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Deleveraging, Traditional versus Capital Markets Banking and the Urgent Need to Separate and Recapitalise G-SIFI Banks

by

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Since the crisis, even with massive support from governments and central banks, widespread regulatory changes and promises from bank executives to improve the governance of risk, the world continues to see failures of Globally Systemically Important Financial Institutions (G-SIFIs, like Dexia), and huge losses (most recently from JP Morgan). Banks refuse to lend to each other, the central banks have become the interbank market and 'bad deleveraging' bears down on the economy forcing job losses in small- and medium-sized companies. 'Good deleveraging' occurs via building capital, and in this respect the US approach to dealing with the crisis provides something of a lesson that policy makers in Europe should take note of. With respect to regulations, the paper shows that capital and liquidity rules create a bias against lending to the enterprise sector (that drives jobs and economic growth). With respect to G-SIFIs, the paper shows how movements in their balance sheets are dominated by derivatives, the exposure to which varies with the cycle in risk. Netting of derivatives provides no protection against market risk, and the collateral and margin calls associated with these swings is both pro-cyclical and dangerous. The paper argues the OECD case that the best way to deal with all of these issues – both materially reducing the risk that arises from too-big-to fail while encouraging well-capitalised retail banks get on with the job of lending to create jobs – is to separate retail banking from securities businesses and ensure the former are (particularly in Europe) well capitalised. In this respect the paper argues that the non-operating holding company approach with ring-fenced subsidiaries (close to Vickers in the UK) is perhaps a better model than the Volcker rule.

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I. Introduction

It is likely that the world is only at the beginning of what will in the end be a period of massive change in the banking industry. The global financial crisis resulted in extreme losses, the full *ex-ante* extent of which, at the most critical periods, will never be fully known. To avoid failure many major banks employed less than transparent ways of dealing with mark-to-market losses, and regulators and policy makers had to make decisions in the trade-offs between transparency and the costs of bank resolutions and government guarantees. The unprecedented use of central bank balance sheets in response to the urgent demands for liquidity of interconnected financial firms provided a breathing space. The regulatory response has been extensive – including the move towards Basel III, revised trading book rules, Dodd-Frank, including the separation of proprietary trading (Volcker rule) and separation of retail from wholesale banking under the Vickers report in the United Kingdom. Nevertheless, and despite all of this, banks continue to take big securities markets positions and mix these with traditional retail banking activities that carry implicit and explicit guarantees. Large unexpected losses can arise from such bets on fair-value-through-profit-or-loss products. While never transparent, market knowledge filters through counterparty linkages triggering solvency fears and, from these, critical liquidity crises arise between interconnected firms. These liquidity mechanisms cannot be hidden, and result either in failures or (with official support present) to balance sheet adjustments often referred to as 'deleveraging'. The inability of firms to model and control these risks remains painfully evident – even after all the reforms and promises to improve governance since 2008: the most recent examples being JP Morgan, Dexia, MUFG, UBS and others. There is some fear that banks own attempts to restore their balance sheets to health and their need to deleverage to comply with all of the new regulations may lead to retrenchment that could exacerbate the current weakness in global economic activity.

The financial industry and its lobby groups have argued that the regulatory agenda is too "aggressive and restrictive", and is intensifying a deleveraging process already under way.[1] As this paper will show, this issue is not at all straightforward and hinges on: how authorities' have addressed capital shortages and liquidity issues; how deleveraging is brought about by banks' own internal decisions; and, importantly, the different business model structures of individual banks.

It is often argued that deleveraging is "bad" if occurs via asset contraction, because this is more damaging for the economy. Good deleveraging, on the other hand, supposedly occurs where banks raise more capital:[2]

- Banks may delever by cutting assets via their loan book, which is presumably the most damaging to real activity. Alternatively, asset deleveraging may occur by cutting fair-value-through-profit-or-loss capital markets assets, either by reducing positions or via falling prices.
- "Good" deleveraging may occur by raising new equity, or by reducing dividends, executive compensation and share buybacks in favour of retained earnings. Raising more capital via bond-like products that are untested in a crisis situation cannot be described as good deleveraging: markets for bond-like securities are notoriously illiquid in such periods – at precisely the moment that capital is required.
- A particularly unsatisfactory way of deleveraging is to focus on reducing risk-weighted assets to which the Basel capital rules apply (raising the Tier 1 ratio) via

internal model calibration of risks and the creative use of derivatives such as credit default swaps (CDS).

Bank business models appear to have played an important role in the question of leverage. Where banks have significant securities businesses, particularly large gross market values of derivatives, their leverage tends to move around sharply in a pro-cyclical way contaminating traditional banking activities and giving rise to periodic liquidity crises.

This paper explores the extent of banking deleveraging at the aggregate level and for a number of large banking groups, and focuses on the implications for policy. The aggregate credit data are examined in section II. However, this system-wide data involves diverse banks and data concepts that leave one less than clear about the influences at work – particularly for large interconnected capital markets banks that are too big to fail (TBTF) and whose role in the crisis have motivated many of the regulatory changes. For this reason deleveraging in the banks that are a part of the Globally Systemically Important Financial Institutions (G-SIFIs) is considered in section III. Section IV turns to policy, and explores all of the nuances of the influence on deleveraging of the capital and liquidity rules. Section V examines the reasons for policies of separating traditional banking from securities market activities, and their likely impact on deleveraging and financial stability. Finally some concluding comments are made in section VI.

II. Bank retrenchment to date

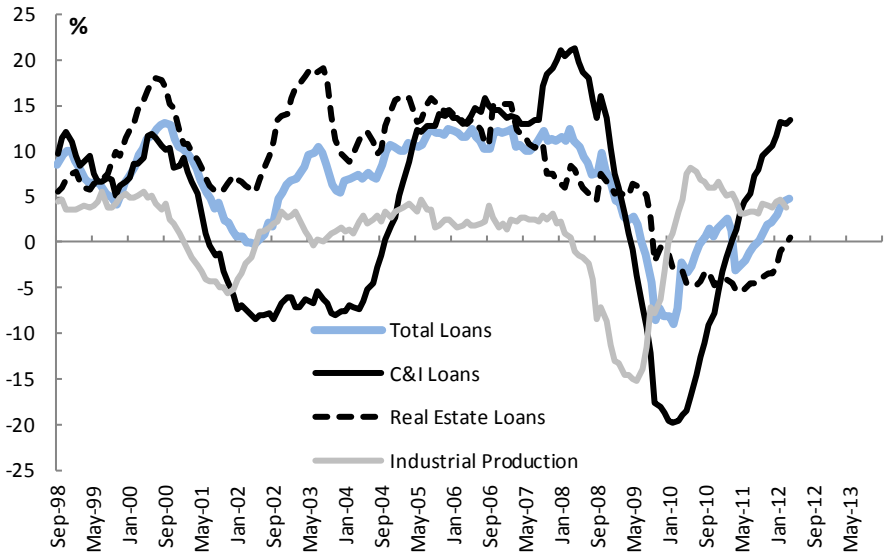
Concern about deleveraging has been driven by the fear that bank retrenchment would limit the extension of credit to worthy private borrowers. This issue has to be seen in an overall context:

- At the *macroeconomic level*, demand conditions associated with the economic cycle influences lending outcomes and, in an era of high budget deficits, non-inflationary monetary policies will insure some degree of "crowding out" of private borrowers; and
- From the *perspective of banks*, much of their leverage may support interbank activity which is not reflected in national accounts data for borrowing and lending by sectors.

Overall, while available data clearly reflect the impact of the cycle on credit demand and, during 2011, banks' shift to cash and interbank claims, they do not suggest overall shrinkage of bank balance sheets in the United States or Europe since the 2009 recession.

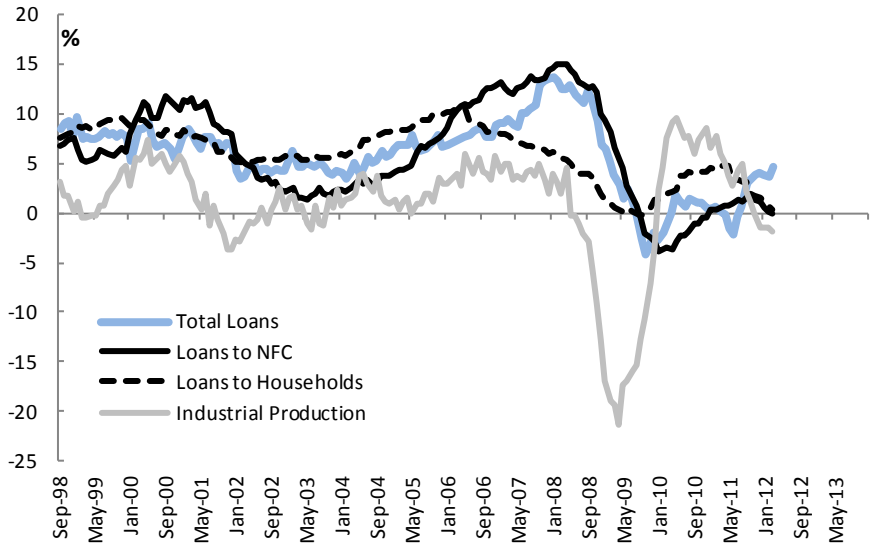
Figures 1, 2 and 3 show US, European and UK credit developments, respectively. In all three countries lending tends to lag the cycle. Lending to non-financial firms tends to be more cyclical and in the case of the USA can pull back sharply and for prolonged periods following episodes of financial stress (the dot.com bust and the subprime crisis. More recently US commercial and industrial loans have picked up much more strongly than elsewhere lending support to the idea that the US financial system is further along the road to healing than in Europe. Mortgage lending in the US remains weak, as house prices remain under pressure. In contrast, the failure of lending to firms and households to pick up in Europe and the UK since 2010 suggests that the financial system is still unable to support the economy. Demand-side factors are playing a role alongside banking system troubles, as confidence and crisis dynamics affect the real economy.

Figure 1. Lending activity in the USA



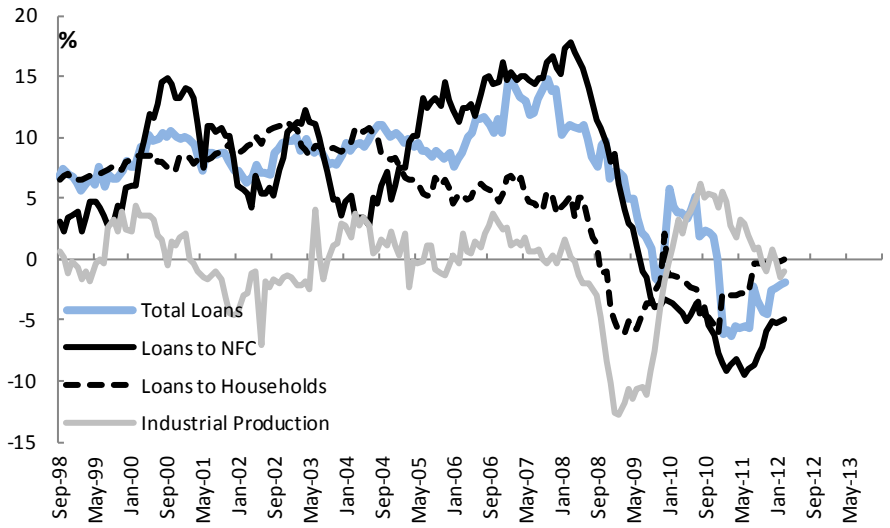
Source: OECD, Datastream.

Figure 2. Lending activity in the euro area



Source: OECD, ECB.

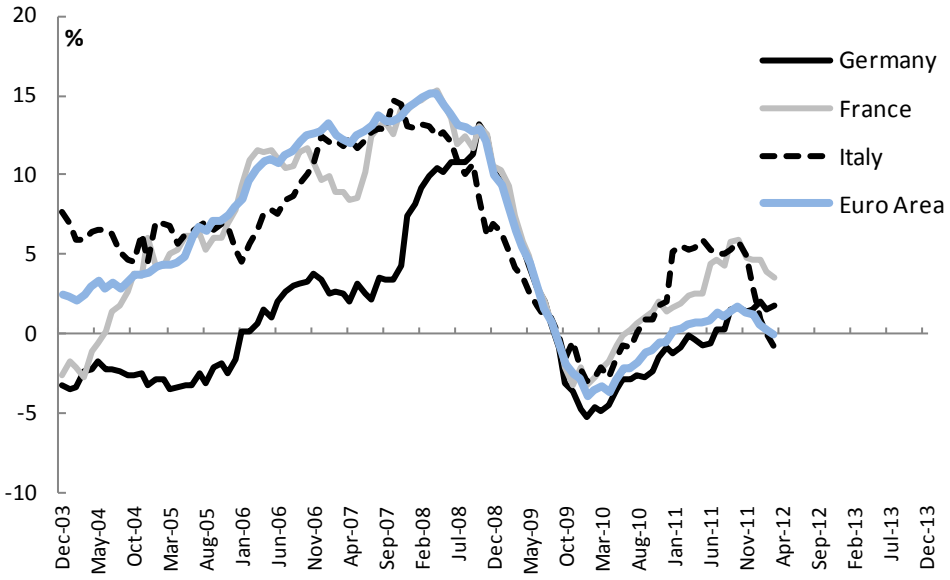
Figure 3. Lending activity in the United Kingdom



Source: OECD, Datastream

The aggregate picture for Europe hides cross-country differences between the north and the south, and the five crisis countries in particular. Figure 4 shows the situation in larger EU countries.

Figure 4. Credit to non-financial corporations, larger euro area countries

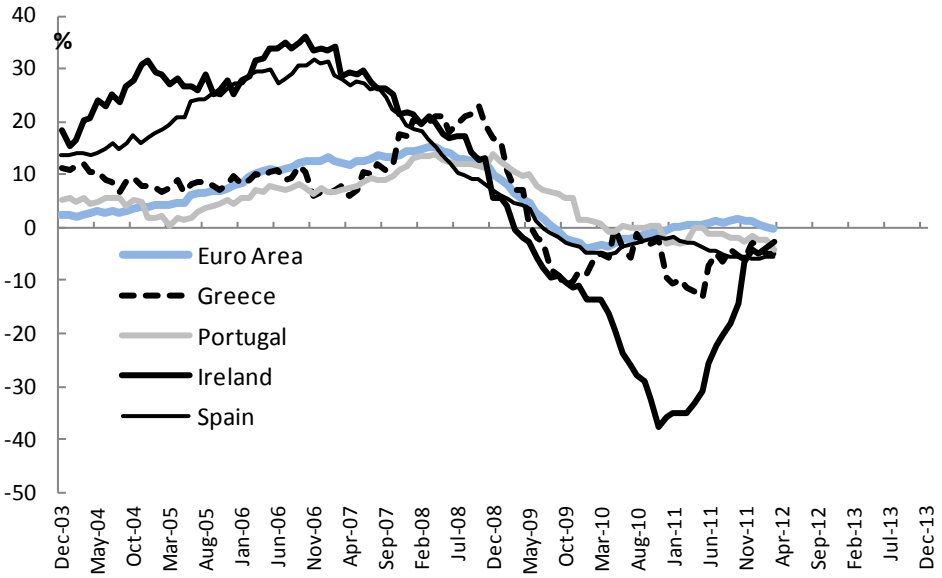


Source: OECD, ECB.

French corporations have been obtaining more credit than those in Germany (where state-owned banks have struggled) and more recently with respect to Italy too, where the sovereign debt crisis is affecting banks.

Figure 5 shows that concerns about strong deleveraging have been more justified in Greece, Portugal, Spain and Ireland, and the contraction of credit is almost certainly more supply-driven in those countries.

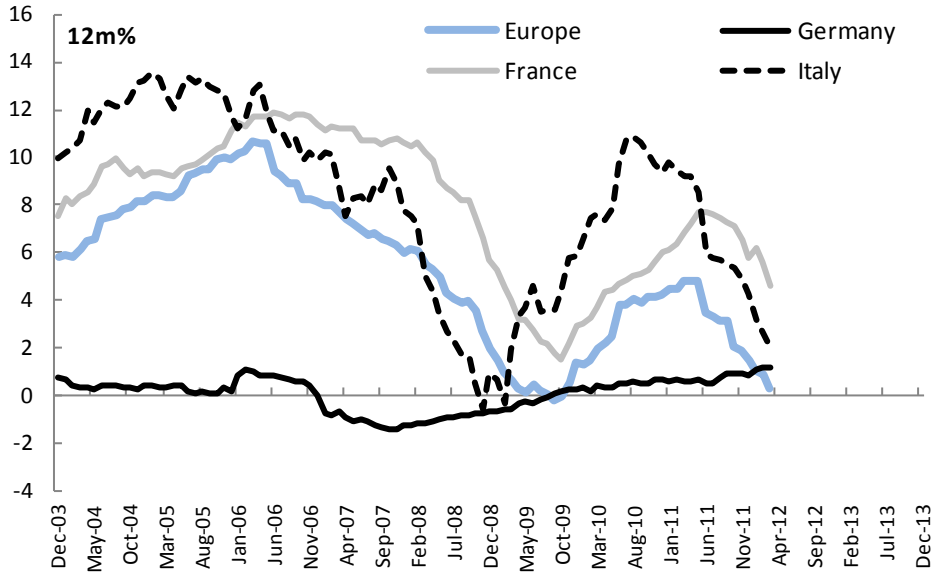
Figure 5. Credit to non-financial corporations, smaller euro area countries



Source: OECD, ECB.

Lending to households is dominated by mortgages, shown in Figure 6 for the larger EU countries. Germany shows no signs of a boom bust cycle, but in France and Italy the nascent recovery after the 2009 recession appears to be slowing again.

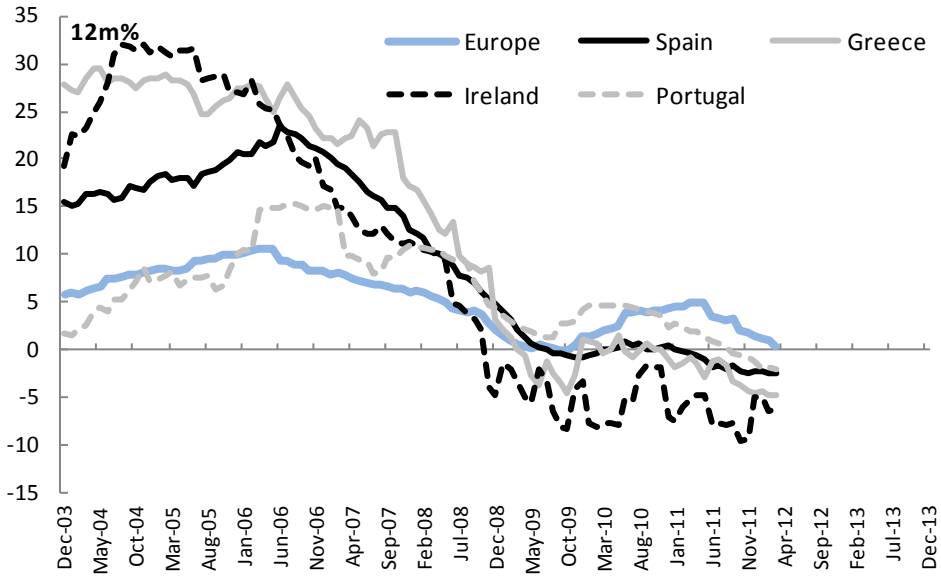
Figure 6. Credit to households, larger euro area countries



Source: OECD, ECB.

The smaller countries shown in Figure 7 include those that suffered a housing boom and bust. Credit contraction in these countries continues. This is not very encouraging for the outlook in these countries.

Figure 7. Credit to households, smaller euro area countries



Source: ECB, OECD.

From the perspective of the system as a whole, the evidence for bank balance sheet shrinkage the since recovery from the 2009 recession is mixed. In the United States asset growth in the system during 2011 was rapid, more than 10%, once derivative activity of the largest banks is taken into account, and still at least in line with potential growth, at more than 4%, if it is not (Table 1). Asset growth in Euro Area banks has averaged nearly 4% for the past two years, also not suggestive of a credit crunch. In the United Kingdom the picture is less robust, as the system's balance sheet continued to contract during 2010 and its growth during 2011, while positive, was still quite low.

The composition of the system balance sheets suggests mixed support for the "credit crunch" hypothesis. Most of the asset expansion reflects the large increases in cash/near cash during 2011, as quantitative easing has kicked in, and items which include external lending and derivatives. The main items reflecting credit expansion to support economic activity, loans and securities, have shown little or negative growth apart from securities in the United States.

A more direct though qualitative measurement of credit crunch pressures may be obtained from bank loan officer surveys. The lending surveys of the ECB and the US Federal Reserve are shown as simple averages of all their components in Figure 8, providing more light on developments in those areas. The extreme nature of the supply-side credit crunch in 2008 is clear in both the USA and the Euro Area for households and enterprises. Symmetrically demand weakened too due to the onset of recession and falling confidence about the future. A more divergent pattern emerged in 2011. In the United States supply and demand conditions in the lending surveys appear to have normalised. In the Euro Area, credit standards appear to be tightening again.

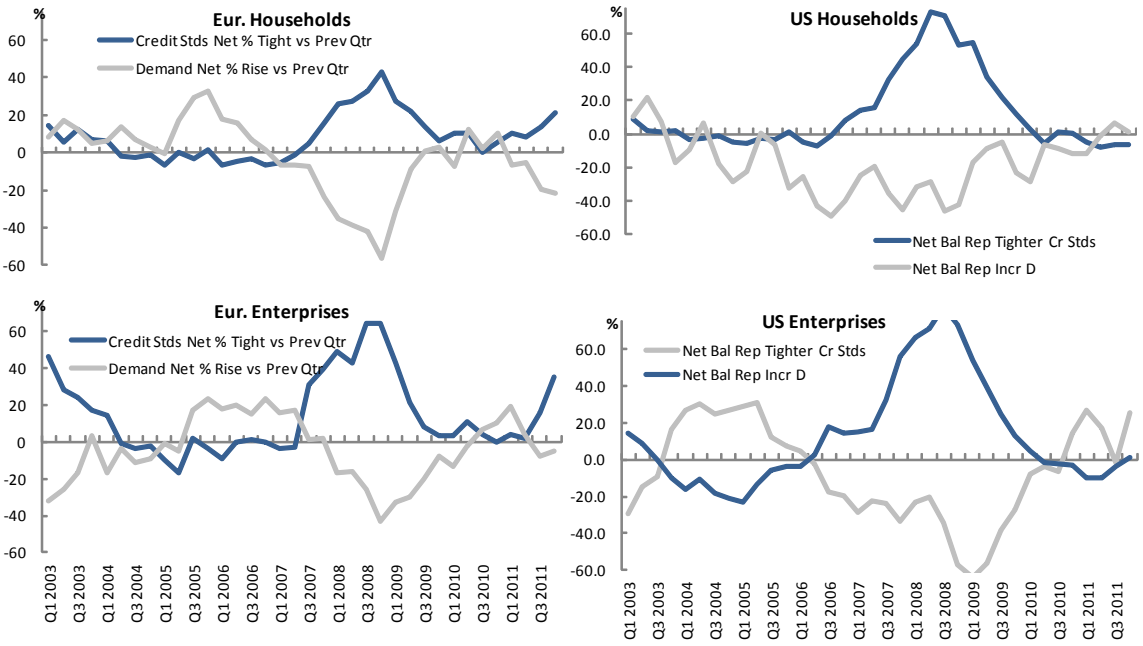
Table 1: Recent Trends in Banking System Assets, Excluding Central Banks
(based on end-year positions, in national currencies)

	United States (percentage change)			Euro Area* (percentage change)			United Kingdom (percentage change)		
	2009	2010	2011	2009	2010	2011	2009	2010	2011
Claims on domestic monetary institutions	-19.9%	-0.8%	20.9%	-6.3%	-7.1%	11.9%	38.5%	-19.2%	13.4%
Net loans and leases	-8.4%	1.3%	1.8%	0.3%	3.9%	0.6%	-4.6%	1.3%	-4.5%
Securities**	22.9%	6.7%	6.8%	9.3%	-2.4%	-3.6%	-11.7%	2.0%	-3.9%
o/w General government				19.0%	2.8%	-8.3%	181.4%	53.4%	36.3%
All other assets***	-9.1%	-0.7%	-2.6%	-8.6%	14.2%	8.4%	-13.0%	3.3%	5.4%
Total assets (GAAP accounting for derivatives)	-5.4%	1.8%	4.2%						
% chng in derivative holdings at six US banks******	-12.7%	-1.3%	26.7%						
Total assets (IFRS accounting for derivatives)	-7.7%	0.9%	10.6%	-2.3%	3.5%	4.2%	-5.2%	-0.7%	2.7%

*Data include Slovakia as of January 2009 and Estonia as of January 2011. Their total assets at end 2011 were EUR 77 billion.
** For Euro Area and UK, domestic shares not included.
*** Includes fixed assets; external claims; for US trading assets; intangibles and, for Euro Area and the UK, equities and derivatives.
****Approximate adjustment for 6 large banking groups to include derivative positions in line with IFRS accounts.

Source: FDIC, ECB, company accounts, OECD.

Figure 8. Lending surveys of supply *vs* demand



Source: ECB, US Federal Reserve, OECD.

III. G-SIFI's derivatives and deleveraging

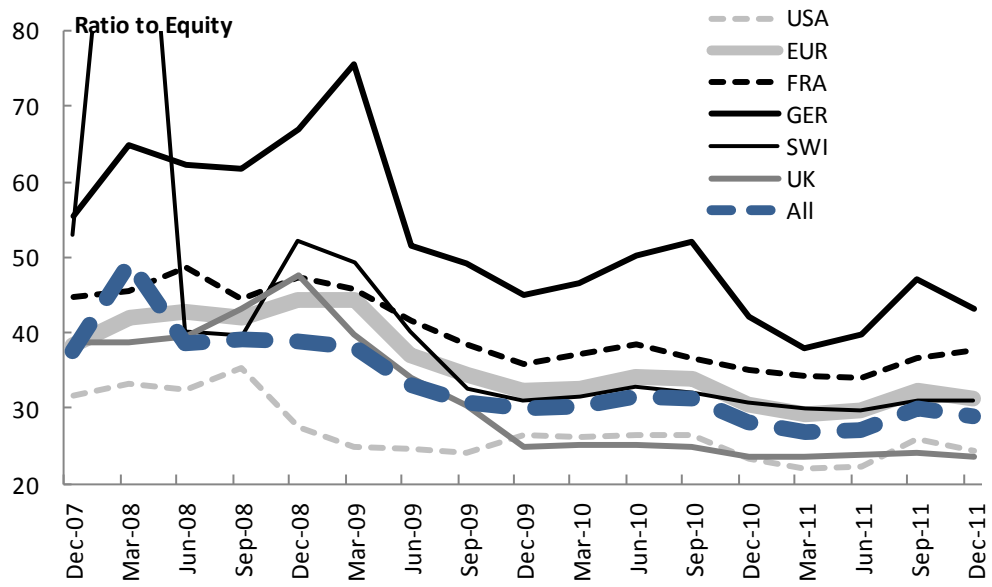
G-SIFIs are examined separately because they are not only large in their own economies, but also play a role in global capital markets products where counterparty risk is so important. The 22 banks were selected with a view to containing all of the large holding companies and investment banks that own banking licenses (allowing them to benefit from access to the central discount window and lender-of-last-resort functions, deposit insurance and other such implicit subsidisation of their business models). Sufficient geographical coverage of countries that have been prominent in the global financial crisis was also a consideration. The banks covered are:

- United States: Bank of America (BAC), Citi (C), JP Morgan (JPM), Morgan Stanley (MS), Goldman Sachs (GS) and Wells Fargo (WFC).
- United Kingdom: Barclays (BCS), Royal Bank of Scotland (RBS), Hong Kong and Shanghai Banking group (HSBA), and Lloyds (LLOY).
- Germany: Deutsche Bank (DBK) and Commerz Bank (CBK).
- France: BNP Paribas (BNP), Societe Generale (SGE) and Credit Agricole (ACA).
- Switzerland: Union Bank of Switzerland (UBS) and Credit Suisse (CS).
- Italy: Unicredit (UCG) and Intesa San Paolo (ISNPY).
- Spain: BBVA (BBV) and Santander (SAN).
- Netherlands: ING banking group (ING).

To make the US banks as comparable as possible to their European counterparts, the gross market value of derivatives (GMV), not including hedging derivatives, is added back into the US bank figures.[3] The leverage ratio is total assets (so defined) versus tangible equity, *i.e.* equity less goodwill and other intangibles.

Figure 9 shows the deleveraging trends for this G-SIFI group of banks on this basis.

Figure 9. G-SIFI deleveraging *versus* tangible equity



Source: Bank report, OECD.

The overall trend in the leverage ratio is downwards, but from very high starting levels of more than 40. The latest global average at the end of 2011 is 30 times, which sits well above the level of 20-times (5% equity ratio) that the OECD prefers as being "well-capitalised".[4] The country differences are quite striking. Germany at one extreme is at 43-times equity at the end of 2011, while the USA and the UK have managed to reduce leverage versus equity to around 24 times (even after allowing for IFRS derivatives in the case of the USA).

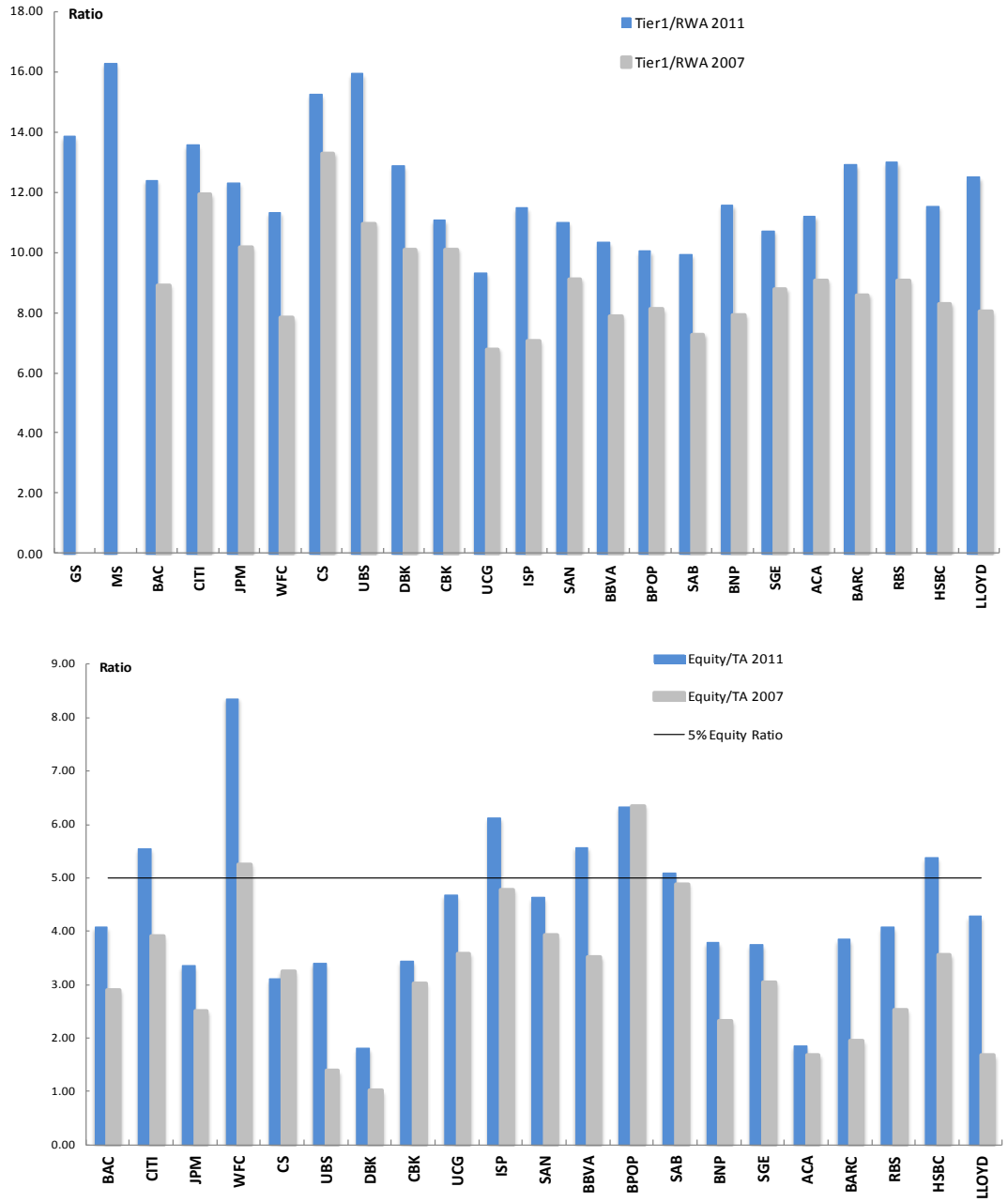
The detailed bank positions for the ratio of Tier 1 capital to risk-weighted assets (RWA) are shown in the upper panel of Figure 10. The positions at the end of 2011 are shown in the darker columns and the positions at the end of 2007 (just prior to the crisis) are shown with the pale columns. The equity ratio to total assets is shown in the lower panel, where the positions in 2011 are compared to 2007. The OECD 5% rule is also shown with the broken horizontal line.

A number of features stand out:

- All G-SIFIs have high Tier I ratios, so that no further deleveraging from this source should be expected this year. The pressure on banks in Europe will presumably be on smaller banks with business models focused more on lending to domestic households, local governments and to small and medium-sized firms (SMEs).
- The ease with which Tier 1 targets are achieved and exceeded is not mirrored in equity ratios. While all banks bar two (DBK and ACA) have already achieved the undemanding potential future 3% leverage ratio of Basel III, only 5 of the 22 banks have a ratio at or above 5%. Banks in the USA received capital injections during the crisis, and 3 of them have relatively high equity positions. The two US specialist investment banks have very high Tier 1 ratios but relatively weaker equity positions.
- The overall picture is very uneven. Two of the US G-SIFIs are "well capitalised". German French and Swiss banks are weakly capitalised in equity, despite very high Tier 1 ratios. The two periphery countries appear to have well capitalised banks, but face more pressure due to the sovereign debt crisis. The UK is similar to the USA, with one bank (HSBA) above the 5% equity ratio level.

As noted in previous papers, the Basel Tier I ratio concept is a very poor measure of bank 'safety' due to the ability of G-SIFI banks to use their internal models to adjust risk weights ("risk weight optimisation"), to use derivatives to engage in regulatory arbitrage and because authorities cannot agree that only genuine equity should be included as bank capital.[5] Here it is worth noting that the most recent G-SIFI failure was Dexia: in a recent press release explaining events the bank reported in the Financials Appendix 1 a total equity position consisting of -€320m in December 2011, *i.e.* negative net equity failure, while their Tier 1 and core Tier 1 ratios in Appendix 2 were a relatively healthy 7.6% and 6.4%, respectively.[6] It is intriguing that the public debate on these issues continues to focus on the Basel ratios, as though relate to banks actual balance sheets and the question of a bank failure. In fact the most common cause of bank failure is a 'funding hole' in the banks actual balance sheet and, in particular, the inability to meet margin calls on derivatives and related collateral issues.

Figure 10. Tier 1/RWA and Equity/TA ratios, 2007 and 2011, compared.



Source: Bank reports, OECD.

G-SIFI good versus bad deleveraging

Deleveraging is often said to be bad if it occurs via asset contraction, because this is more damaging for the economy. Deleveraging may also argued to be bad if it occurs by manipulating RWA through regulatory arbitrage, because the intent is to minimise the holding of capital. Good deleveraging is said to occur where banks raise more capital. Figure 11 shows equity less goodwill, Tier 1 capital, total bank assets (TA, including the

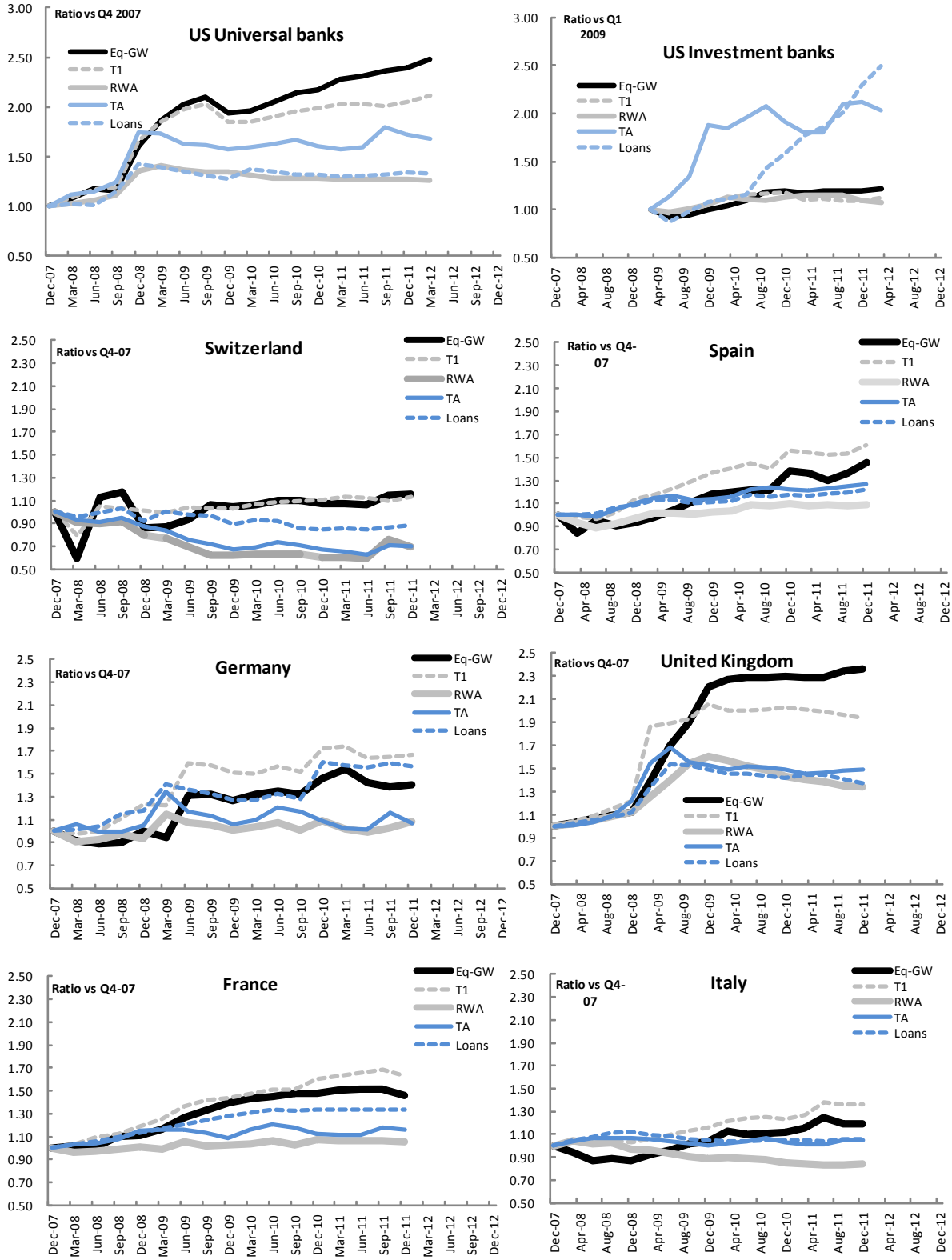
GMV of derivatives), RWA, and loans, as a cumulative index versus 2007Q4. All of the country graphs are shown on the same scale to facilitate comparisons. For the USA, the 2 specialist investment banks are separated from the 4 universal banks considered in the study. The striking country differences reflect to a very large extent the different ways the authorities handled the crisis.

- *Equity versus Tier 1 Capital:* The USA moved in very quickly with the TARP program, declaring a major crisis and essentially pushing capital into the 4 banks considered here via equity warrants in late 2008. The 2 investment banks' data can only be fully constructed from 2009, when they took out banking licenses to benefit from guarantees, but they also benefitted even though they were not banks as such. This program stabilised capital ratios, and has since been augmented by capital raisings in global markets. At the end of 2011, equity was 150% above its 2007 level. The United Kingdom is a very similar story, with RBS and Lloyds being recipients of capital injections amounting to GBP 65 billion. European countries for the most part did not follow the approach of the USA and the UK, preferring instead a less transparent approach to capital needs based on the Basel Tier 1 ratio. In all cases Tier 1 capital rose by significantly more than equity in Europe. In the case of Germany, the jump in equity capital in mid-2009 is related to the €10bn injection into Commerz Bank. The 2 Swiss banks have raised very little equity or Tier 1 Capital compared to the other countries.

- *Risk-Weighted Assets versus Total Assets:* The Basel Tier 1 ratio requirement applies to RWA, and historically banks managed to do a good job at reducing RWA relative to TA in order to minimise capital charges and to improve the return on equity. [7] Following mergers in 2008, the four US universal banks have managed to hold TA flat (including derivatives) in absolute terms, while they have managed to reduce RWA by about 11% from 2009Q1 to 2012Q1 via the usual risk-weight optimisation techniques. The 2 US investment bank specialists are in another league in this respect: they have managed to hold RWA flat while more than doubling TA. In short, leverage via securities markets has expanded. Italy and Spain have also managed consistently to reduce RWA/TA since 2007. TA has risen in Spain and remained flat in Italy. G-SIFIs in the United Kingdom also appear to have returned to the practice of risk-weight optimisation from late 2009. Swiss banks, on the other hand, have been deleveraging with respect to both RWA and TA, while equity and Tier 1 capital levels were maintained.

- *Loans versus Total Assets:* In countries where investment banking is most important (The USA, the UK, Switzerland, Germany and France), there are some striking differences worthy of comment. The rise in TA versus loans in the USA during 2008 reflects merger activity but subsequent volatility in TA is not reflected in loan activity, suggesting the importance of derivatives and other capital markets products in balance sheet movements. The 2 US investment banks are dominated by these products, though loans in one of these institutions have expanded sharply from a small base. In Europe and Switzerland, derivatives positions tend to have been forced down or held steady since the crisis so that loans have risen somewhat relative to TA, or, as in the case of Spain, are moving together.[8] The 2 large Spanish banks have seen some loan growth over the crisis period, and since earlier analysis showed the reverse for the full Spanish banking sector, one can only assume that this has occurred in other regions such as Latin America (reflecting their diversified business models). If one allows for the distortions caused by mergers in the UK and Germany, there is little evidence of G-SIFI banks in the rest of Europe expanding their loan books.

Figure 11. Sources of G-SIFI deleveraging



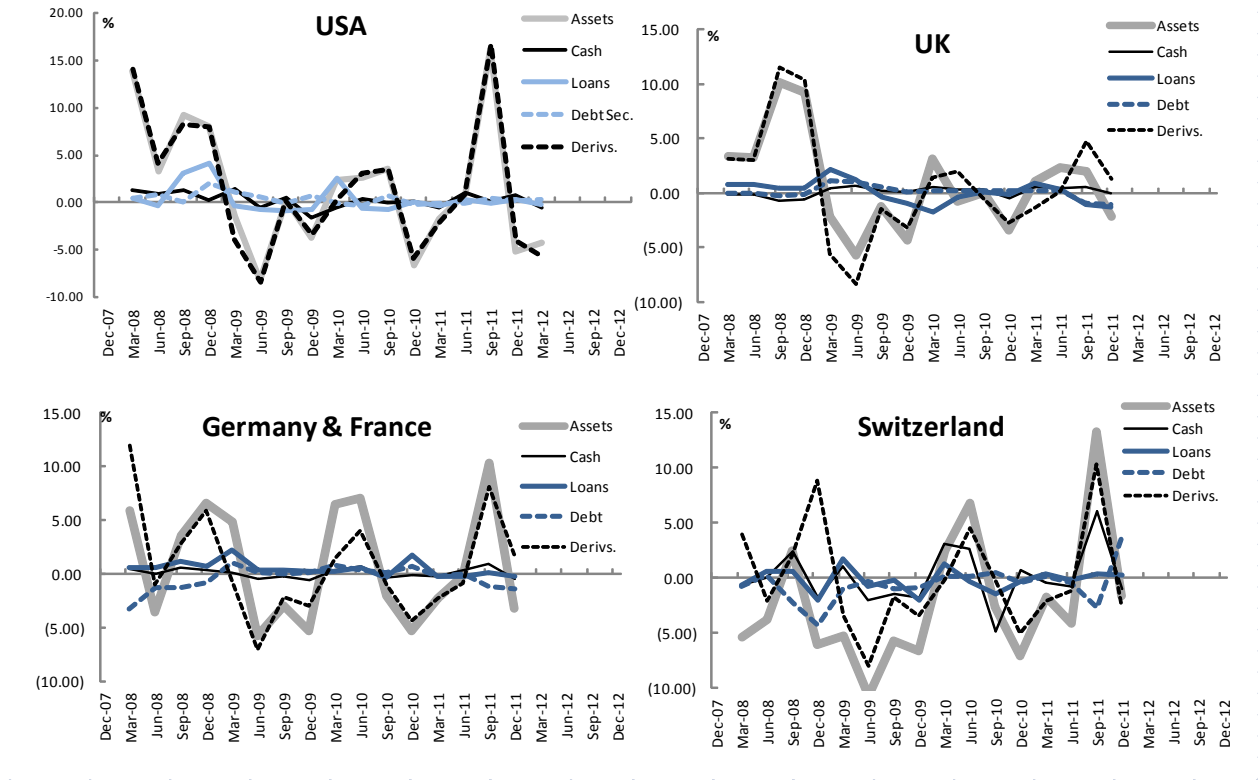
Source: Bank reports, OECD.

While loan growth in G-SIFI banks appears no better in the USA than Europe, capital positions have improved and concerns about bank solvency have improved in the USA but not in Europe where the average bank price-to-book ratio is around 0.5 versus back to parity in the USA. It concerns about solvency that lead to funding issues and in the limit runs on deposits, which is a concern in Europe in 2012. The use of large TARP-style injections of capital into European banks is an option that is touched on in section IV below.

Contributions to total asset growth in investment banking countries

The contributions to G-SIFI total quarterly asset growth from cash, loans, debt securities and derivatives are shown in Figure 12 for the USA (the 4 universal banks), the UK, Germany and France (combined) and Switzerland. In all cases total asset growth is dominated by what is happening to derivatives exposure.

Figure 12. Contributions to bank asset growth



Source: Bank reports, OECD. The USA consists of: BAC, C, JPM, and WFC. The UK consists of: BCS, RBS, HSBA and LLOY. Germany and France consists of: DBK, CBK,BNP, SGE, and ACA. Switzerland consists of: CS and UBS.

Figure 13 compares the derivatives contributions to asset growth with a measure of market volatility (the VIX index). A number of features are worth noting:

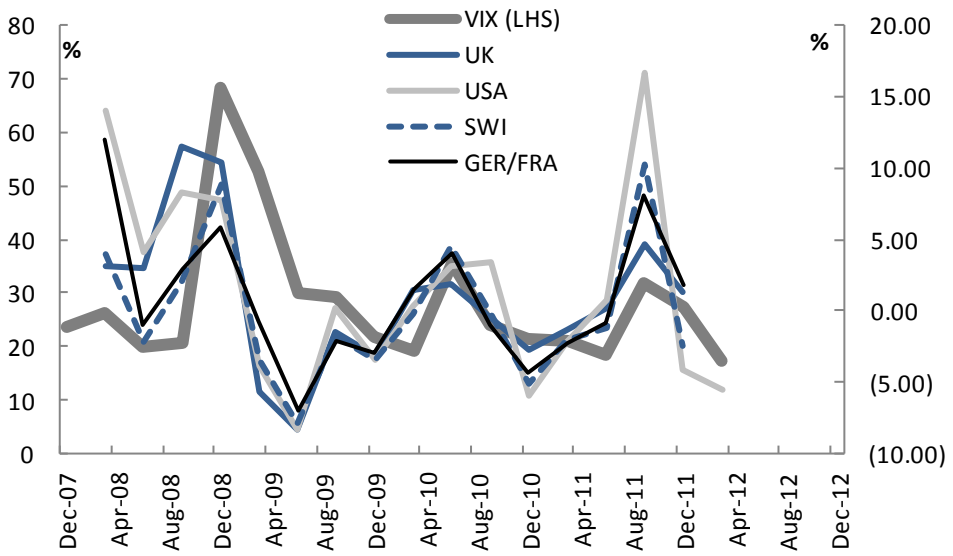
- The derivatives contributions to G-SIFI balance sheet behaviour are highly correlated with each other. This should not be surprising, as the banks in these countries dominate the global derivatives business and use each other as counterparties. Positive and negative market values are most likely randomly shared, with many offsetting

positions that are netted. Profits are made on fees and pricing rather than open position betting.

- Derivatives contributions are highly correlated with any global measure of the cycle in risk (here the VIX index).

The policy implications of these observations will be taken up, following the discussion of regulatory capital policies.

Figure 13. Derivatives contribution to bank balance sheets *versus* the VIX



Source: Bank reports, OECD.

IV. Deleveraging pressures and policies relating to capital adequacy and liquidity

Basel III rules (Pillar 1)

Following G-20 agreement on Basel III reforms banks will be required to comply with rising minima for regulatory capital ratios. Most importantly they will be required to raise their holdings of the new, all-equity, "Core Tier 1" capital measure to 4.5% of risk-weighted assets (RWA) by 2015 and to 7.0% by 2019. It should be noted that both Core Tier 1 capital and RWA contain changes to definitions or rules for calculating them which make complying with requirements more demanding than under Basel II. How much of a challenge will this be?

Table 2 summarises the situation at the end of 2009 as reported in late 2010 in Quantitative Impact Studies (QIS) by the Basel Committee on Bank Supervision (BCBS) and by the European Banking Authority (EBA).[9] It also provides June 2011 updated information about European banks provided in an EBA Monitoring Exercise.[10] The QIS studies, whose coverage of European banks heavily overlaps, cover nearly all diversified, internationally active banks whose Tier 1 capital exceeds €3 billion (Group 1 banks) in G-20 economies and a sample of smaller banks (Group 2 banks).[11] 35 of 91 large banks submitting data in the G-20 sample were European and for smaller banks the G-20 sample appears to be dominated by the European banks. Results suggest that:

- European banks were less well-capitalised than their international counterparts in 2009, as reflected in both Core Tier 1 and leverage ratios for both large and small bank samples.
- On average, Core Tier 1 regulatory ratios are in line with Basel III standards for 2015 for both large and small banks, but for large ones in 2009 they fell significantly below 2019 standards. Both studies note that data limitations lead to a presumption that these figures contain an upward bias.
- Since 2009 European banks, on average, appear to have strengthened their balance sheets. The EBA no longer speaks of an upward bias, but notes that a "significant effort by banks" must still be expected.
- The averages mask considerable variation across banks so that a number of banks face shortfalls, even where sample average ratios are in line with requirements. Relative to 2019 rules these amounted in 2009 to €577 billion for the 87 large banks covered in the G-20 sample and for €263 billion for the 45 large banks in the EBA sample. Notwithstanding improved averages in Europe by 2011, there is little improvement where banks face shortfalls.
- Well over half of large European banks would have been constrained by high leverage of their Tier 1 capital if the 3% minimum for the non-risk-weighted leverage ratio, which may migrate following review to Pillar 1 treatment in 2018, had been in force. Updated figures suggest little improvement. For the G-20 sample, this figure was 42%. This is also high but almost certainly reflects the high leverage in Europe. For smaller banks this appears to be less of an issue.

Table 2: Pillar 1 Capital Adequacy

	Quantitative Impact Studies*, end-2009		**EBA monitoring exercise, end-June, 2011**
	BCBS study	*EBA study*	
Group 1 banks (Tier 1 capital > EUR 3 billion)			
	87 G20 banks	45 European banks	45 European banks
Core tier 1 capital/RWA	5.7%	4.9%	6.5%
Shortfall below 4.5% (2015 rules)	EUR 165 billion	EUR 53 billion	EUR 18 billion
Shortfall below 7.0% (2019 rules)	EUR 577 billion	EUR 263 billion	EUR 242 billion
Leverage ratio**	2.8%	2.5%	2.7%
Share of banks < 3%	c. 42%	c. 60%	c. 59%
Group 2 banks (Tier 1 capital < EUR 3 billion)			
	136 G20 banks	163 European banks	109 European banks
Core tier 1 capital/RWA	7.8%	7.1%	6.8%
Shortfall below 4.5% (2015 rules)	EUR 8 billion	EUR 9 billion	EUR 11 billion
Shortfall below 7.0% (2019 rules)	EUR 25 billion	EUR 28 billion	EUR 35 billion
Leverage ratio**	3.8%	3.5%	3.4%
Share of banks < 3%	c.20%	c. 25%	c. 28%

*Samples sizes refer to shortfalls. Due to data limitations ratios are based on smaller samples
Shortfalls are calculated across banks where shortfalls occur.

**Tier 1 capital as a share of a non-risk-weighted exposure measure.

Source: Basel Committee on Bank Supervision, European Banking Authority; OECD

Other considerations (Basel Pillars 2 and 3)

The OECD has noted in the past that the scope for arbitraging the risk-weight system, the use of Basel II netting for derivative positions and the very slow Basel III transition period make Pillar 1 rules far too undemanding to serve as a basis for a sound regulatory environment. Especially in Europe, this becomes clear once one focuses on actual, *i.e.* not risk-weighted, balance sheets. Table 3 reports aggregate banking system information for the United States, the Euro Area and the United Kingdom, together with implied Core Tier 1 requirements based on varying criteria of increasing stringency. For comparison, actual tangible equity and implied Core Tier 1 capital based on assumptions informed by the QIS studies and the 2012 EBA Monitoring Exercise relating these two variables are reported. Industry estimates[12] of regulatory "common equity", evidently a proxy for Core Tier1 capital, are also provided. For the United States, two sets of figures are given: one based on reported FDIC data; the other reflecting OECD adjustments for derivative positions at 6 major banking groups to make the GAAP-based figures more comparable to IFRS-based European accounts.

Table 3: Overview of capital adequacy, United States and Eruope
(aggregated banking system excluding monetary authoriy, end 2011)

	United States GAAP accounting ($billion)	United States With IFRS adjustment for derivatives at 6 large groups ($ billion)	Euro Area IFRS accounting (EUR billion)	United Kingdom IFRS accounting (GBP billion)
Tangible assets (TA)	13515	20240	33335	8071
Risk-weighted assets (RWA)	9351	9351	13842	3475
Ratio, RWA/TA	0.692	0.462	0.415	0.431
Core tier 1 requirement based on:				
2015 Basel rules (4.5% of RWA)	421	421	623	156
2019 Basel rules (7.0% of RWA)	655	655	969	243
EU capital exercise (9.0% of RWA)	832	832	1246	313
FDIC definition of "well-capitalized" (5% of tangible assets, non-RWA)*	676	1012	1667	404
Actual equity capital				
Tangible Equity	1185	1185	1189	284
(as share of Tan. Assets)	8.8%	5.9%	3.6%	3.5%
Estimated Core Tier 1 capital (Basel III basis)**	948	948	951	227
(as share of Tan. Assets)	7.0%	4.7%	2.9%	2.8%
Industry estimate (common equity)	969	969	1315	278
(as share of Tan. Assets)	7.2%	4.8%	3.9%	3.4%

* Note that this is more stringent than the actual FDIC standard, which uses Tier 1 capital.

** Assumes Basel III deductions reduce Tangible Equity by 20%, in line with 2012 EBA Monitoring Exercise results for Group 1 banks.

Source: FDIC, ECB; RWA for Euro Area and UK derived from IIF estimates; OECD calculations based on company accounts for US adjustment to IFRS .

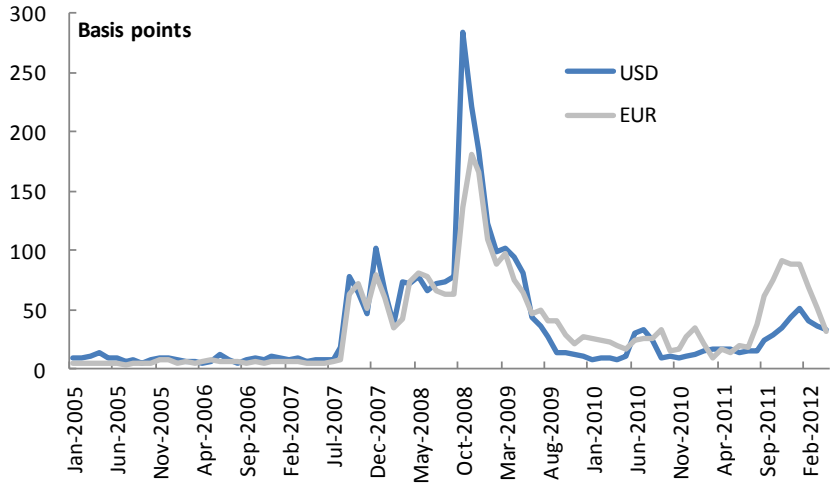
On the basis of standard GAAP reporting, the US banking system appears much less leveraged than the European system. This is reflected in the various measures of actual equity capital as shares of tangible assets that are in most cases more than double the European figures. A key factor explaining this difference is that the risk-weighting system exonerates a much smaller share of the total asset base from capital requirements, reflected in the high RWA/TA ratio.

This appears to be an accounting mirage. Once adjustment for derivative positions in line with IFRS reporting for large groups are incorporated the RWA/TA ratio is very similar to European levels.

However, even after these adjustments are taken into account, the US system appears less leveraged than its European counterparts. All listed ratios[13] measuring equity backing are considerably higher for the US and the various measures of equity capital approach even the most demanding standard listed. Euro Area and UK banks, on the other hand, are already roughly in line with eventual (*i.e.* 2019) Basel requirements but fall short of more demanding standards. This would be especially true if the summer-2011 industry estimate for Euro Area "common equity" failed to anticipate write-downs related to the sovereign debt crisis late in the year. The need for more capital in Europe has become widely recognised with the result that Basel Pillars 2 (supervision) and 3 (market discipline) have overridden the formal Pillar 1 framework agreed in 2010:

- *Pillar 2, capital requirements:* Supervisory concern about the high degree of interconnectedness of many large banks, especially arising from derivatives operations, has led the FSB to designate 29 as Systemically Important Financial Institutions (SIFIs) and to mandate a capital surcharge to be phased in from January 2016. The amount is not yet fixed but seems likely to involve and additional capital requirement for affected banks of 1-2% of RWA.
- *Pillar 2, timetable:* Supervisors in many countries have pressed banks to reach eventual Basel III requirements much faster than scheduled. From 30 June 2012 large banks in Europe outside Switzerland are expected to establish a Core Tier 1 capital ratio, on a temporary basis, of 9% of RWA, a level which exceeds 2019 requirements even for many banks facing the SIFI surcharge.

Figure 14. Libor-OIS spreads



Source: Thomson Reuters Datastream

- *Pillar 3, market discipline:* Since August 2007, when BNP Paribas suspended three funds due to problems in the US sub-prime market, default risk has been a fact of life working to dry up liquidity in the interbank market. This has been reflected in various indicators of market stress (Figure 14). These stresses eased from their peak following the Lehman Brothers default but rose again as the European sovereign debt crisis worsened after August last year. Large infusions of liquidity by central banks, notably Quantitative Easing in the United States and United Kingdom and Long-term

Refinancing Operations (LTRO) by the ECB since late last year, have had stabilizing effects. But market discipline continues to force many banks into positions more defensive than anything mandated by the basic Pillar 1 regulatory framework.

The challenge facing the European Union

While weakness of private sector demand has contributed to the slow credit expansion in Europe it is clear that, at least going forward, bank retrenchment will be a negative force. This seems likely to continue until balance sheets are less stretched. Given the market pressure, there is little to be gained in the short term by relaxing supervisory pressure on banks to strengthen their capital bases. To do so would be to invite a repeat of recent crises.

How much capital do European banks need?

Assessing capital needs requires a benchmark measure of what would constitute a "comfortable" situation that would relieve most banks from the pressure to retrench. There is no definitive answer to this. Regulatory requirements provide reference points but, given that these appear insufficient, a 5% leverage ratio, here the ratio of Core Tier 1 capital to (non-risk-weighted) tangible assets is used as a more demanding benchmark. It should also be noted that calculations based on aggregate data almost certainly understate appropriate capital levels because they do not fully reflect international operations, they neglect off-balance sheet activity and excess capital in well-capitalised banks is not available to weakly capitalised banks should they need it.

Based on the indicators reported in Table 3, increases in Core Tier 1 capital in the Euro Area and the United Kingdom to comply with eventual Basel rules (7% of RWA) are negligible and may not even be necessary (Table 4). The temporary 9% target now being demanded by the European authorities for major banks, if applied system-wide on the basis of end-2011 balance sheets and risk-weights, would require something more substantial: nearly €300 billion in the Euro Area and around GBP 85 billion in the United Kingdom.

Table 4: Estimates of Core Tier 1 Capital Needs in EU banks

Increase, based on end-2011 position, required to meet:		
	Euro Area	United Kingdom
Core Tier 1 capital	(Euro billion)	(GBP billion)
2019 Basel rules (7% of RWA)	18	16
EU capital exercise target (9% of RWA)	295	86
5% pa RWA growth through 2015	563	153
FDIC "well-capitalized" (5% of non-RWA)*	716	177
5% pa asset growth through 2015	1075	264
"Common equity"		
Industry (IIF) estimate to 2015, "Core Regulatory Change"	678	150

* Note that this is more stringent than the actual FDIC standard, which uses Tier 1 capital.

Source: OECD estimates derived from Table 3 and underlying source material.

On the same basis the "well-capitalised" 5% of non-risk-weighted assets standard suggests substantially larger adjustments are necessary: the shortfall amounts to more than €700 billion in the Euro Area and GBP 175 billion in the United Kingdom. These are

consistent with industry estimates of a required increase in "common equity" of €678 billion and GBP 150 billion, over four years, in a central "Core regulatory change scenario"[14].

Except for the industry estimates these are all static calculations, *i.e.* they allow nothing for asset expansion by the banking system. Indeed, the industry scenario envisages a contraction of credit to the private sector of around 11% by the end of 2015[15]. If, however, the banking system is to experience growth, say, in line with nominal GDP that reflects potential growth and some, modest, inflation then additional capitalisation will be necessary to provide backing for the increased lending. If growth of nominal GDP were to amount to 5%, the needed increase in equity to comply with the temporary 9% target would nearly double to €560 billion and GBP 150 billion over four years. To meet the "well-capitalised" 5% leverage benchmark, €1075 billion in the Euro Area and more than GBP 260 billion in the United Kingdom would be needed over four years. This would be nearly €1400 billion in total.

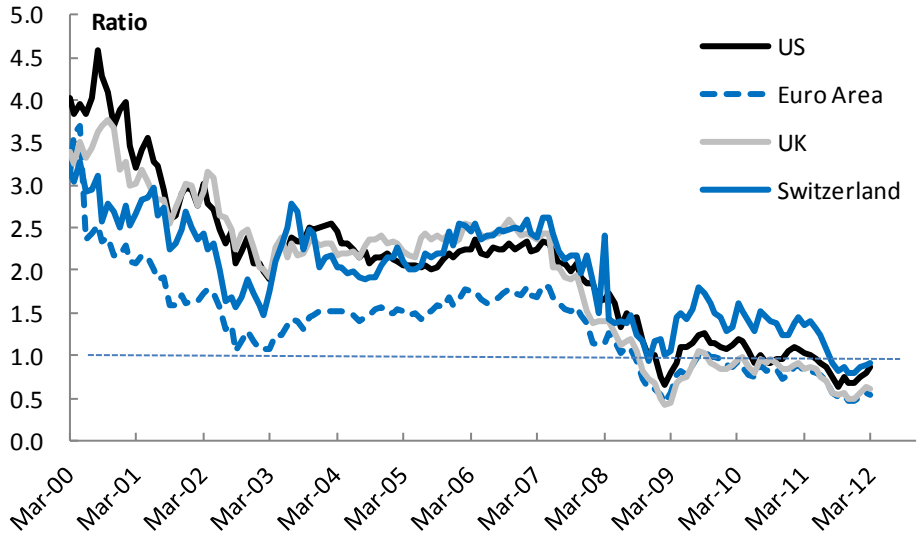
How much new capital will be raised on present plans?

Following the EBA's capital exercise last autumn to assess the adequacy of EU banks' capital relative to the 9% of RWA temporary target, shortfalls amounting to €115 billion were identified in 31 banks. All but one of these was in the Euro Area[16]. Some €30 billion of this relating to Greek banks is being addressed in the context of the Greek rescue package and three other banks[17] are being restructured separately, leaving a shortfall of €78 billion. Plans to cover this have been submitted which envisage raising €98 billion, some 26% more than required by the EBA[18].

This may be less than it seems. Of the €98 billion, only around ¾, or slightly less than the €78 billion shortfall, will involve increases in Core Tier 1 capital. Of this less than €50 billion will involve new money from retained earnings and outside investors, with much of the remainder consisting of restructuring of hybrids and "other mitigating measures"[19] . The other 1/4 will come, less helpfully, from reductions in RWA of around €250 billion, mainly *via* asset disposals, reductions in lending[20] and adjustments to models used to calculate risk weights.

€50 billion is a fairly small figure relative to the amounts identified above as likely to be needed to free Euro Area banks from pressure to retrench. Of this, much seems likely to consist of retained earnings. Given share prices well below book value in the EU banking sector (Figure 15), raising significant amounts of equity from outside investors would require considerable dilution of existing holdings. This makes banks reluctant. Rights issues avoid this problem but may require unrealistically large calls on existing shareholders on unfavourable terms. The large Unicredito €7.5 billion issue in January, for example, amounted to 60% of the bank's existing market capitalisation and had to be priced at a 43% discount to its theoretical *ex-rights* price to attract funds. It should be noted, too, that not all banks are quoted companies. Overall it appears that unless retentions can gradually generate significant increases in shareholders' funds, and barring large injections of public money, that the pressure on banks to shrink or restrain growth of balance sheets will not abate.

Figure 15. G-SIFI equity price to book value ratios



Source: Bloomberg.

Scope for retentions

Operating profits are the original source of any retentions available to strengthen banks' equity positions. These depend importantly on net interest receipts, which in turn depend on both spreads in the market and balance sheet size, and during 2009-10 amounted to just under 0.9% of consolidated assets in the EU banking system annually. They also include trading gains on securities and foreign exchange which were positive in 2009-10 but involve some risk and in difficult conditions, as in 2008, may involve losses. If these operating profits can be maintained they would generate around €1275 billion cumulatively over the period to 2015 in the event of no asset growth and around €1430 billion if assets rose by 5% p.a. These amounts are in line with what appears necessary to meet the most demanding criteria discussed above, and if fully used to recapitalise banks (*i.e.* not distributed) would suggest that deleveraging pressures could ease between now and 2015. However, they take no account of losses, impairments or tax (considered below).

Is there scope for strengthening operating profits? The two main variables which could contribute are:

- Net interest income, which tends to respond favourably to easy monetary policy; and
- Staff costs, which are widely perceived by the public as generous, if not excessive, and could be discouraged.

These can help but probably not by large amounts

As regards monetary policy, interest rates fell sharply nearly everywhere following the Lehman Brothers collapse, so operating profits based on 2009-10 conditions already reflect low interest rates. While there is doubtless some scope for the ECB to follow the Federal Reserve and the Bank of Japan in moving to a zero interest rate policy (and the Bank of England to something close to that), the prospective benefit to banks, in terms of spreads relative to 2009-10, seems limited.

The large quantitative easing provided by LTRO lending of three year money to banks at 1%, which for now has greatly eased the immediate crisis, may appear more promising. While its primary effect has been to assure liquidity, it has also provided banks with an opportunity to recapitalise by buying assets with significantly higher returns, which, after taxes, can be retained to strengthen balance sheets. Gross lending under the LTRO to date has amounted to just over €1000 billion which, if entirely used to purchase high yielding Spanish or Italian debt of maturity similar to that of the LTRO funds, could generate cumulative returns of in the range of €100-150, all going well[21]. However, these potentially high returns reflect default risk associated with much Euro Area sovereign debt and avoiding this by investing in, say, German Bunds at less than 2% (implying a 1% margin) would reduce this figure to less than €30 billion. Furthermore, the funds have not all been used for additional asset purchases but to facilitate other balance sheet operations, including repayment of other refinancing operations. Thus following the second LTRO tranche, the €1000 billion lent to banks is reflected, as of 8 May 2012, in an ECB total balance sheet expansion of not much more than €500 billion since early December, before the program began. Thus a more realistic estimate of the contribution of the LTRO to recapitalizing Euro Area banks over three years might be less than €60 billion in the best case and €15 billion if default risk is to be minimised.

As regards staff costs, scope for cash savings, as opposed to equity-related bonuses, may be more symbolic than material in terms of the system's solvency. Total staff costs in the EU banking sector in 2010 were €230 billion, slightly up on the previous year. A reduction of 10% would yield enhancements to operating earnings of around €100 billion cumulatively by 2015. While helpful, this would not alter the overall picture very much.

The great unknown: losses and impairments

Even in the best of circumstances losses and impairments are part of the business of banking. These must either be covered by operating profits or deductions from existing capital. Considerable judgment goes into deciding how and when to provide for and recognise losses and impairments on positions that are not yet closed and banks have reasonable discretion in this regard. As a result the scope for using retentions to strengthen bank capital positions is a function of: (i) recorded losses, provisions and impairments; and (ii) latent losses not yet acknowledged. Provisions and impairments in the EU during 2008-10, amounting to nearly €700 billion, reflect the severity of the crisis, and cannot be extrapolated as reflecting normal business conditions. But equally, some meaningful amount can be expected. If this amount ran to half of 2010 losses and impairments such provisions would absorb around €360 billion of operating profits cumulatively between now and 2015.

The greater problem is whatever damage that balance sheets may have suffered since the start of the crisis which has yet to be recognised. The extent of unknown damage is unknown, and it may only apply to certain banks and in varying degrees. But areas of concern include:

- Lehman Brothers bankruptcy was well under way, suggested that total write-downs of around $1420 billion, or somewhat more than €1000 billion, would be needed in the Euro Area and the United Kingdom between mid-2007 and 2010. These estimates included no allowance for sovereign debt problems and substantially exceed the recorded EU total for this period. While losses may simply have been over-estimated, it is possible that significant unrecognised losses from this period still exist.
- In particular, unresolved problems with property lending persist in some countries;

- Many losses related to private sector involvement in the Greek rescue are only now in the process of being recognised;
- Other sovereign debt has lost any perceived risk-free status, especially where assets held in the banking book have not been marked to market;

Taxation

To the extent that losses and impairments do not absorb operating earnings banks are generally taxable on the balance. This has typically run around 30% of earnings, substantially reducing the scope for retentions. Furthermore, it should be noted that a number of countries have devised various taxes and levies designed to extract money from banks. For the Euro Area, the industry estimates that these will run to €5 billion p.a. and, for the United Kingdom, GBP 1-2 billion p.a. Over the period to 2015 this would amount cumulatively to €25-30 billion. Where these taxes can be passed on to depositors, say by structuring them as deposit insurance fees, they may play a useful role. But they will be counterproductive if they impinge on banks themselves as such taxes will serve to offset the forces working to recapitalise the system.

The overall picture

The current EBA capital exercise reviewed above is the first comprehensive effort to reinforce the capital base of Euro Area banks as was done in the United States and the United Kingdom following the Lehman Brothers collapse. But it comes much later and, leaving aside the support package for Greece, is much smaller in scale. The various magnitudes surveyed here suggest that much remains to be done, not just in the Euro Area but also in the United Kingdom.

Complying with formal Basel III rules should be no problem but both markets and supervisors have become more demanding. Future earnings can do much of the work during the next few years if the bulk of important losses relating to the US sub-prime crisis, real estate in some European countries and sovereign debt prove to have already been recognised. This assumes, however, that such earnings are not depleted by high taxation. It also assumes that virtually all earnings are retained until banks are sufficiently well-capitalised to feel comfortable about expanding balance sheets in ways that support economic activity.

It still seems likely that outside sources of capital will have to be tapped. To attract outside investors, it will be essential to allay concerns that large unrecognised losses may remain. These will be discounted by the market thus discouraging new investment. Conservative accounting which provides generously and realistically for losses on existing assets, to be borne by existing shareholders, is likely to be a pre-requisite for raising large amounts of capital from new investors.

This raises the question of whether there is scope for large public support for the banking sector, as in the United States and the United Kingdom following the Lehman Brothers collapse. It is difficult to separate this issue from ongoing sovereign debt problems in parts of the Euro Area given:

- In the absence of compensating budget measures, direct funding to support banks requires issuing more sovereign debt. This is counter-productive in financially weak countries while it erodes the strength of financially strong ones.

- The perceived weakness of many Euro Area banks at least partly relates to their exposure, direct or indirect, to sovereign debt that is no longer perceived as risk-free.

To date EU countries have committed to providing large-scale support, more than €1 trillion when ECB bond purchases are taken into account, to sovereign borrowers. This has been supplemented by significant resources from the IMF, which provides scope for non-European funds to be added to support packages, and by "private sector involvement (PSI)" which commits private creditors to recognise losses and write down their holdings of sovereign debt. So far only €30 billion has been singled out for bank recapitalisation (as part of the Greek rescue), but a significant part of the combined EFSF/ESM ceiling of €700 billion remains unallocated and available to deal with future contingencies. Given the degree to which banking and sovereign debt problems threaten to aggravate each other, the best use of much of this money may be to strengthen the capital base of Euro Area banks to ensure that runs on deposits do not emerge in countries other than Greece – which would put pressure on the entire European system of central banks' Target 2 mechanism.

In a previous paper the possibility of a large TARP-style recapitalisation of Europe's banks was elaborated: the uncommitted EFSF/ESM funds could be used to capitalise an SPV sponsored by the EIB, which permits leverage and greatly augments resources.[22] The ECB could even lend a hand if bridge funding were required for the EIB vehicle. Given the interconnectedness between banks, this recapitalisation should be much broader than just the periphery countries.

Regulatory biases against lending to private borrowers

The pressures on banks to strengthen their overall balance sheet, together with the normal "crowding out" engendered by the financing large budget deficits in a non-inflationary way, will work to limit financing for private borrowers. In addition, the regulatory system now being introduced contains important biases working to make such lending more expensive.

Capital adequacy rules

Biases in the capital adequacy framework have worked for many years to discriminate against lending to the household and enterprise sectors as a result of favourable risk-weights for claims on cash, sovereigns and other public sector entities and on other banks. The high risk weights faced by private borrowers, now 35% for residential real estate, 75% for retail lending and 100% or more for corporate and commercial real estate lending other than corporate obligations rated A- or higher[23], imply relatively high capital charges on such lending. Large enterprises, relatively few of which have ratings of A- or higher, and commercial real estate face the highest costs since small and medium-sized enterprises have considerable scope for being treated as households, benefiting from the 75% risk weight. Indeed, if an entrepreneur/small business owner is prepared to pledge his principal residence, his bank can take advantage of the 35% risk weight.

Liquidity rules

The new Basel III liquidity framework with its two new standards, the liquidity coverage ratio (LCR) and the net stable funding ratio (NSFR), may become a larger issue. This differs from the capital adequacy framework, which creates complex and important incentives but only sets minima for three capital measures. These consist of instruments

which banks themselves issue to fund the asset portfolio. The liquidity framework will not only create incentives affecting both asset and liability management but it will require large holdings of assets whose supply banks do *not* control. It seems likely to do so in ways that reinforce the main biases of the capital adequacy framework. The standards are being phased in slowly[24], allowing preparatory observation periods and scope for modification should unintended consequences become apparent. But, since banks can be expected to incorporate these into their activities in advance, their impact is probably already being felt.

Perhaps the most important bias results from the definition of high quality liquid assets, which banks need to hold *continuously* as a buffer to survive a hypothetical 30-day period of liquidity stress, under the LCR standard:

- The buffer must consist predominantly of "Level 1" assets, which are largely confined to 0% risk-weighted claims on central bank and public sector entities[25];
- It can also contain "Level 2" assets, which include 20% risk-weighted claims on central banks and public sector entities as well as AA- or higher-rated corporate or covered bonds not issued by financial institutions.
- A 15% "haircut" is applied to all Level 2 assets, which cannot account for more than 40% of the total buffer.
- An important feature of the LCR is that the assets in the buffer must be *unencumbered, i.e.* not pledged (explicitly or implicitly) to secure, collateralise or credit-enhance any transaction.

Thus qualifying assets consist almost entirely of the same claims on public sector entities and central banks privileged by low risk-weights in the capital adequacy framework, which should work to reinforce demand for such assets. The major differences are that inter-bank claims are not included, due to concerns that these can become illiquid in a period of stress ("wrong-way risk"), while collateral for covered bonds may include commercial real estate mortgages (see below). It should also be noted assets eligible to serve as collateral at central banks do not necessarily qualify, and that senior unsecured claims on other banks and even very liquid equities are excluded.

Other sources of bias are built into the various behavioural parameters used to calculate that: (i) the expected cash outflow under stress which LCR rules require that the liquid asset buffer cover; and (ii) the "stable funding" aggregates that NSFR rules focus on:

- LCR rules treat secured funding as highly stable so long as: (i) the assets securing the funding are Levels 1 or 2; or (ii) the funding is provided by domestic public sector entities or central banks. Such funding will receive 0-25% weights to reflect likely run-off. All other secured funding is assumed to run-off 100% in the event of stress.
- NSFR rules treat cash, liquid short-term securities (< 1 year) and marketable claims on 0% risk-weighted public sector entities and central banks as highly stable, requiring only 0-5% stable funding. But loans of similar maturity to private borrowers require stable funding ranging from 50-85%. While high-quality corporate and covered bonds of longer maturity rated above A- qualify for 20-50% stable funding, everything else over 1 year needs 100% stable funding.

While these parameters merely create incentives, as opposed to requiring actual holdings as do the buffer rules, they again operate to favour the same asset classes: claims

on public sector entities and central banks. Highly-rated corporate bonds and real estate qualifying for cover pools aside, claims on the private sector are effectively penalised. The bias operates not only directly on the asset side but also indirectly by privileging funding that is collateralised by favoured assets.

The international framework is increasingly being supplemented by moves in a number of individual economies to ring fence liquidity in their markets. These include the United Kingdom and some Asian jurisdictions with large international banking centres. Ring-fencing, which can apply at the branch as well as subsidiary level, requires internationally active groups to maintain their liquidity positions in individual markets on a stand-alone basis. This makes it difficult to manage liquidity centrally and to direct it where and when it is needed. It can also lead to conflicting pressures from home and host supervisors[26]. Ring fencing seems likely to add to the need to hold the same high quality liquid assets that are privileged by the international framework.

Collateral and asset encumbrance

Given that all internationally active banks -- in Europe, all banks -- will need to hold large quantities of assets whose issue is beyond their control, it is useful to ask whether there are enough qualifying assets to go around. Given the size of many countries' budget deficits and outstanding debt adequate supply seems highly likely for the near future. But it is worth keeping in mind:

- As a number of countries have already demonstrated, continuing large deficits can put the high quality of sovereign debt and even its liquidity at risk, defeating the purpose of the buffer.
- EU countries are committed by treaty to delivering low deficit positions and many other countries are ambitious to do likewise once a recovery is clearly under way. Today's supply of qualifying sovereign debt may not be indicative of tomorrow's supply.
- The scope for high-quality private debt to supplement the supply of qualifying assets is very limited, mainly consisting of real estate mortgages. Collateral required for covered bonds otherwise consists mainly of the same assets which qualify as high quality under LCR rules and thus add nothing to overall supply. Highly-rated corporate debt, the remaining potential source of private supply of qualifying assets, is likely to remain highly-rated only if the issuer is parsimonious with supply. More issuers would be welcome, but banks are not in a position to influence this very much.
- Banks are not the only source of demand for high quality liquid assets. Other important buyers include insurance companies, pension funds and managers of foreign exchange reserves, notably in parts of Asia.

Some indication of the situation as it stood at the end of 2009 is available from the QIS exercises described above. For the G-20 bank sample only 4% of the total stock of qualifying assets consisted of private debt instruments, roughly split between corporate and covered bonds. In Europe the figure was around 9% with covered bonds reflecting essentially all of the higher stock[27]. In aggregate, the LCR in the G-20 sample was 83% for large banks, suggesting significant shortfalls at the level of the system, although it was 98%, or nearly in balance, as required, for smaller banks. In Europe these figures were 67% and 87% respectively[28,] suggesting that large European banks face more pressure to acquire liquid assets and/or to adapt their operations to reduce their exposure to net cash outflows than their international counterparts. These figures mask a very large dispersion

across banks. If the rules for 2015 were applied to end-2009 portfolios, shortfalls in liquid assets in banks in the G-20 sample which had shortfalls, some 54% of the sample, would have been €1.73 trillion. In Europe, in mid-2011, these figures were 66% and €1.15 trillion, respectively.

Assets qualifying for the LCR buffer must remain unencumbered and the required buffer seems likely to be very large, even if much can be done to reduce the stressed cash outflow which must be covered. LCR rules must be seen in context with a recent trend to increasing reliance on collateral to support bank funding. The major need for collateral in Europe has been in operations with the ECB, *i.e.* repos, the Marginal Lending Facility and, for most of the next three years, the LTRO. But the rising use of covered bonds (see below) to fund operations has also encumbered an increasing share of bank assets in cover pools. The assets which can serve each of these various purposes are not identical, in particular some ECB eligible assets and the real estate mortgages eligible for covered bond asset pools do not qualify for the LCR buffer. But there is a heavy overlap consisting of claims on public sector entities and central banks.

The importance of this is difficult to judge. The LTRO encumbers large quantities of assets but also creates them, in the form of cash balances at the ECB. It is scheduled to end in late 2014 and early 2015, just as the LCR rules become binding. Therefore, while there may be an issue of how they will interact during the LCR phase-in period their claims should not be additive afterwards. Also, while encumbering assets in the LCR will preclude their use as collateral for secured bank funding, it should not hurt the quality of unsecured funding instruments. This is because the assets are available in the event of bankruptcy.

On the other hand, the amounts involved are large. Market estimates indicate that for many large European banks encumbered assets, mainly related to repos and covered bonds, ranged between 15% and 35% of assets, ex derivatives, even before the LTRO[29]. Since the LTRO these figures are likely to have risen significantly in those banks that took heavy advantage of the program. For strong banks this may not pose problems. But they don't want to lend to banks that are less well-off and they may hold large amounts of cash at the ECB. On the other hand, the problem banks which lack the collateral to raise secured funds in the market may find it difficult to raise anything without collateral. They can easily become dependent on the ECB but, even there, may face a collateral eligibility issue.

Secured funding: covered bonds and securitisation[30]

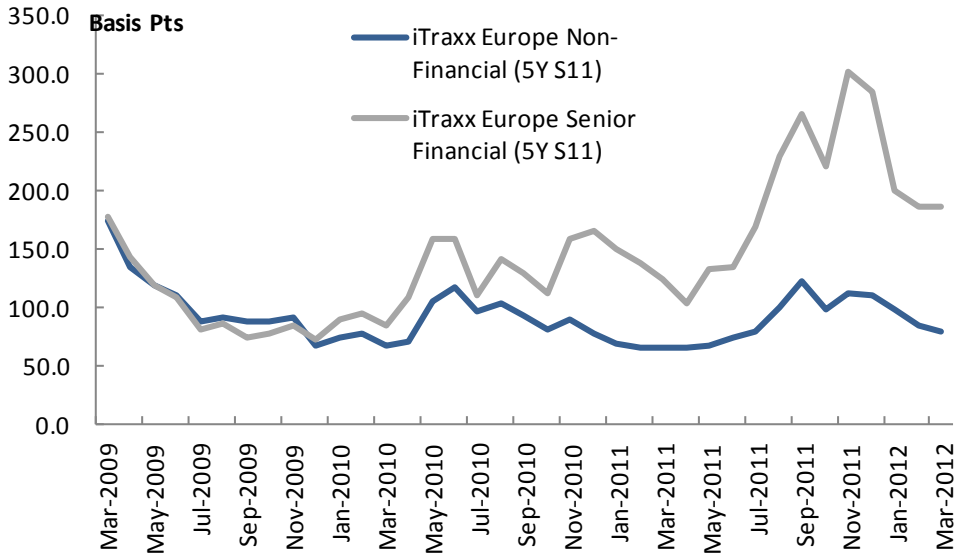
Impediments to unsecured funding

The challenges banks face raising unsecured funding in the markets will be reinforced by the Basel liquidity and other regulatory frameworks, working to reduce demand for such instruments and thus to raise costs. For banks which might act as sources of funding, unsecured bank bonds (unlike high-quality corporate bonds) will not qualify as high quality liquid assets under LCR rules, making them unattractive. At the same time, they will require full stable funding under NSFR rules. For insurance companies in Europe, the Solvency II framework due to come into force in 2013 will discriminate against unsecured non-sovereign bonds by assigning them high risk-weights. Capital charges will also rise in line with the maturity of such instruments. In addition, such bonds may be subject to conversion to equity under "bail-in" provisions should the issuer be subject to emerging bank resolution regimes. And where depositor preference laws exist they will

add to the perception that unsecured instruments are low quality. All this will reduce demand for such instruments.

At the same time, NSFR rules will oblige banks to find stable funding and issuing unsecured medium-to-long term bonds is an obvious way to do this. Upward supply pressures therefore seem likely to reinforce the effect of lower demand working to raise costs of such funding to banks. Indeed, since the Basel liquidity framework was proposed in December 2009, a notable divergence between unsecured bank bond yields and high quality corporate bond yields reflecting these forces has emerged (Figure 16). These costs will have to be passed on to bank customers.

Figure 16. Baskets of CDS on senior debt of EU financial & non-financial corporations



Source: Bloomberg

Collateralised securities

This points to increased use of collateralised instruments, the two most important of which are asset-backed securities (ABSs) and covered bonds (CBs). Both of these derive their value from being backed by a pool of assets, the main difference being that CBs provide holders with recourse to both the originator and the asset pool in the event of difficulties. ABSs are usually issued by a special purpose vehicle separate from the originator[31]. CBs are governed by the Capital Requirements Directive in the EU as well as by national legislation in a number of countries. In some countries frameworks have emerged on the basis of contractual agreements. These frameworks impose conditions for eligibility of assets for the cover pool and which govern how much of an originator's portfolio can be allocated to the pool. These conditions serve to make CBs generally higher quality instruments than ABSs, reflected in AAA ratings for nearly 90% of European covered bonds.

ABSs were popular until the recent crisis but from 2008 they have largely been retained by originators, at least partly because they can serve as collateral for ECB refinancing transactions, and their use has diminished. Since 2009 amounts outstanding have declined. At the same time a number of factors have encouraged the use of CBs, mainly in Europe[32]:

- Recourse to the originator should encourage better asset quality standards than were often displayed by ABSs during the recent sub-prime crisis and provides an additional layer of protection to holders.
- Reputational considerations in the aftermath of the crisis work against ABSs. Regulatory reforms needed to help in this regard may work to raise costs.
- CBs rated AA- or better will qualify as high quality liquid assets under Basel liquidity rules, after a 15% haircut, while only 20% of their value will require stable funding. This works to raise bank demand for CBs, relative to ABSs or unsecured bonds.
- CBs will be a way of raising stable funds under Basel liquidity rules, which will encourage supply.
- CBs, in contrast to unsecured bonds, are unlikely to be subject to "bail-in" conversions to equity.
- Large issues of CBs ("jumbos"), roughly half of the total outstanding, are generally more liquid than ABSs.

The result is that CB issues have continued at a high rate (Table 5), although the sovereign debt crisis has acted as a restraining force, and this seems likely to continue.

Table 5: Trends in the covered bond market

(EUR billion)

(Amounts outstanding, end-period)

	Public sector	Mortgage	Other	Total	*o/w: Europe*	*US,Canada, NZ*	*of issuers*
2010	608	1790	103	2501	2470	31	300
2009	691	1603	98	2392	2372	20	299
2008	775	1407	97	2279			268
2007	859	1070	92	2021			233
2006	884	923	74	1881			213
2005	870	745	61	1676			194
2004	859	644	50	1553			167
2003	870	584	44	1498			140
				(New issues)			
2010	75	517	21	613	599	14	22
2009	84	428	18	530	529	1	39
2008	129	507	15	651			43
2007	151	286	27	464			21
2006	173	304	21	498			20
2005	180	273	16	469			26
2004	162	198	13	373			27
2003	182	205	13	400			22

Source: European Covered Bond Council

A number of factors, however, seem likely to limit the growth of the CB market:

- Only restricted asset classes, generally mortgages and the same government securities that satisfy Basel liquidity rules, are available for cover pools. As a result, CBs are attractive to investors looking for a higher-yield alternative to government securities and serve primarily and increasingly to refinance fixed interest rate mortgages.

- Assignment of high quality assets to cover pools weakens the average asset quality of the remainder of the balance sheet. This can adversely affect market perceptions of a bank's unsecured bonds and raise unsecured funding costs. In light of this caps are generally imposed on the share of a bank's portfolio that can be devoted to cover pools[33].
- Structuring of cover pools and management programs can be expensive, which discourages smaller banks. In addition, weaker banks need to provide higher levels of collateralisation than stronger ones. This works to limit the market to the largest, most highly rated banks.
- Separate national frameworks fragment the market[34] which may limit liquidity.

Measures could be taken to address these issues and encourage further development of the CB market. However, these would not ease concerns about bank deleveraging and credit availability to the enterprise sector. So long as the framework privileges government bonds and mortgages, thus discriminating against non-mortgage lending to the business and household sectors, it reinforces biases of the Basel framework.

V. Deleveraging and G-SIFI bank business models

In section IV the issue of collateral encumbrance and the sufficiency of high-quality instruments for this purpose was discussed and the bias against lending noted. This issue is particularly important for the G-SIFI banks discussed in section III, where it was noted that loans from large banks to the private sector have not contributed to asset growth and total asset behaviour has been dominated by banks' derivatives exposures. Since 2008 there has effectively been no loan growth from the banks studied in the USA, France, Germany and the United Kingdom. In Switzerland the level of loans has actually fallen.

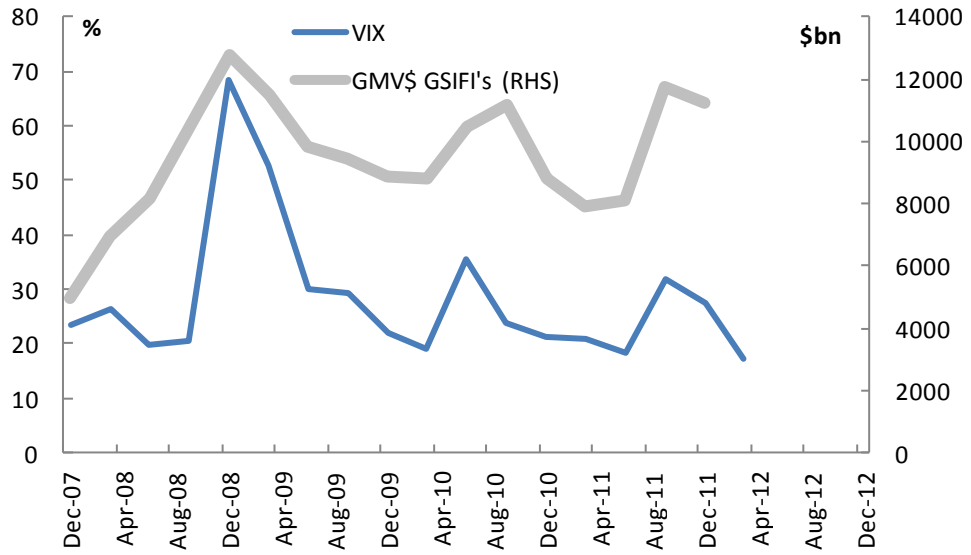
The crisis has led to extreme market pressures that have led to vastly increased demand for cash and other (typically sovereign debt) collateral in G-SIFI banks that impedes lending to enterprises. This has been strongly reinforced by regulatory trends:[35]

- OTC derivatives: when risk and volatility rise in the market the GMV rises with it. This can be seen in Figure 17, which compares the VIX with the derivatives of G-SIFI banks in the investment banking capitals. This typically causes collateral demands to rise. Most banks have vast derivative exposures but net them for regulatory purposes[36], and in low volatility periods there is little pressure on liquidity. But netting provides no shelter from market risk. The gross credit exposure (GCE), which is GMV after netting, can move suddenly in a market risk event and collateral demands can rise quickly as a consequence in a pro-cyclical way. At the same time the CVA charge proposed under Basel III would rise, increasing pressures and prompting CVA desks to hedge (with CDS trades). Banks, hedge funds and the like require cash buffers, since the failure to meet a margin call can result in bankruptcy. The demand for such buffers has risen as a consequence of the more volatile environment since the crisis.
- Re-hypothecation, which results in collateral being re-used in prime broking businesses (resulting in a "velocity of circulation" of collateral), has the particular legal characteristic that clients (like hedge funds) that have not demanded segregated accounts become unsecured creditors in the event of a failure. Consequently, after some spectacular failures during the crisis, customers' demands for segregated accounts have risen and are putting more pressure on bank cash positions. Similarly,

novation requests rise when banks are perceived as being vulnerable, and such requests require the transfer of collateral to the new counterparty. At the same time regulatory demands for segregated accounts are reinforcing this trend.

- Dealer banks operate with short-term repos style transactions to fund longer-term holdings. The environment since the crisis has led to tougher collateral requirements, including increased haircuts or higher quality (cash). Regulatory changes with respect to what is acceptable as collateral in some central banks and in clearing houses have also become tougher. Similarly, regulatory changes focusing on liquidity buffers (discussed earlier are coming into play).
- The perceived riskiness to lending to banks has also led to increased demands on cash and other high quality assets to serve as encumbered collateral to facilitate fund raising, as discussed earlier in relation to covered bonds.

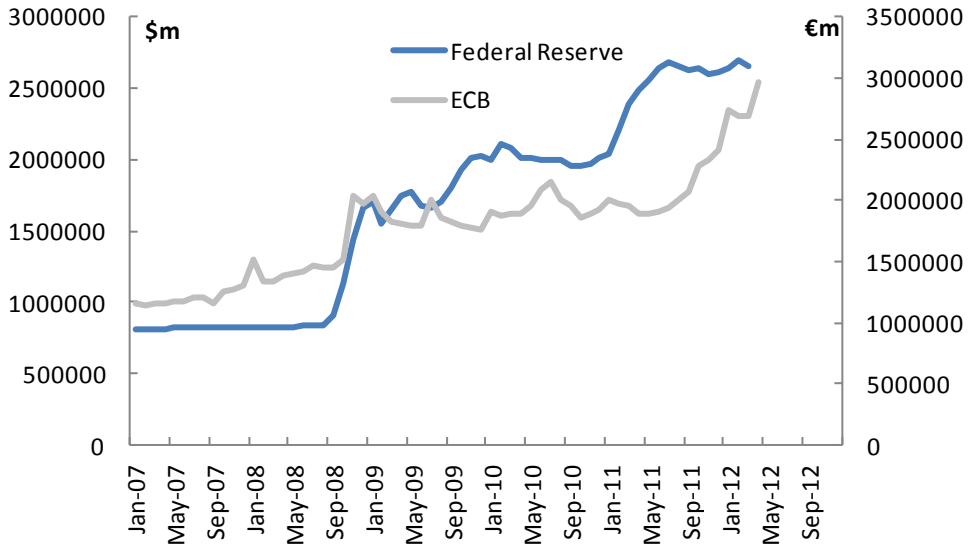
Figure 17. VIX *versus* G-SIFI bank gross market value (GMV) of derivative holdings



Source: Bank reports, Datastream, OECD.

These trends mean that the demand for cash as collateral has risen for banks and shadow bank customers. In conditions prevailing since 2007, the inability of many banks to fund themselves in the market on the basis of their own name has at times led to or at least threatened G-SIFI bank failures, and they cannot expand traditional lending in such an environment. Central banks have responded with large infusions of cash to liquefy the system, shown in Figure 18. This monetary base expansion has mainly replaced other inter-bank transactions in this volatile environment, as central banks have become the major suppliers of funds to money markets. But it has not been sufficient to restart the lending process. This is especially marked in Europe where, as illustrated in Figure 8, lending standards to enterprises have been tightening in the face of reasonable demand.

Figure 18. Central bank balance sheets



Source: Datastream, OECD.

Some policy makers have questioned the use of central bank balance sheets in the above non-traditional manner, as portending potential inflation risk for the future and discuss the need to reverse these measures. Mechanically, there is little problem in reducing outstanding cash: central bank government bond portfolios can be reduced using open market sales and, especially in the Euro Area, loan repayments by banks, especially LTRO credit, would shrink central bank balance sheets rapidly. However, it has been argued here that there has been a structural shift in the demand for cash due to the GSFI business model itself, where OTC derivatives, repo financing and prime broking functions hold central banks hostage in the event of a crisis if bank failure and deleveraging are to be avoided. Reducing cash outstanding without policies to change the structure of G-SIFI bank business models could make the system more vulnerable to periods of stress.

The importance of separation: Vickers/Volcker/NOHC

This issue is inextricably tied up with the riskiness of the GISFI bank business model. The OECD has long proposed the separation of securities businesses from traditional banking since 2008, favouring a non-operating holding company (NOHC) structure. The US Dodd-Frank Act and the UK Vickers Report have come to similar broad conclusions on the need for business models to be changed by separating traditional banking from securities businesses. The three regimes are compared in Table 6.

Table 6: Regulatory Approaches to Bank Separation

	Vickers	Volcker Rule	Non Operating Holding Company (NOHC)
AIM	Insulate retail banking & SME lending from international shocks in capital markets. Improve resolvability within groups. Better prudential safety of core functions of banking. Reduce taxpayer risk.	Reduce speculative losses to banks & focus on intermediary functions serving customers.	Better allocation of risk and improved resolvability. Continuous provision of services by some affiliates in the group in the face of distress in some others.
Features	Ring-fence retail from w/sale & investment bank (IB) divisions within a holding Co. Tougher capital standards for ring-fenced bank, but not for IB. Promoting competition in retail banks & IB's separately was the main driver. Foreign branches are welcome to join the retail space.	Prohibits proprietary trading by any insured depository instit. in commodities, financial securities & derivatives that do not benefit customers. (Banks & BHC's included) Prohibits deposit. instits. from investing in priv. equity firms & hedge funds (no more 3% of any 1 firms capital & no more than 3% of the banks capital in all such investments) to ensure bank capital isnt standing behind them.	The parent is non-operating, raises equity and invests in ring-fenced affilaites with their own governance. Ring fenced entities (e.g.the bank from securities businesses), are essential in order to protect against creditors of distressed affiliates seeking redress against the others in the group. This allocates risk more efficiently between the prudentially regulated bank & less regulated entities.
Functions	Maintains all business units in the group. Bank mandated to take deposits & provide overdrafts/loans. Bank prohibited from: structuring OTC derivatives; equity & ETF functions; security market making; underwriting; services outside the EEA. Trade finance & aspects of W/sale are not excluded.	Permitted activities: traditional banking, trading in US government debt; underwriting & making markets (broking only); risk mitigating hedging; trading for customers; liquidity management; investments in 'Small Business Inv. Companies"; limited investments in covered funds in asset management & advisory busisnesses; foreign trading by non-US banks; foreign covered fund activities of non-US banks.	Maintains all business units in the group. Decides on the regulatory treatment of each--with banks being more heavily regulated for capital & with dep. insurance for retail investors. Banking vs securities functions are the broad divide. Risk is priced differently in the different segments with the price of risk rising in the less regulated. The volume of functions is determined by supply & demand at prices reflecting the true risks, not by detailed rules on what can & cant be done.
Administrative & industry concerns.	UK banks and lobbyists claim that it is difficult to implement & have convinced the authorities to give them until 2019 to sort it out. They would do well to examine the NOHC legislation in Australia. Applies to foreign subsidiaries operating in the UK.	A disadvantage to US & foreign deposit-taking institutions in the USA Extra-territoriality as it applies to foreign banks operating in the US. Foreign parents can do all the prop trading etc, as long as their branches or subsidiaries in the US do not. Banks have to separate functions according to whether they are intermediating for a client or trading on their own account--this is difficult to monitor. Making a market for example requires principle risk. Some foreign governments claim it will reduce the liquidity on trading in their own bonds.	It is not mandatory (Macquarrie Bank only). Easy to implement--entities & functions defined by prudential regulator & balance other laws. Restructure instruments grant relief to regulatory impediments to separation arising from corporate income tax tax laws to the entities specified by the prudential regulator.'Transfer certificates' issued provide for the transfer of assets & liabilities between the entities. This was carried out by MQG in the same year as the enabling act was passed. Does not apply to foreign banks, or any bank choosing not to implement (at this stage).
Effective date	2019--linked to Basel III timetable.	2012 (July)	2007 (July)

Source: OECD, & various Treasury, regulatory agency, legislative documents, and inquiry reports.

The Vickers report has more in common with the NOHC model.[37] The main differences between Dodd-Frank and Vickers/NOHC are:

- Dodd-Frank focuses on prohibiting insured depository Institutions from engaging in certain activities involving proprietary trading (see Table 6) *i.e. 'engaging in trading activity in which it acts as a principal in order to profit from near-term price movements'*[38]. But there are important exceptions (see Table 6) and this requires qualitative rules to be written separating activities in terms of the intent of the trade. The Vickers/NOHC approach, on the other hand, focuses on different prudential 'buckets' within a banking group that can be ring-fenced, so that the adjustments fall on the pricing of risk in the different activities, thereby helping to avoid (inappropriate) cross-subsidisation of risk taking via TBTF channels.
- There are greater extra-territorial implications of Dodd-Frank compared to Vickers or NOHC.

Under the Volcker Rule the guidance for rule making in key securities market activities is that they be: *"designed not to exceed the reasonably expected near-term*

demands of clients, customers, or counterparties." There is a "backstop" prohibition for the permitted activities: *"Under the Volcker Rule, permitted activities are subject to a "backstop" that prohibits these permitted activities if they result in a material conflict of interest, result in material exposure to high-risk assets or high-risk trading strategies, pose a threat to the safety and soundness of the banking entity, or pose a threat to financial stability"*.[39] This rule-based approach to separation may be difficult to interpret, implement and monitor in practice, and banks have been very adept at finding ways around such complex rules in the past[40]. Three permitted activities, 'underwriting', 'market making' and prime broking serve as an illustration:

- Underwriting: is exempted from Dodd-Frank provided it is done on behalf of clients as a service, but not for profit driven by market prices. Yet underwriting a securities issue puts the banks capital at risk and it would be unreasonable to expect this activity to be undertaken without a profit incentive. If the book build on behalf of a client proves to be inadequate, so the issue of (say) a bond is under-subscribed, the bonds would have to be taken into the banks' own inventory and laid off later. The issue may have been mispriced, or fundamentals might change in the future, resulting in prices moving for or against the bank. This will result in profits or losses. The bank will need to have some profit motive in mind in running an underwriting business over time, or it will not be able to continue with this activity. Underwriting could simply migrate to the shadow-banking sector or to foreign banks not subject to the Volcker rule, which brings about separation. But depending on the final writing of the rules such proprietary risk may well be allowed to rest with the bank.

- Market making: this is also exempted if it is not done on a for-profit basis. Yet market making is inherently a form of proprietary trading.[41] The bank provides immediacy to a client by buying at a quoted price, taking the security into inventory, and laying it off at an average price over subsequent periods. As before, the bank will not undertake the activity if it cannot quote with a profit motive in mind to compensate the risk of adverse price movements in the uncertain future. This may lead to the migration of the business to elsewhere as a consequence of the Volcker rule. But if the interpretation is that the rules will allow it, then considerable proprietary risk is likely to stay in the bank.

- Prime Broking with a covered fund in which the banking entity has an ownership interest: these transaction are exempted provided they meet the *de minimis* rules (see Table 6), the bank provides no guarantees to the fund, and sections 23A and 23B of the Federal Reserve Act (dealing with arms length transactions) are complied with. Prime broking, however, requires banks to provide immediacy to hedge funds in terms of the borrowing stocks and the execution of sales. These functions requires inventory – which drive profit and loss via short-term price movements that have to be managed with profit motives in mind.

The Dodd-Frank Act also has extra-territoriality issues that are more pervasive than Vickers or the NOHC:

- A foreign parent that owned a substantive share of a securities business abroad would not be allowed to own a depository institution in the USA unless all of its activities are executed wholly outside of the US, do not involve any US residents as counterparties and no personnel involved in the transaction are physically located in the USA.

- The exemption for dealing in US government debt does not apply to dealing in foreign government debt.

Deleveraging implications of separation

Whatever the philosophical differences between alternative approaches to separation, restructured bank business models are required to reduce the impediments to lending arising from periodic mark-to-market losses and short-term margin and other liquidity pressures. A natural split is traditional banking versus securities businesses. The former consists of deposit taking from mainly unsophisticated investors and lending to households and SMEs, all of which are strongly related to developments in the domestic economy and are based on less volatile amortised cost accounting. Deposit insurance should apply only to the retail customers of a bank, and not form the basis for TBTF cross-subsidisation of securities market activities. The securities business, on the other hand, consists of products whose prices are determined in international capital markets where fair-value-through-profit-or-loss accounting applies. Not only are earnings more volatile, but the bank is subject to extreme liquidity pressure in periods of volatility and stress, which may contaminate all business segments.

In the event of a crisis, a separated traditional bank could go on lending to households and SMEs regardless of what was happening to the securities market affiliates in the capital markets – there should be less deleveraging in the areas where local business depends on bank funding to provide jobs growth. The CEO of the separated securities business, on the other hand, would have to earn a profit with clients aware that it would have access to less capital in the event of failure, and that failure would be much less likely to result in the socialisation of losses. The price of securities firm risk taking would rise and the volume of business would fall. The securities firm would become a smaller business that would be less levered and less risky than was the case for, say, Lehman Brothers. Management would be more risk-averse and face a higher cost of capital. Clients' demand for collateral would not have to be accommodated by the central bank in periods of stress to the same extent as would be the case for a depository institution. Securities businesses would be less likely to fail and, if they did, they could be more easily resolved without the disruptions seen in 2008/2009, 2010 and 2011.

VI. Concluding remarks

The global financial system reached a breaking point, where banks in the end proved unable to fund themselves in their own names. This point was arrived at as a consequence of:

- Excess leverage; and
- Excessively risky activities bundled into the business strategies of banking groups that could not manage them.

This pressured governments to intervene with capital injections and guarantees, and forced central banks to play a major role in bank funding. These problems have, however, continued well into 2011 and now with the euro crisis (and the JP Morgan insight) into mid 2012.

Bank management has overseen a period of deleveraging, which has been particularly severe in countries where the resulting recession exacerbated other structural weaknesses. Good deleveraging supposedly occurs where banks raise more capital, and 'bad deleveraging' when they cut back on loans and other balance sheet components. Banks

need substantial amounts of new capital, particularly tangible equity, and the regulatory process has succeeded in varying degrees in achieving this – though more in the Basel Tier 1 area than in actual equity and leverage prevailing in bank balance sheets. Bank lending has been relatively flat overall, and both Tier 1 capital and tangible equity have risen. But even after allowing for the different treatment of derivatives, Europe and Switzerland remain the most highly-levered jurisdictions. The US provides a useful example of how capital injections occur without costing the taxpayers in the longer run, once bank share prices improve. A TARP-style injection of equity capital into the highly interconnected European banking system would help to restore trust in banking, and prevent the risk of deposit funding shifts that put pressures onto the European System of Central Banks inter-funding mechanisms (Target 2).

On the funding side for G-SIFIs, the crisis has resulted in an increased premium on high-quality assets that can serve as collateral. The demand for such assets has risen as a consequence of: the margin requirements of the derivatives business; increased demands for segregated accounts that reduce the possibility re-hypothecating collateral; tougher collateral requirements for lending between banks; covered bank funding from the non-bank sector; and regulatory trends. Eligible collateral has a bias towards public sector assets: central bank cash and sovereign debt. This raises the cost of capital for lending to enterprises. Policies are required which will help to reduce this bias, and do so without relying on cross-subsidisation from TBTF banks. This requires policy makers to look again at the biases in liquidity rules and to continue with the progress made in some jurisdictions in removing TBTF distortions via Vickers and the Volcker rule.

A major part of the problem is the business models of G-SIFI banks. There is a need to separate traditional banking from capital markets banking. The former are linked with deposit taking and lending to households and SMEs driven by domestic demand and supply factors. Capital markets banking, on the other hand, is characterised by mark-to-market gains and losses more closely tied to events in global financial market. This leads to highly-correlated influences on bank balance sheets which, despite attempts by bank management to smooth them, eventually must be booked as losses that an absorb excessive amounts of bank capital. More worryingly, periods of stress in capital markets can also result in a liquidity crisis that lead even more quickly to deleveraging and bank failures.

NOTES

1. See IIF (2011), p8.

2. The EU summit directed that the 9% should be achieved by raising capital and not cutting assets.

3. US GAAP accounting permits derivatives subject to netting agreements to be reported on the balance sheet on a fully net basis to measure TA. IFRS includes fair value derivatives exposure in TA with very limited netting – there must be the specific intent to settle the contract on a net basis, or a specific intent to realise the asset and settle the liability simultaneously.

4. This is in line with the US FDIC criterion for a bank to be "well-capitalised" although it should be noted that the capital concept used by FDIC, like that mandated for observation with a view to migration toward Pillar 1 status by Basel III, is the wider Tier 1 concept. As such it is less demanding than what is suggested here.

5. Blundell-Wignall and Atkinson (2010).

6. See Dexia (2012). It is believed that the authorities had to settle their counterparty exposures as also occurred with the AIG rescue.

7. See Blundell-Wignall and Atkinson (2008, 2010, 2011).

8. Once again the Germany figures reflect the Deutsche Post Bank acquisition, but the pattern was in place prior to that.

9. BCBS (2010); EBA (2010).

10. EBA (2012b).

11. BCBS coverage of 91 Group 1 banks in 20 jurisdictions including most of the OECD area, the BRICS except Russia and Hong Kong and Singapore is described by the Committee as "very high …reaching 100% …for some jurisdictions". For 158 Group 2 banks coverage was "comparatively lower [] and varied across jurisdictions." Group 2 coverage was dominated by 3 EU jurisdictions suggesting that results for these banks should be interpreted cautiously. The first EBA study covered 230 fully-participating banks in 21 European jurisdictions. For Germany, France, Italy, the Netherlands, Spain and the United Kingdom coverage in the two QIS studies appears to be identical except for a single UK bank included in the EBA study but not in the BCBS study. Due to incomplete reporting, the different results are not all based on the same samples of banks. Coverage in the EBA follow-up Monitoring Exercise was similar for Group 1 banks but reduced for smaller banks.

12. IIF (2011). The analysis in this document appears to have been completed in August so 2011 figures are estimates that may not reflect subsequent events and reporting relating to the sovereign debt crisis in Europe.

13. As Core Tier 1 capital is a new concept reliable data on a consistent basis are scarce. The FDIC and ECB report data for the value of equity but the deductions from this mandated by Basel III are difficult to estimate. The BIS and EBA QISs and the EBAs

Capital Exercise provide useful information for significant samples of banks that have been used here to make adjustments but considerable uncertainty remains.

14. IIF (2011). This scenario was designed to assess the impact of regulatory change, both Basel and national initiatives, on the global banking system.

15. The IIF does not report whether this involves enough lending to the public sector to generate growth in total assets.

16. DnB Nor, with a shortfall of €1.5 billion.

17. Oesterreichische Volksbank AG., Dexia and West LB AG.

18. See EBA (2012a).

19. EBA (2012a), para.5.

20. The EBA notes that a small part of this is "deleveraging " arising from State Aid rules, and do not imply an impact on the economy due to the capital raising exercise.

21. High and volatile interest rates have come down sharply since the first tranche of LTRO lending in December, so any calculations are highly speculative. If fully invested in ways that lock-in interest rates averaging 5%, €1000 borrowed from ECB at 1% would generate €120 billion over three years. But the success of the first tranche helped to lower interest rates to a point where it seems unlikely that such a high a margin could be achieved with the second tranche at the end of February.

22. See Blundell-Wignall (2011). This option is set out in items 7 and 9 of Table 1 of the above-mentioned published article.

23. Basel II standardised system. Basel III does not alter the risk-weights.

24. The LCR becomes effective 1 January 2015 and the NSFR on 1 January 2018.

25. Where sovereign debt is non-0% risk-weighted, domestic banks may also include it among its Level 1 assets.

26. In Europe, avoiding such conflicts is one of the issues that has motivated the European Bank Coordination "Vienna" Initiative. This aims to enhance coordination of national policies that could impact on emerging European economies, in some of which subsidiaries of international groups play an important role.

27. The 2012 monitoring exercise shows a slight increase for 2011, to 10.4%.

28. The 2012 EBA Monitoring Exercise updates the figures to 71% for Group 1 banks, only slightly changed from 2009, and 70% for Group 2 banks. Given limits to the representativeness of the Group 2 samples, the decrease since 2009 should be judged cautiously.

29. For example, see Durden (2012), quoting estimates by Barclays Capital.

30. For good discussion of these issues see Packer *et al.* (2007), and for a post-Basel III banking perspective see Uslenghi (2011) and Del Punta (2011).

31. Other differences include impact on capital requirements of the issuer (CBs none, ABSs possible reductions); the frequent use of tranching with ABSs; and the replacement of assets in CB cover pools in the event of repayment or default, in contrast to ABSs where these are passed through to the holders.

32. CBs have been used in Europe, especially in Germany and Denmark, for a long time. Much more recently the United State, Canada, Australia and New Zealand have all

established covered bond frameworks too, although only in Canada have they so far been widely used.

33. The EU maintains a sliding scale based on regulatory capital ratios and excludes banks with less than €500 million in regulatory capital altogether. Australia caps the amount to be placed in cover pools at 8% of assets.

34. To take a case in point, new Australian legislation restricts mortgages in the cover pool to Australian property and excludes ABSs (Lonsdale, 2011). Italian law, in contrast, authorises appropriate ABSs as well as derivative contracts tied to other authorised assets.

35. For a fuller discussion of this see Blundell-Wignall (2011).

36. Credit Valuation Adjustment (CVA) is an additional up front charge to cover mark-to-market unexpected counterparty risk losses, valuing counterparty risk in bond equivalents and applying the market risk regulatory charge to such bond equivalents (after deducting the incremental risk charge on the trading book). The CVA is calculated within each of the netting sets, and is then added across netting sets. The bigger the netting sets the more scope there is for reducing the charge.

37. The Australian legislation including the way restructuring instruments and transfer certificates may be used to create an NOHC structure is certainly worth examining – particularly when so many banks claim it is too difficult to achieve. Australia's Macquarie Group restructured in a matter of a couple of months. The structure is not, however, mandatory. One simple reason for this is that Australia is not an investment banking centre, and the same systemic risks do not apply on the scale of banks in the USA, the UK, France Germany and Switzerland.

38. See FSOC (2012).

39. FSOC (2012), p. 17.

40. Just as they were with the Basel II rules, where regulatory arbitrage was rampant.

41. See Duffie (2012).

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