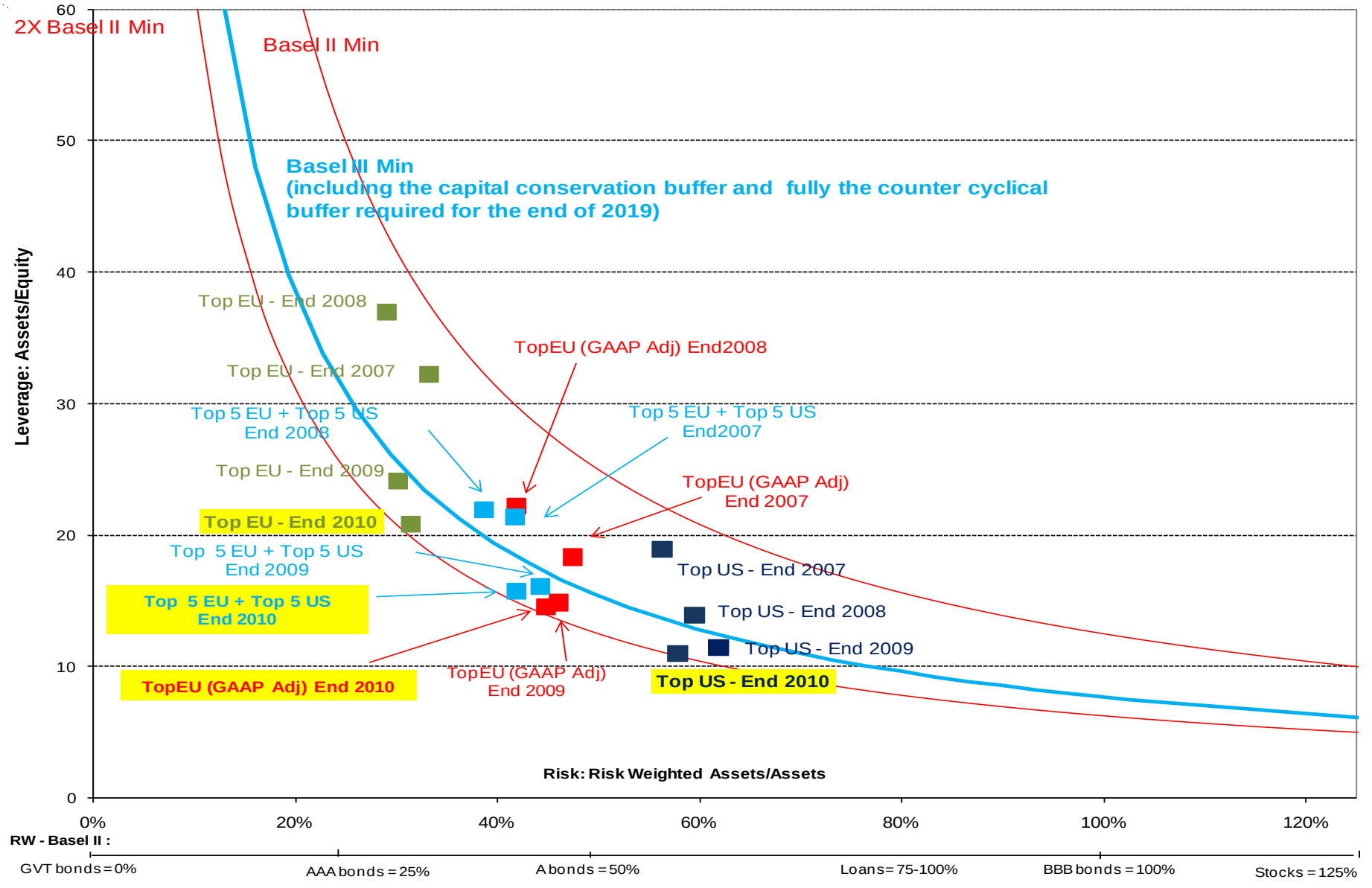
- Basel II (and III) regulations state that Government Bonds carry a risk weight of 0%, AAA bonds of 25%, A bonds of 50%, BBB bonds of 100% and Stocks of 125%. This scale is broadly coherent with the relative volatility of the different asset classes.

- Banks must disclose Risk Weighted Assets (RWA), that when divided by Total Assets (TA), gives a synthetic indication of the riskiness of a bank's book. For instance a bank with RWA/TA of 50% and leverage (TA/E) of 15 has the same risk profile of an investor holding a 15x leveraged portfolio of A rated bonds.

- Basel II criteria required 8% total qualifying capital to support RWA. In addition, Basel III requires banks to build up a capital conservation buffer (2.5% of RWA), which will lead the minimum total capital to 10.5% of RWA. The Basel III framework also contemplates an additional countercyclical capital buffer of up 2.5% of RWA. A bank holding only listed equities would have a RWA/TA ratio of 125% and was required to have minimum prudential capital of 10% (or 16% under Basel III). 10x (6.25x) leverage in equity seems very far from prudent. Capital requirements seem too low.

- As of 31.12.2010 the top 5 US banks had an average RWA/TA of 59% and a leverage (TA/E) of 11x. The top 5 European banks had RWA/TA of 29% and a leverage of 25 (or RWA/TA of 42% and leverage of 16x when the difference in accounting standards is considered).

LEVERAGE AND RISK ON BANKS BOOK



- Given Basel II weights, and assuming a simplified bank portfolio made of AAA bonds and listed equities only, overall top 5 US + top 5 EU big banks' balance sheet at 42% RWA/TA and 16x leverage has a risk equivalent to a portfolio 3 times leveraged in equities and 13 times leveraged in AAA bonds. This would be considered a very risky portfolio by any investor.

- Since December 2007 banks have almost halved leverage in the US and reduced it by 35% in Europe. Banks in the US have also increased their RWA/TA by 10% (from 2007 to 2009) indicating a more realistic appraisal of risk by their models. Banks in Europe have not begun this process (and don't seem to be able to afford it yet). The relaxation of accounting standards in the crisis probably contributed to the overall improvement of these ratios.

- Banks currently run with almost 2 times the minimum Basel II capital requirement (versus 1.5 times at the end of 2007) and already have more or less the capital Basel III requires.

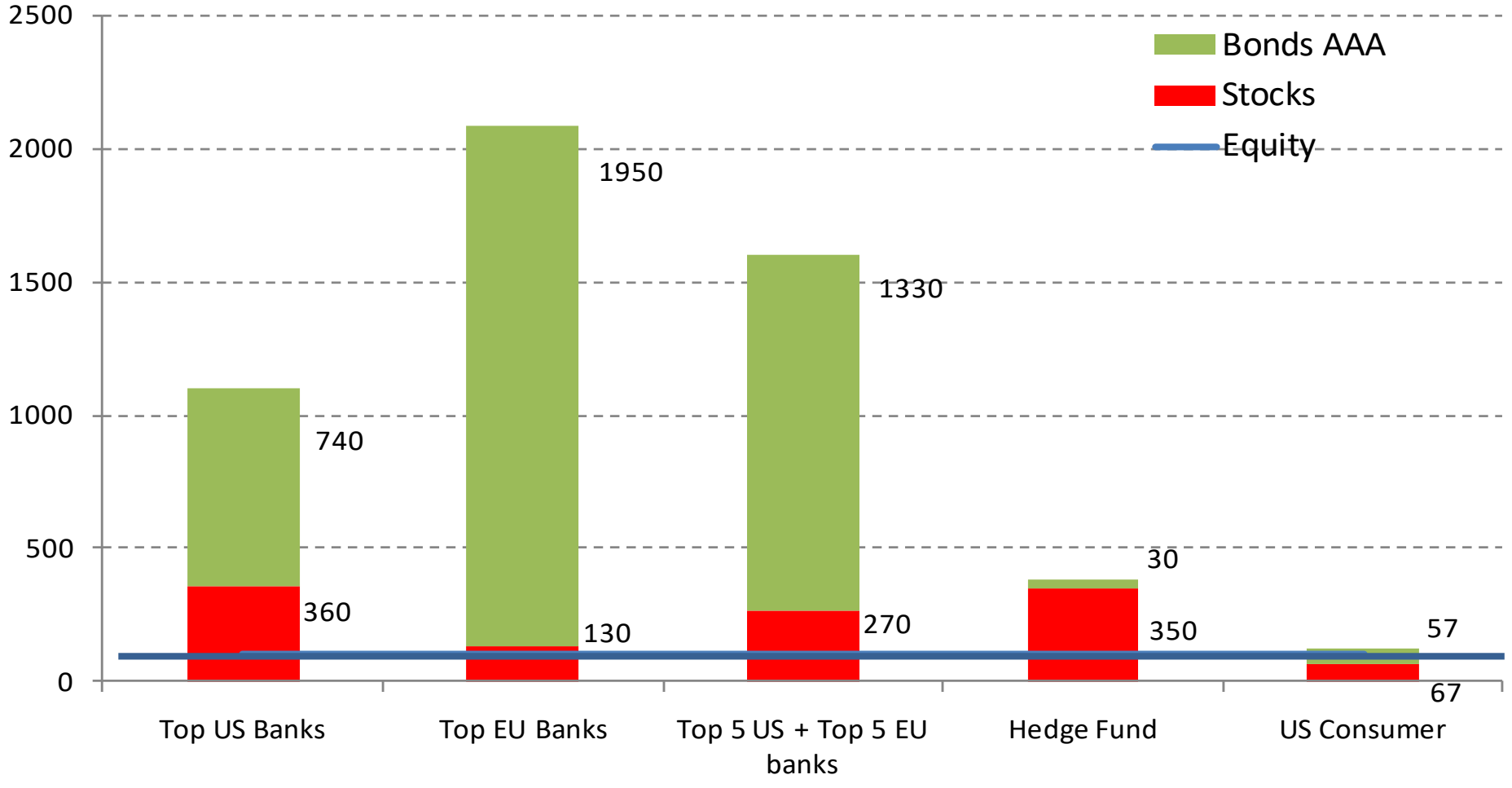
- An aggressive hedge fund would probably operate at about 3 times the minimum Basel II capital requirement confirming the need for banks to have 1.5 times their current capital to become as "prudent" as an aggressive hedge fund.

Top 5 EU+ Top 5 US	Nominal	Basel II coeff.	Risk Weighted
Stocks	272.00	@125%	340.0
AAA Bonds	1328.00	@25%	332.0
Tot Assets	1600		672.0
Equity	100		
Leverage	16		
RWA/TA	42%		
Eq/RWA	14.9%		

HF Balance Sheet	Positions	Basel II Multiple	RWA
Stocks Long	150	@100	150
Stocks Short	80	@100	80
Stocks Net	70		
Gov Bond , 8y duration	100	@0	0
Corp Bond BBB 3y duration	30	@100	30
Foreign currency	100		
Interest rate risk			57.9
Currency risk			125.0
Total Positions	380		
Total Risk Weighted Assets			443
Equity	100		
Leverage	3.8		
RWA/TA	117%		
Eq/RWA	22.6%		
Min Capital according to Basel II (8% of RWA) = 35.5			

BANKS ARE CONSIDERED “SAFER”. SAFER THAN WHAT?

Simplified portfolios with the same risk and leverage profile of actual balance sheets.



CURRENT BANKS' CAPITAL REQUIREMENT IS LOWER THAN ANNUAL VOLATILITY OF THEIR ASSETS

	Gov Bonds	AAA Bonds	A Bonds	BBB Bonds	Stocks
Annual StDev	2.9%	3.1%	4.6%	7.5%	15.8%
Basel II - Risk Weight Coeff.	0%	25%	50%	100%	125%
Basel II Minimum Capital	-	2%	4%	8%	10%
Basel II - Allowed Leverage	∞	50	25	12.5	10
Basel III Minimum Capital (including capital buffers of 5% of RWA)	-	3%	6.5%	13%	16.3%
Basel III - Allowed Leverage	∞	30	15	8	6

- Risk weight coefficient are roughly consistent with the relative volatility of the asset class they refer to. Capital requirement are not.
- It would seem logical to set prudential minimum capital requirements for banks at a multiple, not a fraction, of the annual volatility expected for the assets on banks' balance sheets…
- In the Basel II framework, a global equities portfolio has an average annual standard deviation of 16%: insolvency sooner or later becomes a certainty rather that a remote probability with only 10% capital to back it up.
- Less risky assets such as AAA bonds, more represented in banks' portfolios, can be supported under Basel II by only 2% capital, again less than the expected annual volatility of the asset class.
- Basel III has relatively closed the gap between asset classes' volatility and capital requirements, except for the "ultra-safe" government bond market. But minimum capital set at the level of annual volatility would still allow more than 50% chance of banks being wiped out of their capital every 4 years. Compare this with post 1929 Reg T that imposed 50% margin for equities…
- Banks further decrease RWA assuming benefits from diversifications but have to hold additional capital for operational risks etc: the two effects broadly cancel each out.

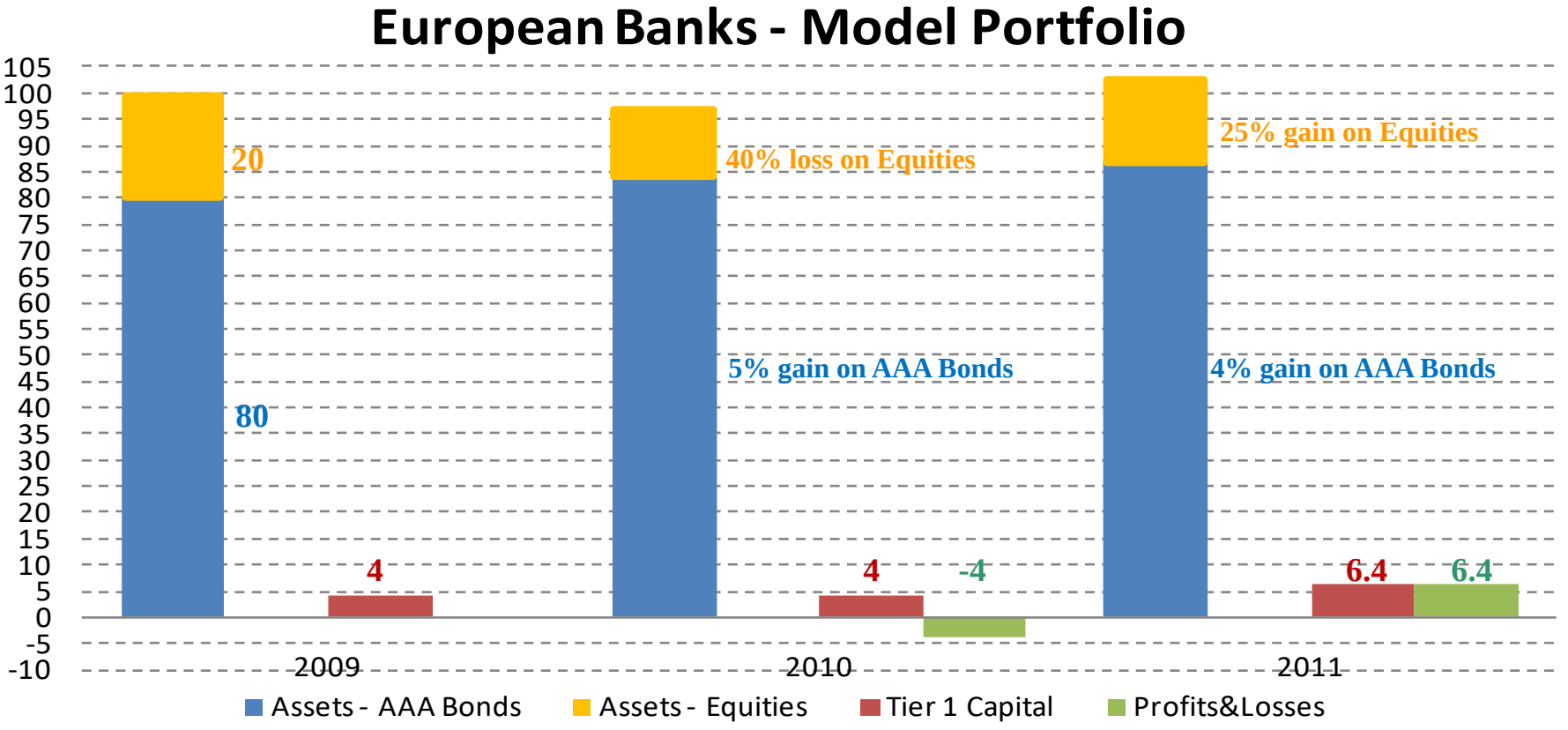
EU'S 2010 STRESS TEST

- How was it possible that a large majority of the European banks passed the "severe" bank stress test, seeming adequately capitalized despite having been broadly insolvent in the recent past?

- According to the Committee of European Banking Supervision, the top 91 European banks had an average RWA/TA of 45% and a TIER 1 leverage (TA/Tier 1 Capital) of 25x. This is the risk equivalent of carrying a portfolio 5 times leveraged in equities and 15 times leveraged in AAA bonds.

EU Stress Test Sample			
	Nominal	***Basel II coeff.***	***Risk Weighted***
Stocks	20.00	@125%	25.0
AAA Bonds	80.00	@25%	20.0
Tot Assets	100		45.0
Equity	4		
Leverage	25		
RWA/TA	45%		

EU'S 2010 STRESS TEST



- In a two-year horizon test, making the hypothesis of one year of deep crisis and one year of mild recovery, banks could easily die and resurrect.

- Thanks to leverage, that amplifies losses but also profits, and thanks to governments that allow banks not to properly account for losses, at the end of the second year the banking system seems solid and well capitalized, despite having been insolvent during the crisis.

THE NEW EU'S STRESS TEST

- The new established European Banking Authority (1st January 2011) , under pressure to prove its credibility as a regulator, will initiate and coordinate the second stress test on the European banking system whose results will be published some time in June 2011. The aim of the tests is to restore confidence in the region's banking sector after last year's health check was widely criticized for lack of transparency and credibility.

- EBA will test the banks' solvency resilience to a baseline and an adverse macro-economic scenario. This new adverse scenario does not look much more severe than last year, though there will be new elements such as a fall in property prices, a lesson learnt from the Irish banking collapse.

- The new tests will be based on "core" Tier 1 capital, a more strict threshold of Tier 1 capital, used in last year's stress tests.

- Unfortunately the new stress test is still flawed by the same inability to force banks to show a loss on assets held in their long-term banking book (where they park the most part of their sovereign bonds), as the exposure to sovereign risk will be tested only on the trading book.

- Nevertheless banks will also be required to disclose their overall exposure to sovereigns broken down by accounting portfolios (Available-for-Sale, Held-to-Maturity and Held-for-Trading), maturities and countries.

BASEL III

- Basel III has done nothing more than require, at worst, the banks current capital as the new minimum. Regulators have stopped well short of imposing challenging requirements and painful recapitalization to banks.

- The minimum requirement for “total qualifying capital” under the Basel III framework remains unchanged at 8% of RWA (without considering a maximum 5% in capital buffers). However, Basel III tries to improve the quality (the loss-absorption capacity) of existing capital, narrowing the definition of Tier 1 capital and increasing the minimum requirement for Tier 1 Capital from 4% to 6% of RWA (or potentially to 11% fully adding capital buffers requirement) by the end of 2018.

- Referring to the EU banks 2010 stress test sample, Basel II required the banks to have at least 1.8 units of Tier 1 capital to finance a portfolio composed by 20 units invested in equities and 80 units in AAA bonds. Basel III increases the minimum capital to 5 units, only marginally higher than the capital already held by EU banks.

- The minimum risk-based capital requirements under Basel III will be supplemented by a non risk-based maximum Tier 1 leverage ratio, which has been tentatively set at 33.3x. This new requirement does not seem particularly stringent, considering that the current Tier 1 leverage ratio of the EU banks is already at 25x.

HOW MUCH MORE CAPITAL DO BIG BANKS NEED?

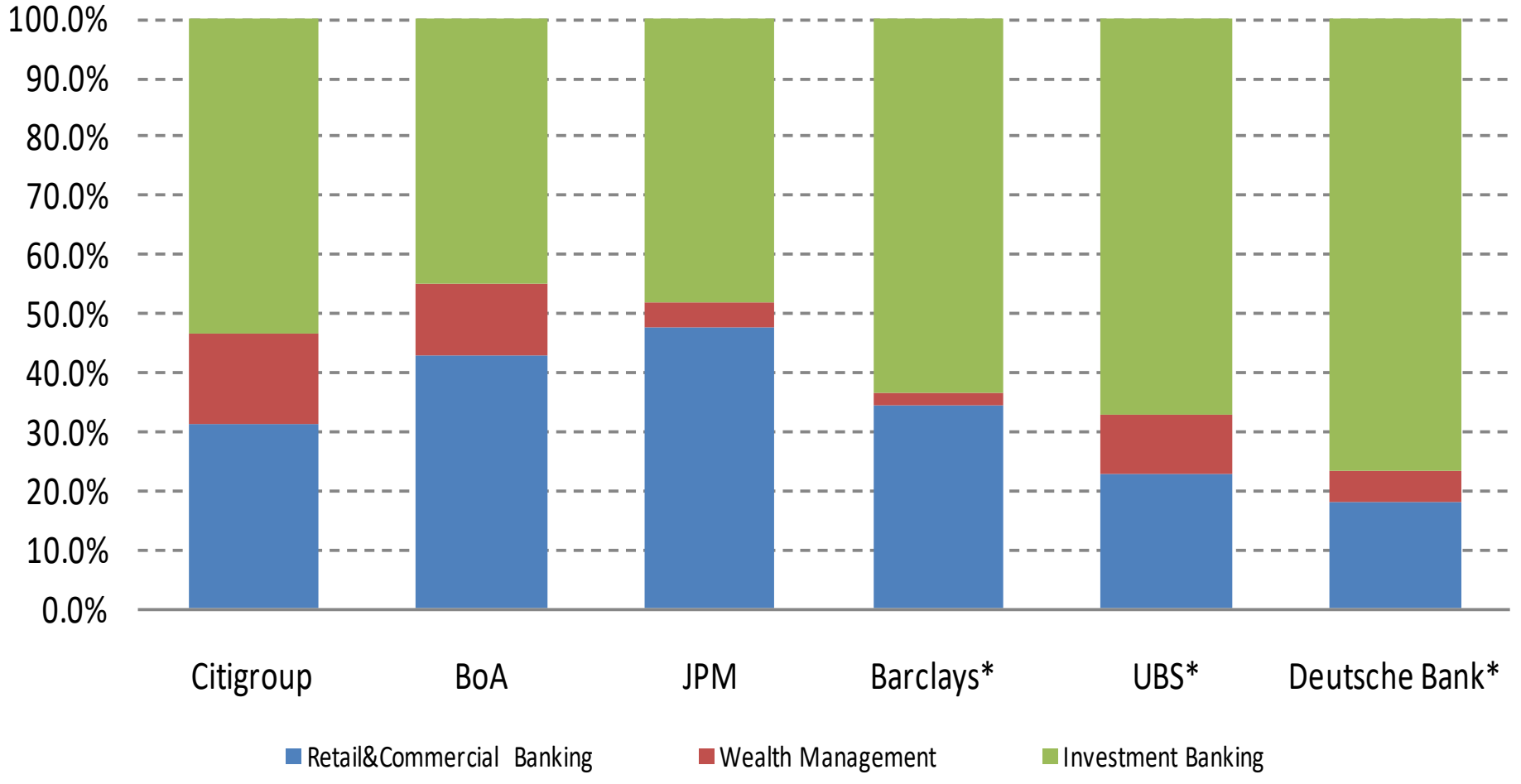
Compared to the capital they now have, big banks would seem to need:

- Compensation derived guess : 2 to 3 times
- Volatility derived guess: about 3 times
- Commonsense portfolio derived guess: 2 times their current capital.

WHERE WOULD BANKS FIND THE NECESSARY CAPITAL?

- Fortunately, they have it already! Read on…
- Bank need capital to support their lending and securities/derivatives businesses but the latter does not need to happen OTC on banks book but should be carried out onto regulated exchanges.
- About 60% of big banks' balance sheets is currently dedicated to supporting investment banking (i.e. securities and derivatives business).
- If banks were to have 2.5 times their current capital but were also to decrease their investment banking books almost entirely, then their current capital would in fact be enough to continue their other lending operations (assuming similar riskiness of the two business lines) on the higher capital ratio.
- Increasing overall capital requirements while asking more capital to be set aside for similar risks when they are not traded on regulated exchanges could provide the incentive to ensure a smooth transition to sounder banks and better financial markets without curtailing the availability of credit to the economy.
- Legislators and regulators must resist the bank efforts to water down *Dodd-Frank Wall Street Reform and Consumer Protection Act* provisions in this respect.

SEGMENTAL BANKS BALANCE SHEETS (2009 ANNUAL REPORTS)



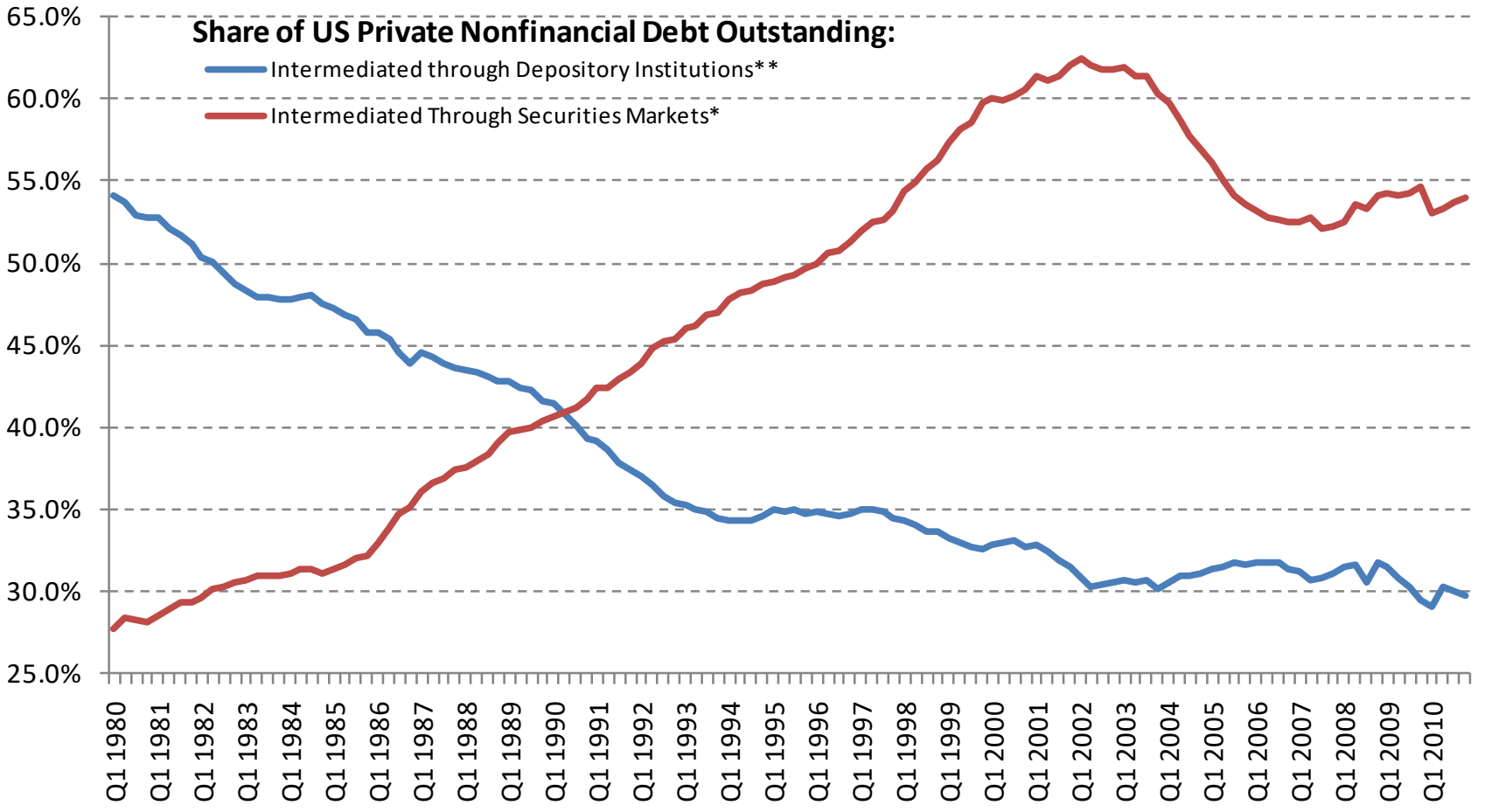
*Adjusted to US GAAP

BANKS' BUSINESS LINES

- Historically the businesses of deposit taking and lending and of securities and derivatives were separated. Rigidly so in the US (Glass-Steagall). Also in Europe, though, securities and derivatives were not a big business for universal banks until the last couple of decades.
- Authorities were specialized too, with central banks looking over banks (FED, Bundesbank, etc.) and other authorities overseeing markets (SEC, Bafin, etc.).
- While banks' business evolved more towards securities and derivatives, per se a positive development given the superior transparency and negotiability versus loans, the authorities overseeing banks became everywhere much more influential than those overseeing markets.
- Financial markets became dominated by banks themselves overseen by authorities who did not understand markets. They hence evolved into the shallow and opaque oligopolistic domains we know as Over The Counter (OTC) markets.
- The "too big to fail" effect created a vicious loop that reinforced the process until it became clear in the crisis that both the banks and the markets had been regulated and deregulated in a disastrous way.

BANKS' BUSINESS LINES

Declining relevance of banks as credit providers

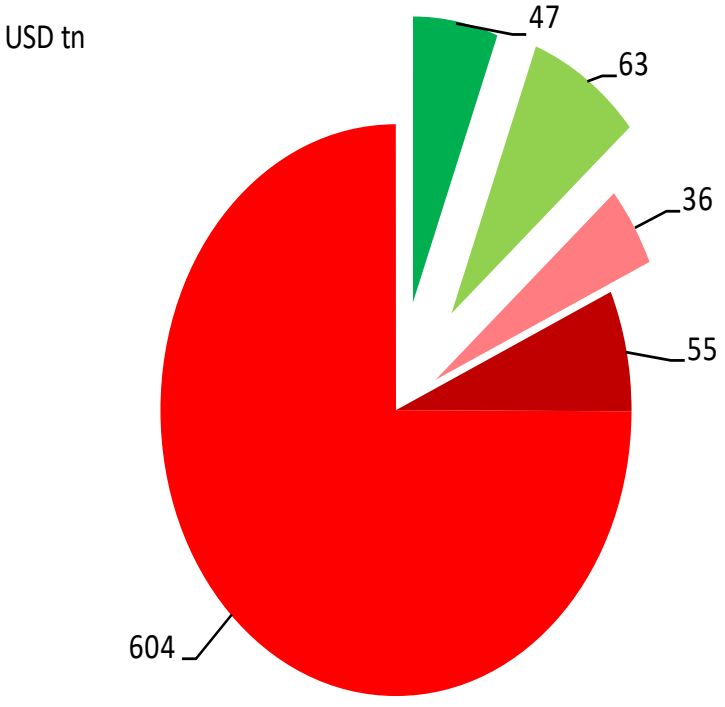


* Corporate Bonds, Commercial Paper and Asset Backed Securities

** Mortgages, C&I Loans and Credit Card Debt that remain on banks' balance sheet

Source: Flow of Funds Report – Federal Reserve

OVER THE COUNTER (OTC) MARKETS.

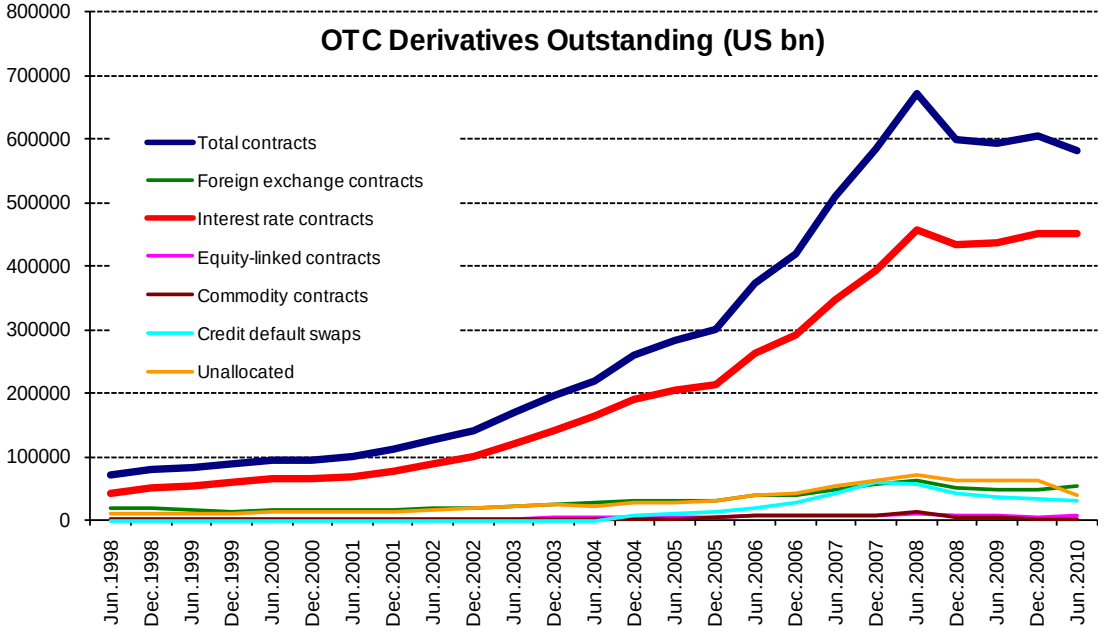


Regulated:

- Stock markets
- Exchange Traded Derivatives

Unregulated:

- Government Bonds
- Corporate Bonds
- OTC Markets



Source: IMF – Financial Stability Report April 2010 e Bank for International Settlement

PROBLEMS IN REGULATED MARKETS

- The competition between banks' OTC trading and regulated markets has seen the latter being weakened.
- Disturbing evidence of dysfunctions in regulated markets, for instance
  - Proliferation of competing exchanges whose relative advantages should be carefully reviewed (dark pools etc.).
  - Extraordinary profitability of high frequency trading without evidence of risks to the funds practicing it that would justify the returns (Sharpe of 5 and higher).
- Some regulations, like MIFID in Europe, are dressed up as pro-market but were designed under heavy lobbying to favor big banks over fair regulated markets.
- Market overseeing authorities seem too weak to focus on such important but complex issues and prefer to pursue easier but trivial goals such as mediatic eruptions over insider trading accusations which seem overall irrelevant.
- Product regulators have also been weakened to the point of missing crucial issues (Jumps in CDS, counterparty risks in UCIT3, custodians in HF, etc.)
- Antitrust authorities frozen in the face of blatant abuses of dominant positions

THE DODD-FRANK ACT: THE FIRST STEP TOWARDS A REGULATED OTC DERIVATIVES MARKET

- On July 21 2010, the *Dodd-Frank Wall Street Reform and Consumer Protection Act* was signed into law. Title VII of the Dodd-Frank Act established a new framework for regulatory and supervisory oversight of the Over-The-Counter derivatives market.
- The primary aims of the act are to increase transparency and efficiency of the OTC market and to reduce the potential for counterparty and systemic risk. The mechanisms to reach these goals are:
  - to require that as many product types as possible are centrally cleared and traded on exchanges or comparable trading facilities.
  - to subject swap dealers and major market participants to capital and margin requirements (with higher requirement to be imposed on uncleared swaps).
  - to require the public reporting of transaction and pricing data on both cleared and uncleared swaps.
- In addition to the limitations on the derivatives activity, the Dodd-Frank act introduces also prohibitions and limits to the ability of banking entities from engaging in certain activities (the "Volcker Rule"). These provisions include prohibitions on "proprietary trading" and investing more than 3% of bank's Tier 1 capital in private equity and hedge funds and from owning more than a 3% stake in any private equity or hedge fund.
- The restrictions to OTC derivatives and the Volcker Rule will directly put strong downward pressure on bank profitability. In addition, administrative and transition costs associated with implementing the various new requirement will not be insignificant (the Dodd-Frank financial reform bill is 2,319 page long)

TO DO:

1. Increase capital requirements from the levels of Basel III to induce banks to hold 2-3 times their current capital.

2. Require more capital to be set aside on any product when traded OTC rather than on an exchange in order to drive securities and derivatives business off banks' balance sheet and onto regulated exchanges.

3. Regulated markets and product functioning should be carefully reviewed after years of neglect and some ill advised deregulation.

4. Restore discipline by removing "too big to fail" moral hazard through downsizing and "living wills".

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