



The Basel III Agreement: A Critical Survey

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Introduction*

In assessing the impact of the implementation of the Basel III agreement on the economic process, one must critically wonder which problem this accord should aim to tackle. Most of the analyses of the preceding accord emphasised the procyclical character of the agreement¹. In addition, in the aftermath of the crisis, analysts have raised the issue of the permissive character of the micro-self-regulating principles of the banking industry in the diffusion of systemic risk, as well as a number of other problems². This paper will argue that while the procyclical patterns of the agreement have, in part, been taken into account in the regulatory reforms, the diffusion of systemic risk is not tackled.

The Basel III agreement increases capital requirements and suggests the implementation of capital and liquidity buffers to protect banks against risk while leaving the problem of the source and the propagation of systemic risk in the system aside. Banks will be better individually protected against expected risk while systemic risk will develop in the economy. This development could lead to unexpected losses for which capital and liquidity buffers and requirements could be too low. Indeed, the process of securitisation and risk transfer towards the shadow or parallel banking system weakens the sustainability of the entire financial system. In this respect, the agreement provides answer for the protection of individual banks while leaving aside the issue of the propagation of systemic risk in the financial industry.

To illustrate this, the first part of this paper will be devoted to the analysis of the nexus securitisation/leverage as one of the main sources in the creation and the diffusion of systemic risk in the economy, given also the importance of the unregulated shadow banking system. This process, in return, is a strong force in the development of macroeconomic imbalances, which are part of the systemic risk. The second part will be devoted to the analysis of the Basel III agreement. In a third part, some macro-prudential tools for achieving more financial stability and balanced growth will be presented. The final part is focused on the analysis of the impact of the agreement on economic growth.

* I would like to thank Stephany Griffith-Jones for her support and comments as well as the rest of the IPD team at Columbia University. All remaining errors are my own.

¹ See Barell & Gottschalk (2009).

² See Geneva report (2009).

1. Securitisation, leverage and imbalances:

The securitisation process:

The securitisation process is important with respect to capital requirements. Indeed, when the principles of a loan are accepted, banks are requested to hold a certain amount of capital, in case of unfavourable circumstances. This can be avoided through securitisation.

A very simple example is provided in Tymoigne (2009). A plumber wants to invest in a new car for his company. The plumber goes to the bank to get a loan and buys the car from the car dealer. In order to decrease its level of capital requirements and to share risks, the bank will decide to sell the plumber's promise of repayment. But the plumber was able to get a loan only at that bank, and nobody else wants to acquire the plumber's promise. Then the bank implements a Special Purpose Entity, or Special Purpose Vehicle, and sells the plumber's promise to the entity. For doing this, the SPV will borrow funds from individual investors. The promise of the SPV to repay the funds is considered as safe, and then liquid. The SPV has an auto loan as assets and has liabilities called certificate for automobile receivables (CAR). The bank will collect the monthly debt services from the plumber and transfer them to the SPV for servicing the CAR.

However, that last scheme is quite simple, and a more detailed analysis would split the proceeds of the different operations presented before between different institutions. Moreover, the asset-backed securities issued by the SPV are backed by a pool of loans, which also allows the SPV to issue different classes of securities given their risks and maturities. Indeed, investors are not interested all in the same products and financial flows. Then Tymoigne (2009), based on Kothari (2006), gives four types of balance sheet management depending on investors' will: 1) The pass-through structure *"where the maturity of assets and liabilities of the SPE are matched"*; 2) The pay-through structure where a mismatch is created *"between the maturity of assets and liabilities by reinvesting any excess principal collected on the pool of reference relative to the principal to be paid to security buyers given the amortisation speed of SPE securities"* which means, *"assuming that no principal payment is due on SPE liabilities"*, that *"assets and liabilities of the SPE stay constant, but the pool of reference declines and is progressively replaced by reinvestment assets"*; 3) The revolving structure

where short-term financial claims are funded with long-term securities and 4) The asset-backed commercial paper conduit (ABCP) “*that buys long-term financial claims and issues commercial papers*”. This is the process of tranching. Securities are also classified with regard to their risks and seniority, i.e. how quickly, relatively, it will be affected by losses within the pool.

Such financial innovations, while creating high maturity mismatches³, increase investors’ risk exposure by compounding the multiplier effect of embedded leverage⁴. In addition, such a process relies on an expected growth of refinancing loans and/or an expected liquidation of asset positions at growing asset prices in order to pay debt commitments. In other words such a scheme relies heavily on expected financial market growth and is prone to encourage very high leverage ratios, high indebtedness and risk taking.

Leverage and asset growth: financial wealth out of financial wealth:

Tymoigne & Wray (2009) give a very simple example. Consider a bank with 25 billion in assets, 1.25 billion in capital, and 187.5 million in profits. Its asset to capital ratio, i.e. leverage ratio, is 20 and its return on assets is 0.75%, so its profit to equity is 15%. Moreover, assume a dividend payout of 1/3, banks earning a 15% profit will accumulate capital at a growth rate of 10% per year: “*To maintain leverage ratios at 20, bank assets and deposit liabilities will have to increase each year by twenty times the increase in capital*”. Indeed, in the first year:

$$\text{Profit (187,5m)/Capital (1.25b)} = 15\% = 20 \times 0.75\%$$

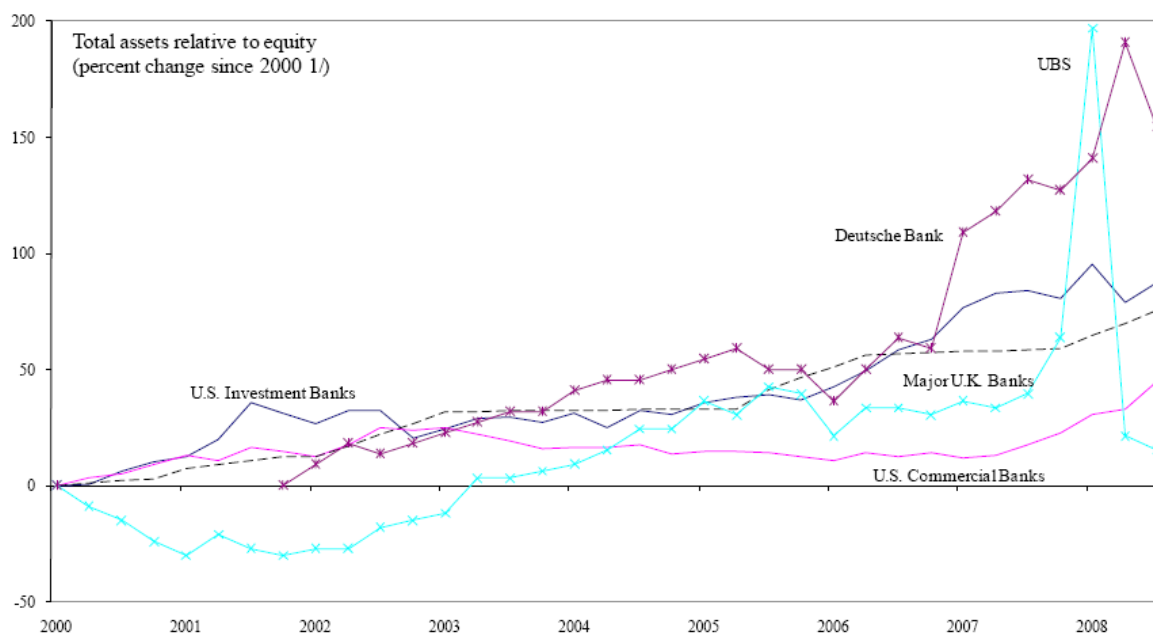
where $0.75\% = \text{Profit/Asset}$.

The second year capital will amount to 1.375 billion while profits, given the 15% profit to equity, will amount to 206.25 million. If the leverage ratio is kept constant at 20, this means that the value of assets must amount to 27.5 billion, so an increase of 2.5 billion while capital increased by 125 million.

³ The choice of debt maturity creates an externality which in times of crisis will force financial institutions to liquidate assets. For a view on the short-term financing dominance over long-term financing for commercial banks and broker-dealer in the US, see Hanson & al. (2011). In 2008, the Counterparty Risk Management Policy Group III (2008) encouraged maturity mismatches on the wrong “*implicit belief that ready access to [short-term] financing would always be there*” because long-term borrowing is more expensive than short-term. SPV were issuing commercial papers with a maturity of only days or weeks, while hedge funds and broker-dealer firms (like Bear Stearns and Lehman Brothers) financed their investments with repurchase agreements (“repo”) (See Stein (2010)).

⁴ See FSF-CGFS (2009).

Then as economic expansion proceeds, markets tend to saturate and the rate of return on equity tends to decrease. Financial institutions can counter this movement by “*creating or expanding markets towards more risky endeavours in terms of creditworthiness, liquidity, and funding sources*” or by increasing leverage. However, during the process of a booming accumulation in the whole economy or in some sectors, the increase in risk taking is not seen as such (either because it is a way of increasing profits or because the ratings of those risks decrease given the prosperity period), but as a way to increase profits in an expansionary economy⁵. Assets are created not so much with regards to their financial cash flows, but mainly with regard to their saleability⁶.



In Claessens & al. (2010)

Sources: Bloomberg, Bank of England, Federal Reserve, FDIC, and IMF staff estimates

From an individual bank perspective, this could be seen as a diversification strategy. From a macroeconomic point of view, this creates systemic risk⁷, a risk mainly concentrated in the

⁵ Especially in the investment banking sector were ROEs used to be very high. For example the one of Société Générale for its investment banking division was, for the second trimester of 2007, 50.3%. See http://www.companynewsgroup.com/documents/PJ/CO/2007/123438_88_4RH7_07100.pdf

⁶ As also rightly pointed out by Keynes (1936, chap 12): “It is rare, one is told, for an American to invest, as many Englishmen still do, “for income”; and he will not readily purchase an investment except in the hope of capital appreciation. This is only another way of saying that, when he purchases an investment, the American is attaching his hopes, not so much to its prospective yield, as to a favourable change in the conventional basis of valuation”.

⁷ As again already stated by Keynes (1936, chap. 12): “professional investment may be likened to those newspaper competitions in which the competitors have to pick out the six prettiest faces from a hundred photographs, the prize being awarded to the competitor whose choice most nearly corresponds to the average preferences of the competitors as a whole; so that each competitor has to pick, not those faces which he himself finds pretti-

shadow and unregulated banking system (while supported by the whole economy), thanks to the securitisation and re-securitisation processes. As stated clearly by the joint FSF-CGFS report (2009):

“In addition to growing credit exposures on banks’ balance sheets, off-balance sheet vehicles substantially contributed to the build-up of financial leverage during the current cycle. The fastest-growing segments of the ABCP market were SIVs, collateralised debt obligations (CDOs) and securities arbitrage programmes, all of which were designed explicitly to invest in long-term assets and securities. In addition, single-seller ABCP conduits, such as those created to fund warehouses of newly originated mortgages, also grew significantly. By extending credit and liquidity support to these off-balance sheet vehicles, banks were exposed to funding liquidity risk. Measures of bank balance sheet leverage failed to capture this risk.”

Moreover, subordinated SPV were able to issue securities with AAA rating, justified by the underlying growth trend in some segments of the financial markets. Indeed most AAA assets are mortgage-based structured products, concentrating risks in the shadow banking sector and creating systemic risk (Geneva report (2009)). Finally, during a boom, ratings are better, and the need for capital requirements is low, while during a burst, ratings are low, implying an increase in capital requirements out of new loans in a depressed economy. All this led the authors of the Geneva report to state both that 1) *“Risk-weightings are, inevitably flawed, and fail to reflect risk properly”*; and that 2) *“Basel II requirements for capital adequacy are pro-cyclical”*.

The shadow banking sector:

Already in 1993, D’Arista and Schlesinger (1993) noticed the development of an unregulated shadow banking system that they called the Parallel Banking System:

“Over the last two decades, the U.S. system has been reshaped by the spread of multifunctional financial conglomerates and the emergence of an unregulated

*est, but those which he thinks likeliest to catch the fancy of the other competitors, all of whom are looking at the problem from the same point of view. It is not a case of choosing those which, to the best of one’s judgment, are really the prettiest, nor even those which average opinion genuinely thinks the prettiest. We have reached the third degree where we devote our intelligences to anticipating what average opinion expects the average opinion to be. And there are some, I believe, who practise the fourth, fifth and higher degrees. (...) When the capital development of a country becomes a by-product of the activities of a casino, the job is likely to be ill-done. The measure of success attained by Wall Street, regarded as an institution of which the proper social purpose is to direct new investment into the most profitable channels in terms of future yield, cannot be claimed as one of the outstanding triumphs of **laissez-faire** capitalism — which is not surprising, if I am right in thinking that the best brains of Wall Street have been in fact directed towards a different object”.*

parallel banking system. (...) Measured in terms of their aggregate assets and the size of individual companies, finance companies rank as the largest single group of unregulated intermediaries. (...) Finance companies are the most important nonbank intermediaries because they function like banks with virtually no regulatory costs. (...) Like banks, they fund their loans by issuing liabilities held directly as investments by households and businesses or by other intermediaries that accept funds from those sources. Unlike banks, finance companies need not comply with capital and reserve requirements, limits on loans to single or related borrowers, or limits on transactions with parents and affiliates.”

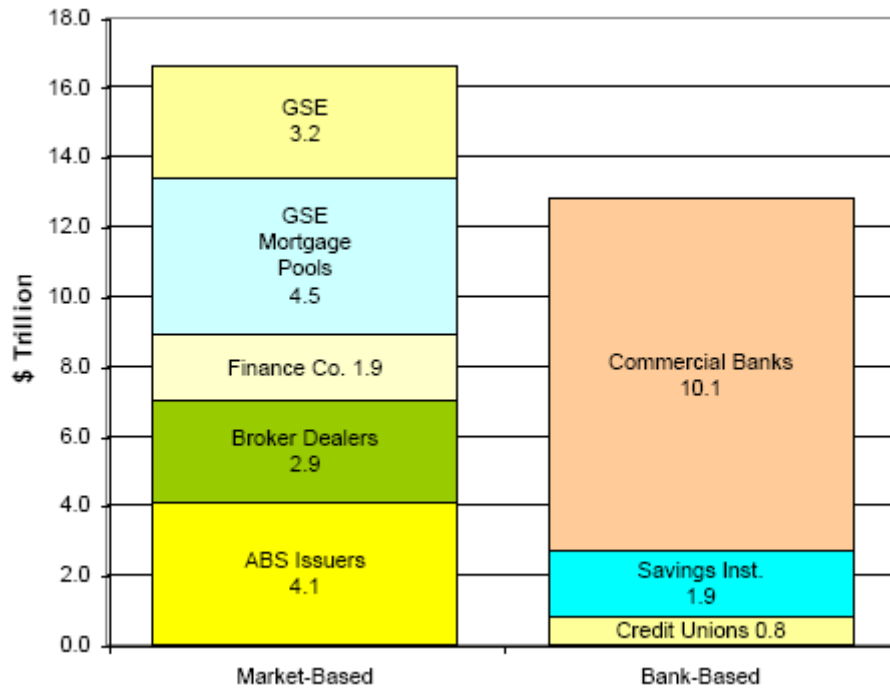
Coupled to securitisation and leverage processes, this development enabled the diffusion of risks into the whole system. As stated by Adrian & Shin (2009):

“Securitization was intended as a way to transfer credit risk to those better able to absorb losses, but instead it increased the fragility of the entire financial system by allowing banks and other intermediaries to “leverage up” by buying one another’s securities”;

In the same vein:

“In this crisis, although perhaps in more subtle forms, regulatory approaches to and prudential oversight of financial innovation were insufficient as well. As in the past, but this time in advanced countries, finance companies, merchant banks, investment banks and off-balance sheet vehicles of commercial banks operated—to varying degrees—outside banking regulations. But as this “shadow banking system” provided increasingly important avenues for intermediation, it grew without adequate oversight and led to systemic risks. Regulators also underestimated the conflict of interests and information problems associated with the originate-to-distribute model. Not only did this harm consumers of financial services, but it also created the potential for chain reactions leading to systemic risk.” (Claessens & al. (2010))

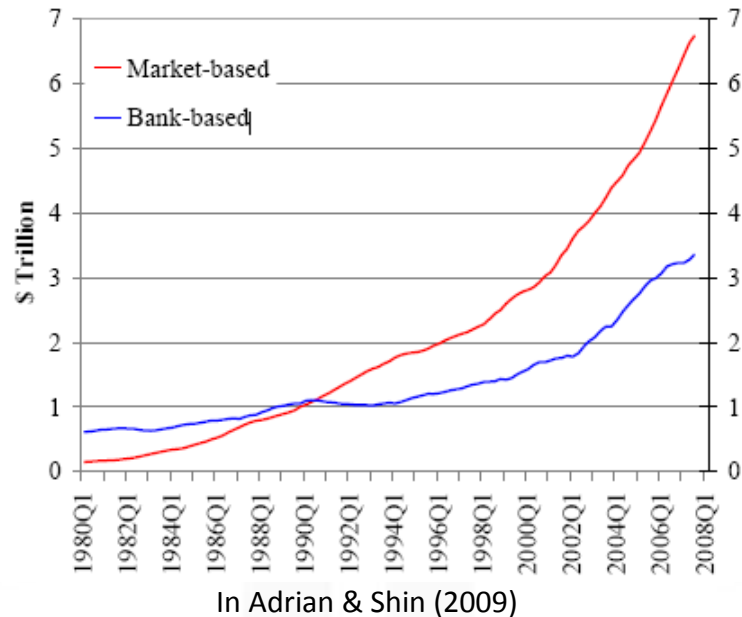
Indeed, if one looks at the difference in assets between assets managed by banks (Bank-based) and asset managed by market-based institutions (Market-based), one can clearly see a discrepancy between the two:



In Adrian & Shin (2009)
 Total Assets, second quarter of 2007, USA
 (Source: US Flow of Funds, Federal Reserve)

Historically, the discrepancy can be sourced at the beginning of the increase of the mortgages for homes. Indeed, as shown by the authors, the higher growth of assets in the market-based institutions compared to the one in the bank-based assets begins at the end of the 1980s/beginning of the 1990s. The same figure applies if one only looks at market and bank based holding of home mortgages⁸:

⁸ The same graph is available in Ötoker-Robe & al. (2010).



In Adrian & Shin (2009)
 Market Based and Bank Based Holding of Home Mortgages
 (Source: US Flow of Funds, Federal Reserve)

As presented earlier, banks and financial intermediaries have an incentive, short-term profit seeking, to expand leverage and securitisation, even at the cost of lowering lending standards and increasing systemic risk propagation. In a normal banking system, *“the quantity of deposits represents the obligation of the banking system to creditors outside the banking sector”*. In a global and deregulated one, new creditors are coming, through the banking sector activities, and banks and financial intermediaries buy each other’s securities, by indebtedness, also creating embedded leverage:

“In this way, the subprime crisis has its origin in the increased supply of loans - or equivalently, in the imperative to find new assets to fill the expanding balance sheets. This explains two features of the subprime crisis - first, why apparently sophisticated financial intermediaries continued to lend to borrowers of dubious creditworthiness, and second, why such sophisticated financial intermediaries held the bad loans on their own balance sheets” (Adrian & Shin (2009));

“The expansion of short-term borrowing in wholesale repo and commercial paper markets not only reduced banks’ required reserves; it also expanded their access to funding and ability to grow; (...) Thus the growing use of non-deposit liabilities (...) intensified the interconnectedness that had already become a major structural component of offshore markets” (D’Arista & Epstein (2010));

“... re-securitisation compounded the multiplier effect of embedded leverage. For example, mezzanine tranches of mortgage securitisations (which themselves have embedded leverage) were often purchased by CDOs, which in turn issued senior and subordinated tranches, creating additional leverage on top of that embedded leverage in subordinate tranches.(...) Hence, investors could not always be certain about the degree to which their exposure to the mortgage market was leveraged at the time of investment. When delinquency assumptions as-

sociated with subprime mortgage securitisations of 2005–07 proved to be far too low, the leverage and losses experienced by investors were much greater than anticipated” (FSF-CGFS (2009)).

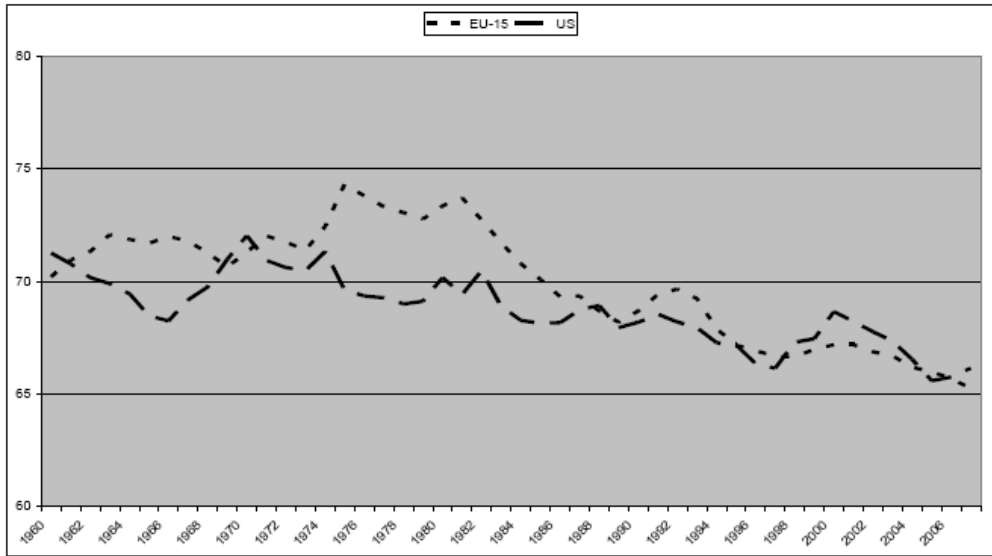
Profit, debt and income distribution: imbalances

This process of securitisation and leverage led to a transfer of profit from the real economy to the financial industry. The proportion of corporate profit received by the financial sector (with inventory valuation and net of capital consumption) went from 10% in 1948, to 20% in the 1970s to 45% (peak) in 2002 before maintaining at about 35% before the financial burst (Tymoigne (2009)). Moreover, according to Tymoigne & Wray (2009), the FIRE sector (finance, insurance and real estate) received 40% of the US total profits before the burst. These findings are shared by Johnson (2009) who writes that financial industry’s share in the total US corporate profit was 16% between 1973 and 1985. In the 1990s, it was between 21% and 30% while just before the burst, 41% of the profits of the entire US corporate sector went to the financial industry.

At the same time, Tymoigne & Wray (2009) find that the debts to income ratio for household and private finance were respectively 1% and 1.3%, representing 64% of the debt to GDP ratio of the private sector as a whole in 2008. This figure has always been lower in the past and steadily increased until the financial burst.

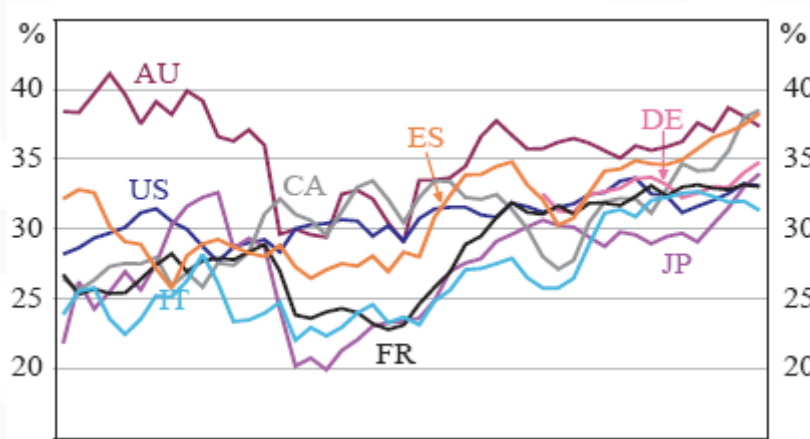
Johnson (2009) also writes that wages in the US financial sector reached 181% of average compensation in domestic private industries in 2007. US average hourly earnings CPI adjusted stagnated at 16\$ in the last 30 years⁹, and in a growing economy. In Europe wage share in GDP decreased for the last 30 years, as well as in the US:

⁹ See http://www.data360.org/dsg.aspx?Data_Set_Group_Id=773



In Arpaia & Pichelmann (2008)
Adjusted wage share EU-15 and US
Source: Eurostat

In this respect, it is expected to find that profit share in GDP increased, while the preceding statements induce thinking that it was towards the financial departments that additional profits were directed, either because they created or extracted them:



In L. Ellis & K. Smith (2007)
Profit share/GDP ratios at factor cost (1960-2005)
Source: European Commission, authors' calculations

This is the reason why Tymoigne & Wray (2009) insist on the fact that *“the growth of debt and the greater reliance on short-term debt with adjustable interest rate – and high fees and penalties – occurred precisely as the ability to service debt out of income declined”*.

2. The Basel III agreement:

The agreement is based on two assumptions that are judged as flawed. The first one states that the crisis is a liquidity crisis when in fact it is a solvency crisis. This point is raised by Blundell-Wignall & Atkinson (2010):

“The liquidity proposals have some puzzling features. If banks are solvent, and have adequate capital, then the management of their liquidity and funding should, in principle, be left up to them. Maturity transformation is a key function of the banking system, and notwithstanding the crisis, banks should not be treated as being naïve in running their own business. The cause of the crisis was a solvency problem, after which uncertainty arose as to banks’ ability to pay which, in turn, led to a buyers strike affecting short-dated funding”.

Indeed the process of funding long term assets with short term debt is a liquidity issue, while the inability to pay the debt is a solvency one. However, there will be a liquidity crisis only if the lender sees or foresees a solvency problem in one or some financial institutions¹⁰. Nonetheless, the diffusion of the crisis to the whole economy seems to be made possible because of the interaction of funding illiquidity due to maturity mismatches and market illiquidity (Geneva report (2009))¹¹.

The second assumption, which is linked to the first, is based on the idea that increasing capital requirements at the bank level will decrease the occurrence of systemic risk. However, systemic risk is not the aggregation of individual risks. Banks can be very well capitalised, while their activities are creating the occurrence of systemic risk:

“The main tool which regulators use to do so, is capital adequacy requirements, but the current approach has been found wanting. It implicitly assumes that we can make the system as a whole safe by simply trying to make sure that individual banks are safe. This sounds like a truism, but in practice it represents a fallacy of composition. In trying to make themselves safer, banks, and other highly leveraged financial intermediaries, can behave in a way that collectively undermines the system. (...) Micro prudential regulation concerns itself with the stability of each individual institution. Macro-prudential regulation concerns itself with the stability of the financial system as a whole. Micro-prudential regulation examines

¹⁰ “The trigger for the credit crunch was rising defaults among US holders of subprime mortgages in the last quarter of 2006 and early 2007, as interest rates were inched up to protect the failing dollar” (Blackburn (2008)).

¹¹ Nonetheless, even the Geneva report (2009) finds it difficult to differentiate between insolvency and liquidity issues in times of crisis.

the responses of an individual bank to exogenous risks. By construction it does not incorporate endogenous risk” (Geneva report (2009)).

In this respect, the Basel III agreement increases capital requirements while keeping intact the way financial activities are conducted. These proposals appear to be penalties without amending any processes. However, liquidity requirements will create an incentive for banks to hold government bonds and high-quality corporate debt. This could allow macroeconomic industrial policies, limit the risk profile of the financial entities and create incentives to fund their activities with more stable sources of funding on an ongoing structural basis. Nonetheless, these proposals should be understood as it seems they are, very micro-prudential regulation instruments.

Capital requirements:

From the press release of the Group of Governors and Head of Supervision at the BCBS and BCBS (2009), the general principles of banking regulations are the following ones.

The minimum requirement for common equity, considered as the highest form of loss absorbing capital, will be raised from 2% to 4.5% after the application of stricter adjustments¹². The Tier 1 capital requirement, which includes common equity and other qualifying financial instruments, will increase from 4% to 6% over the same period, while the minimum total capital ratio remains unchanged at 8%. The amount of intangible and qualified assets that can be included in capital will be limited to 15%. This increase in the level of capital comes on top of an increase in the capital requirements for trading book exposures, counterparty credit risk, and exposures to other financial institutions, as stated in BCBS (2009). However, deductions will be phased in, with 20% of the required deductions from CET1 applying on 1 January 2014 and increasing 20% per year thereafter until 100% of the deductions are made from common equity by 1 January 2018.

¹² 85% of Tier 1 capital must be composed of common equity which comprises of common shares and retained earnings. Most deductions must be applied at the level of CET1. The ratio of CET1 to risk weighted assets will increase from the current 2% minimum to 3.5% on 1 January 2013, 4% on 1 January 2014 and 4.5% on 1 January 2015. However, regulatory adjustments also imply some deduction from CET1: among others, goodwill and other tangibles assets, deferred tax assets that rely on future profitability of the bank to be realised, increase in equity capital resulting from securitisation transaction, all unrealised gains and losses resulting from changes in the fair value of liabilities that re due to the bank’s own credit risk, all bank’s investments in its own common shares, held directly or indirectly. For all detailed list see BCBS (2010g).

The same Group of Governors and Heads of Supervision also agreed that the capital conservation buffer above the regulatory minimum requirement should be calibrated at 2.5% and be met with common equity, after the application of deductions. The goal of the conservation buffer would be to ensure that banks maintain a capital buffer that can be used to absorb losses. While banks are allowed to draw on the buffer during such periods of stress, which remains to be defined at least on the micro/systemic aspect, the closer their regulatory capital ratios would approach the minimum requirement, the greater the constraints on distributions of earnings. An example is provided in BCBS (2010e). Assume that the minimum Tier 1 requirement for all banks is 4% of risk weighted assets. Also assume that the capital conservation buffer is 2% of risk weighted assets. Under this scenario a bank with a Tier 1 ratio of 6.5% would not be subject to any restrictions as restrictions are only imposed in the range of 4% – 6%. Now assume that this bank becomes subject to a countercyclical capital buffer add-on of 2%. The consequence of this is that the range in which restrictions on distributions are imposed becomes 4% – 8%. Now the bank with a Tier 1 capital ratio of 6.5% would be required to conserve X% of earnings, based on the lack of capital.

A countercyclical buffer within a range of 0% – 2.5% of common equity or other fully loss absorbing capital will be implemented according to national circumstances. The purpose of the countercyclical buffer would be to achieve the broader macroprudential goal of protecting the banking sector from periods of excess aggregate credit growth. For any given country, this buffer will only be in effect when there is excess credit growth¹³. The countercyclical buffer, when in effect, would be introduced as an extension of the conservation buffer range.

In addition, while the riskiest securitised products could be deducted¹⁴ from Tier 1 capital and were non risk-weighted for calculating total risk-weighted assets in the Basel II framework, they will now be charged at a 1250% rate in the total risk-weighted assets calculation. However, these products remain in Tier 1 capital, increasing Tier 1 capital ratio. Two problems arise here. The first one relates to risk valuation of securitised products. As noted previously, rating agencies used to have very good rates for products which had in fact to be

¹³ BCBS (2010e).

¹⁴ or be charged at 1250% in the total risk-weighted assets calculation.

considered very risky. The second relates to the fact that while they were deducted from Tier 1 capital in the Basel II agreement they are part of Tier 1 capital in Basel III. Moreover, the risk-weight patterns for best rated securitised products remain unchanged¹⁵.

In this respect, the Basel III agreement is not going to the far-reaching proposals, which would have suggested deducting securitised products from Tier 1 capital while charging them a risk-weight of 1250%. Moreover, derivatives and repos cleared through CCPs are no longer risk-free and have a 2% risk weight.

Finally, these capital requirements are supplemented by a non-risk-based leverage ratio that should serve as a backstop to the risk-based measures described above. In July, Governors and Heads of Supervision agreed to test a minimum Tier 1 leverage ratio of 3% during the parallel run period (see table below).

Liquidity requirements:

In addition to the capital requirements banks will also have to fulfil liquidity requirements. The BCBS (2010d) suggests two types of liquidity ratios, a liquidity coverage ratio and a net stable funding ratio: *“The liquidity coverage ratio identifies the amount of unencumbered, high quality liquid assets an institution holds that can be used to offset the net cash outflows it would encounter under an acute short-term stress scenario specified by supervisors; The net stable funding (NSF) ratio measures the amount of longer-term, stable sources of funding employed by an institution relative to the liquidity profiles of the assets funded and the potential for contingent calls on funding liquidity arising from off-balance sheet commitments and obligations. The standard requires a minimum amount of funding that is expected to be stable over a one year time horizon based on liquidity risk factors assigned to assets and off-balance sheet liquidity exposures. The NSF ratio is intended to promote longer-term structural funding”*.

The liquidity coverage ratio should be superior to 1 and is defined as the ratio of the stock of high quality liquid assets over net cash outflows over a 30-day time period. However, while there is a debate on how to calibrate such a ratio, one must also clarify what is considered to

¹⁵ BCBS (2009c); Hannoun (2010). For a critic, see Griffith-Jones, D. Silvers & M. Thiemann (2010).

be a “high quality liquid asset”. Indeed, “*Under the proposed standard, banks must hold a stock of unencumbered¹⁶, high quality liquid assets which is clearly sufficient to cover cumulative net cash outflows (as defined below) over a 30-day period under the prescribed stress scenario*”, but the liquidity of those assets will also depends on the model used, “*the volume to be monetised and the time-frame considered*”, to test banks liquidity¹⁷. On the denominator, banks are not allowed to double count items. If an asset is included as part of the stock of high quality assets it cannot also be counted as cash inflow for calculating the net cash outflow. Cash outflows¹⁸ are retail deposit run-off, unsecured wholesale and secure fundings run-off while a 15% reduction in funding availability will be assigned to maturing transactions backed by level 2 assets, a 25% factor is applied for maturing secured funding transactions with the bank’s domestic sovereign, domestic central bank, or domestic PSEs that have a 20% or lower risk weight and a 100% factor is assigned to all other maturing transactions.

The net stable funding ratio is said to be structured to ensure that investment banking inventories, off-balance sheet exposures, securitisation pipelines and other assets and activities are funded with at least a minimum amount of stable liabilities in relation to their liquidity risk profiles. It should also be superior to 1 and is the ratio of the available amount of stable funding over the required amount of stable funding. “*Available stable funding (ASF) is defined as the total amount of an institution’s: 1) capital; 2) preferred stock with maturity of equal to or greater than one year; 3) liabilities with effective maturities of one year or greater; and 4) that portion of “stable” non-maturity deposits and/or term deposits with maturities of less than one year that would be expected to stay with the institution for an extended period in an idiosyncratic stress event*”. The available amount of stable funding is calculated by first assigning the carrying value of an institution’s equity and liabilities to one of five categories in the table below. The amount assigned to each category is to be multiplied

¹⁶ As stated by BCBS (2010d), “*“Unencumbered” means not pledged either explicitly or implicitly in any way to secure, collateralise or credit enhance any transaction and not held as a hedge for any other exposure*”.

¹⁷ For BCBS (2010h), these assets (divided between level 1 and 2) are mainly cash, central banks reserve, marketable securities representing claims on or claims guaranteed by sovereigns, central banks, non-central government PSEs, the Bank for International Settlements, the International Monetary Fund, the European Commission, or multilateral development banks which used to be assigned a 0% risk-weight under Basel II for level 1; and Marketable securities representing claims on or claims guaranteed by sovereigns, central banks, non-central government PSEs or multilateral development banks that used to be assigned a 20% risk-weight under Basel II, corporate and covered bonds not issued by a financial institution and rated above AA- for level 2 assets (level 2 assets cannot exceed 40% of the stock).

¹⁸ For a detailed of items within this category see BCBS (2010h).

by an ASF factor and the total ASF is the sum of the weighted amounts. The required amount of stable funding is calculated as the sum of the value of the assets held and funded by the institution, multiplied by a specific required stable funding (RSF) factor assigned to each particular asset type, added to the amount of OBS activity (or potential liquidity exposure) multiplied by its associated RSF factor. The RSF factor applied to the reported values of each asset or of balance sheet exposure is the amount of that item that supervisors believe should be supported with stable funding.

| Available Stable Funding (Sources) | | Required Stable Funding (Uses) | |
|--|---------------------|--|---------------------------------|
| Item | Availability Factor | Item | Required Factor |
| <ul style="list-style-type: none"> Tier 1 & 2 Capital Instruments Other preferred shares and capital instruments in excess of Tier 2 allowable amount having an effective maturity of one year or greater Other liabilities with an effective maturity of 1 year or greater | 100% | <ul style="list-style-type: none"> Cash Short-term unsecured actively-traded instruments (< 1 yr) Securities with exactly offsetting reverse repo Securities with remaining maturity < 1 yr Non-renewable loans to financials with remaining maturity < 1 yr | 0% |
| <ul style="list-style-type: none"> Stable deposits of retail and small business customers (non-maturity or residual maturity < 1yr) | 85% | <ul style="list-style-type: none"> Debt issued or guaranteed by sovereigns, central banks, BIS, IMF, EC, non-central government, multilateral development banks | 5% |
| <ul style="list-style-type: none"> Less stable deposits of retail and small business customers (non-maturity or residual maturity < 1yr) | 70% | <ul style="list-style-type: none"> Unencumbered non-financial senior unsecured corporate bonds (or covered bonds) rated at least AA, maturity ≥ 1 yr | 20% |
| <ul style="list-style-type: none"> Wholesale funding provided by non-financial corporate customers (non-maturity or residual maturity < 1yr) | 50% | <ul style="list-style-type: none"> Unencumbered listed equity securities or non-financial senior unsecured corporate bonds (or covered bonds) rated at least A-, maturity ≥ 1 yr Gold Loans to non-financial corporate clients having a maturity < 1 yr | 50% |
| <ul style="list-style-type: none"> All other liabilities and equity not included above | 0% | <ul style="list-style-type: none"> Loans to retail clients having a maturity < 1 yr | 85% |
| | | <ul style="list-style-type: none"> All other assets | 100% |
| | | Off Balance Sheet Exposures | |
| | | <ul style="list-style-type: none"> Undrawn amount of committed credit and liquidity facilities | 10% |
| | | <ul style="list-style-type: none"> Other contingent obligations | National Supervisory Discretion |

(In percent, all dates are as of January 1)

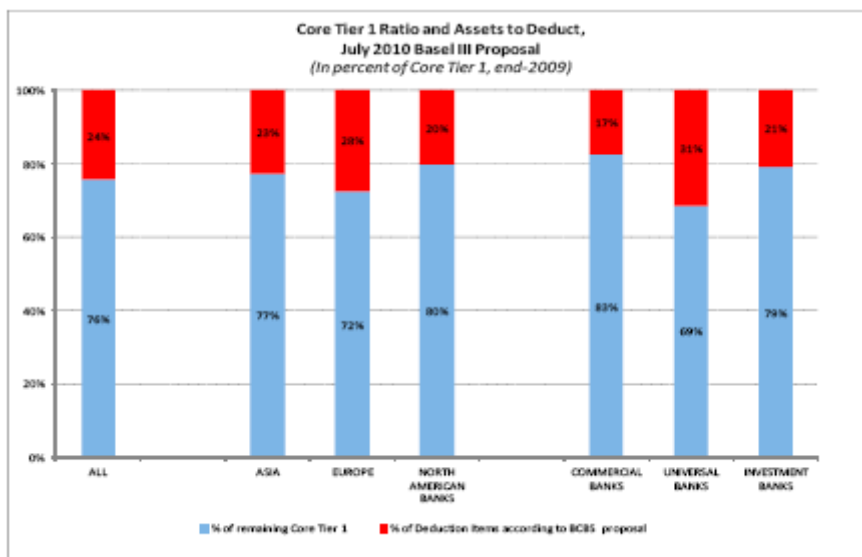
| | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|--|---------------------------|------|---|------|----------------------------|-------|------|------------------------|------|
| Leverage ratio | Supervisory monitoring | | Parallel run 2013-17 Disclosure starts January 1, 2015 | | | | | Migration to Pillar 1 | |
| Minimum common equity capital ratio | | | 3.5 | 4.0 | 4.5 | 4.5 | 4.5 | 4.5 | 4.5 |
| Capital conservation buffer | | | | | | 0.625 | 1.25 | 1.875 | 2.50 |
| Minimum common equity plus capital conservation buffer | | | 3.5 | 4.0 | 4.5 | 5.125 | 5.75 | 6.375 | 7.0 |
| Phase-in deductions from CET1 (including amounts exceeding the limit for DTAs, MSRs, and financials) | | | | 20 | 40 | 60 | 80 | 100 | 100 |
| Minimum Tier 1 capital | | | 4.5 | 5.5 | 6.0 | 6.0 | 6.0 | 6.0 | 6.0 |
| Minimum total capital | | | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 | 8.0 |
| Minimum total capital plus conservation buffer | | | 8.0 | 8.0 | 8.0 | 8.625 | 9.25 | 9.875 | 10.5 |
| Capital instruments that no longer qualify as noncore Tier 1 capital or Tier 2 capital | | | Phased out over 10-year horizon beginning 2013 | | | | | | |
| Liquidity coverage ratio (LCR) | Observation period begins | | | | Introduce minimum standard | | | | |
| Net Stable Funding Ratio (NSFR) | | | Observation period begins | | | | | Introduce min standard | |

In BCBS (2010a)

Impacts on various banking models:

As stated by Ötker & al. (2010), banks, either geographically or with respect to their business models, will be affected differently by the change in definition and calibration of capital requirements: *“The total amount of assets of weak going-concern loss-absorbency characteristics is high on average, if compared to banks’ core Tier 1 capital, varying significantly across banks and countries”*¹⁹. Based on their sample of large and complex financial institutions (LCFI), 24% of Tier 1 capital should be eliminated from the definition of regulatory capital. Indeed, as stated earlier, assets with low absorption capacity are limited to 15% of Tier 1 capital, while core Tier 1 and Tier 1 ratios are increasing. From a business activity perspective, investment banking activities will be more affected by the change in the definition and calibration of capital requirements.

¹⁹ As presented in Ötker & al. (2010), at the end of 2009, these assets represent on average 35% of banks’ core Tier 1 capital (ranging from 5 to 60% across countries). Asian banks had the lowest ratio while European ones had the highest. Universal banks have the highest ration followed by investment banks and commercial banks. Moreover, one has to take into account the 1250% risk factor assigned to badly rated securitised products, lowering Tier 1 capital ratio.

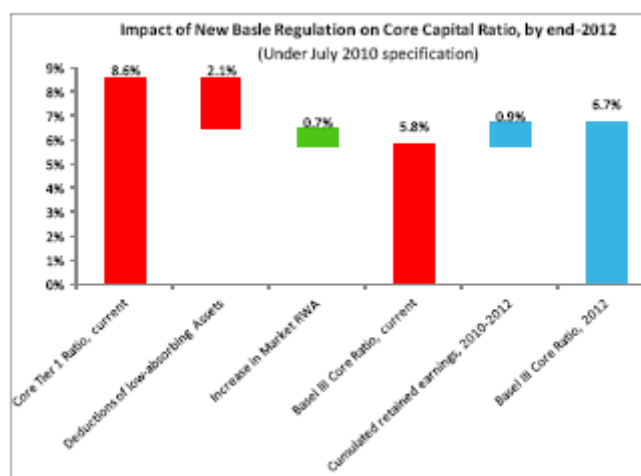


In Ötker & al. (2010)

Implications of BCBS Proposals on Quality of Capital

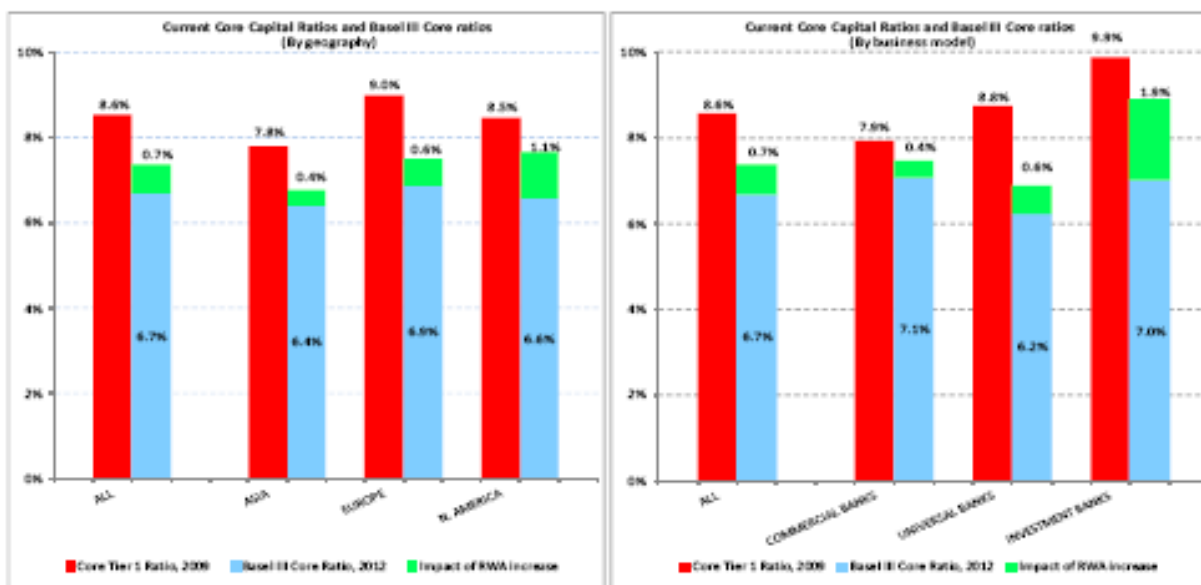
Source: Company reports, Fitch Database, and staff estimates based on data for sample LCFIs

If applied, the reduction would decrease Tier 1 capital from 8.6% to 5.8%, if the increase in the risk weighted is taken into account. In Europe, this would reflect the increase in market RWA, while the decrease in Tier 1 capital in North America would mainly come from asset deductions (Ötker & al. (2010)). Investment banks are affected the most by the change in regulation.



In Ötker & al. (2010)

Breakdown of the Impact of Various Deductions on Core Tier 1 Capital



In Ötcker & al. (2010)

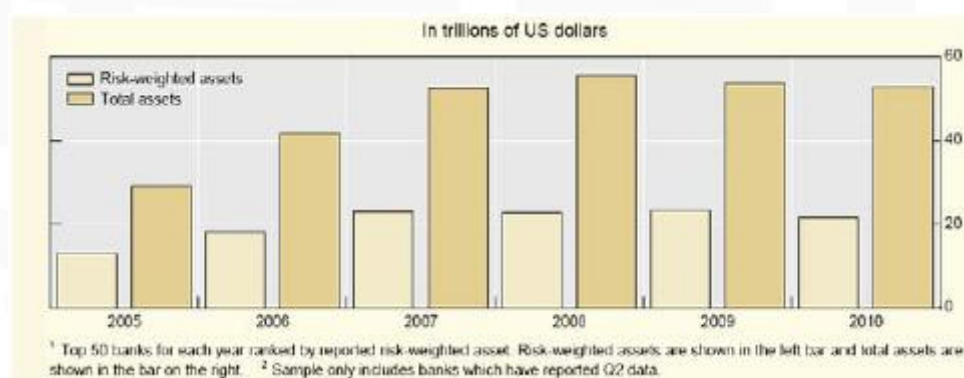
Adjusted Core Tier 1 Capital Ratios for Capital Definition and Rise in RWA

However, there is no change in the way businesses are conducted under the Basel III framework. The proposals only touch the level of Tier 1 capital and of liquid and secure assets to secure either a solvency problem following a market risk, or a liquidity one, following the appearance of a systemic crisis. There is no tackling of the regulation needed for preventing the occurrence of systemic risks leading to crises. Even if securitisation business requires originators to consolidate some securitised transactions onto balance sheets and reduce issuers' incentives to securitise by imposing 5% risk retention, there is no strict ban of any activity contributing to systemic risk building.

In this sense, one could expect that financial institutions, more specifically banks, will be better protected but the Basel III agreement is leaving plenty of space for avoiding capital requirements. Given the higher requested capital requirement rates in an unregulated financial environment, banks could have an incentive to do riskier activities. This in turn, could imply a systemic crisis of an even larger extent than the one we are now experiencing since 2007-2008.

A critic of capital buffers:

Even if capital and liquidity requirements could be said to be implemented in a counter-cyclical way, the pricing of risk is still an important part in the calibration of the buffers. As the CEO of Goldman and Sachs, Blankfein (2009), stated, *“We rationalised and justified the downward pricing of risk (...) We did so because our self-interest in preserving and extending our market share”*. This led to a decrease in capital buffers. Indeed, a long period of pseudo-tranquillity, because systemic risk is created, means also a low default rate and high profitability. This will also lead to decrease buffers. Moreover, as stated by Tymoigne (2010), data used to calculate buffers are backward looking rather than forward looking and fail to *“account for the implication of increasing risk taking on the asset and liability sides of balance sheet”*. This explains, together with the transfer of risk to the shadow banking system, the low level of risk-weighted assets in the banking system: *“all these dynamics have led to a very low level of loan-loss reserve (...), even though the quality of loans declined dramatically”*



In Hannoun (2010)
Risk-weighted and total assets for top 50 banks

However, already in 1994, the main point of regulation was on the table. As stated by Kaufman²⁰, *“securitisation encouraged a drift toward a financial system in which credit has no guardian”, where “the opportunity to disengage through securitization loosens the link between creditor and borrower, and where “misconceptions about marketability” may lead to illusion”* leading to an increase of risk. Indeed this would tend *“to encourage sloppy proce-*

²⁰ In D’Arista (1994).

dures and inadequate loan valuation as each party relied on others to investigate the loans thoroughly” (Martin (1994)²¹.

Innovative finance and the shadow banking system should then be more regulated and in a dynamic way. In some cases, one could even go further stating the sole increase in capital and liquidity requirements, even if a leverage ratio is introduced, would favour more risk taking, through innovative finance (Campbell & Minsky (1987)). That is why more direct regulation of the shadow banking system seems to be needed dramatically. The same could be true of those explaining the roots of the 2007-2008 crisis (and after) by a lax monetary policy.

However, this requires a long term view on the desired role and functioning of financial markets for a balanced accumulation path.

²¹ In D’Arista (1994).

3. The need for deeper and larger measures: procyclicality and systemic risk:

The two obvious problems in financial market regulation lie in the couple securitisation/leverage, and the existence of off-balance-sheet operations and the rise of the banking shadow system. These two aspects of financial markets, symbolised by very high maturity mismatches, allow the building of systemic risk, through procyclical policy tools:

“a large portion of the mortgage expansion consisted of loans extended to sub-prime borrowers with limited credit and employment histories. Debt servicing and repayment were, hence, vulnerable to economic downturns and changes in credit and monetary conditions. This maximized default correlations across loans, generating portfolios highly exposed to declines in house prices— confirmed ex-post through the large non-performing loans when house prices declined. (...) In this crisis, although perhaps in more subtle forms, regulatory approaches to and prudential oversight of financial innovation were insufficient as well. As in the past, but this time in advanced countries, finance companies, merchant banks, investment banks and off-balance sheet vehicles of commercial banks operated—to varying degrees—outside banking regulations. But as this “shadow banking system” provided increasingly important avenues for intermediation, it grew without adequate oversight and led to systemic risks. Regulators also underestimated the conflict of interests and information problems associated with the originate-to-distribute model. Not only did this harm consumers of financial services, but it also created the potential for chain reactions leading to systemic risk” (Claessens & al. (2010))²².

One must therefore concentrate on the systemic risk building in the financial markets and the way to prevent it.

As stated by Ötker & al. (2010), *“the trading book in LCFI assets displaced loans as the most important asset group, reducing the importance of net interest income, and raising the share of trading assets in total assets (from 20 percent in 2000 to above 40 percent in 2008 for US, European and UK LCFIs). In most countries regulatory ratios did not capture the build-up of risks, and capital was inadequate or of insufficient quality to provide a buffer”.*

Moreover, as stated earlier, financial intermediaries are either connected or part of the banking shadow system and are an essential part of the building of risk: *“regulations did not fully capture the set of risks banks were exposed to, particularly market, liquidity, and fund-*

²² See also J. W. D’Arista and S. Griffith-Jones (2010), in S. Griffith-Jones, J. A. Ocampo & J. Stiglitz (2010).

ing risks, and the regulatory oversight framework was not sufficiently wide to capture the build-up of vulnerabilities in the shadow banking system”.

Maturity mismatches: funding long-term with short-term debt:

In stressing the need for a liquidity coverage ratio, defined as the ratio of the stock of high quality liquid assets over net cash out flows over a 30-day time period, the BCBS does not here refer to a flow relationship. During a period of stress, this suggests that financial operators, if they do not hold enough liquidity, will have to use position-making operations, reflecting an excess of securitisation and leveraging:

“Fluctuations in leverage in the context of widespread secured lending expose the myth of “lump of liquidity” in the financial system. It is tempting to be misled by our use of language into thinking that “liquidity” refers to a stock of available funding in the financial system which could be redistributed to those who need it most. When liquidity dries up, it disappears altogether rather than being re-allocated elsewhere. When haircuts rise, all balance sheets shrink in unison. Thus, there is a generalized decline in the willingness to lend. When a bank such as Northern Rock finds itself at the receiving end of a run by its creditors, it cannot simply turn to another creditor to take up the slack, for all other creditors are simultaneously curtailing their lending. In this sense, liquidity should be understood in terms of the growth of balance sheets (i.e. as a flow), rather than as a stock. (...) Even if some institutions can adjust down their balance sheets flexibly, there will be pinch points in the system that will be exposed by such de-leveraging” (Geneva report (2009)).

Indeed, the size of the repo market more than doubled while the volume of term repos fell substantially while short term funding of off-balance sheet vehicles constituted another mechanism through which maturity mismatches were built up. Funding for these vehicles was primarily secured by issuance of short-term ABCP, which grew rapidly between early 2003 and mid-2007 (FSF-CGFS (2009)). If short-term funding of long-term assets carries a capital cost because it weighs on systemic stability it will moderate banks’ reliance on systemically adverse short-term funding and encourage them to seek longer-term funding. Solvency problems occurred at a micro-level because small changes in credit and monetary conditions could involve solvency problems, this could lead to liquidity crisis leading to more solvency problems, and then to a systemic crisis:

“But that failure is generally triggered by a decline in the value of the assets held by the bank, and by a run on the bank, itself usually primarily caused by a perceived decline in the bank’s asset values. Liquidity problems usually generate un-

derlying solvency worries, (though the illiquid bank will attempt to deny this, as in Northern Rock, the Icelandic banks, etc.). In order to deal with such liquidity problems prior to failure, and in the course of liquidation after failure, the bank in difficulties will often be forced to sell assets (fire sales). But such sales will drive down the current market price of the same assets held on other banks' books, when these are valued on a mark-to-market basis. And, of course, the same is true the other way around; solvency is not exogenous to liquidity. When there is a generalised liquidity problem attempts to deal with it will lead to declines in asset values, creating a solvency problem, even where none existed before. In short, there is an internal amplifying process (liquidity spirals) whereby a falling asset market leads banks, investment houses, etc., to make more sales (deleveraging), which further drives down asset prices and financial intermediaries' assessed profit and loss and balance sheet net worth" (Geneva report (2009)).

That is why it must now be analysed the way assets and projects are funded. High maturity mismatches are the symptoms of systemic risk building:

"Regulators and supervisors (...) should be especially worried when refinancing loans are growing rapidly relative to outstanding debts, and when the liquidation of encumbered assets is seen as a normal and convenient way to meet debt commitments. This was illustrated very well by the recent mortgage boom. (...) Most important of all is the analysis of cash inflows and cash outflows induced by assets and liabilities (both on- and off-balance sheet), and the determination of the position-making needs and practices" (Tymoigne (XXX));
"One of the most critical lessons of this crisis is that, while regulators have been focused on asset quality, systemic risk has as much to do with how assets are funded" (Geneva report (2009)).

In this respect, liquidity requirements proposals contained in the Basel III framework do not seem to distinguish between liquidity risks and funding liquidity risks but treat liquidity in general terms. However, funding liquidity risk is driven by the possibility that over a specific horizon the bank will become unable to settle obligations with immediacy²³. Indeed, a bank is running funding liquidity risks when its outflows are above inflows net of unencumbered assets and that liquidity will be financed either by new borrowing from depositors and/or from the interbank market and/or by selling assets and/or by accessing the central bank:
"Ideally and in line with other risks, we would want to measure funding liquidity risk by the distribution summarising the stochastic nature of in- and outflows and random prices banks

²³ *"In contrast to other definitions used by academics and practitioners we show in the first part of the paper that our definitions have important properties, shared by definitions of other risks. First, like solvency, funding liquidity is point-in-time and a binary concept as a bank is either able to settle obligations or not. Funding liquidity risk on the other hand can take infinitely many values depending on the underlying funding position of the bank. As any other risk, it is forward looking and measured over a specific horizon" (Drehmann & Nikolaou (2009)).*

*need to pay to obtain the necessary funds. However, this information is unavailable*²⁴ (Drehmann & Nikolaou (2009)). Indeed, funding liquidity risk stands on future random in- and outflows of money and future random prices of obtaining funding liquidity from different sources. Not only banks should be liquid but they should also be able to fund this liquidity and this has to do with market liquidity. In this respect the needed ratio for insuring global liquidity should be based on a pure flow relationship for a very short time period, i.e. intraday liquidity risk, rather than on a stock-flow relationship. This is part of the monitoring tools suggested in the Basel III framework under the category “Contractual maturity mismatches”, requesting banks *“to indicate how it plans to bridge any identified gaps in its internally generated maturity mismatches and explain why the assumptions applied differ from the contractual terms”* (BCBS (2010h)). However, this framework, while recognising the issue of maturity mismatches, does not suggest a way of diminishing them.

The Geneva report (2009) suggests then the use of a mark-to funding assets²⁵. This method would in fact penalise financial institutions financing long-term assets with short-term funding and gives an incentive to fund long-term assets with long-term funding, whatever the intentions of the buyer concerning the assets bought:

“if a bank has funded its twenty-year assets with one-month or shorter-term borrowings, then whatever their intention, they should value the asset using current market prices. If, however, the asset is funded with the issuance of a 10-year bond, the asset can be valued by a third party valuer (to ensure against fraudulent valuations) on the basis of the present value of the likely average price over the next ten years. In particular, this long-run valuation can place less weight on current daily price volatility and more on valuing the expected cash flows over the next ten years”.

This valuation would not bring an additional piece of procyclicality while it would prevent banks of being forced to sell an asset *“the bank considered good value over the time-horizon of its funding”*. This approach would favour a better representation of the risk the bank would support. If the liabilities have the same time duration as the assets, then its valuation would be its present value. If the liabilities are half as long in time, then the valuation would be half the present value and half the market price, etc...

²⁴ *“However, the net amount of central bank money needed to remain liquid is uncertain from an ex-ante perspective and depends on the stochastic volume of liquidity required and the stochastic prices of acquiring it”* (Drehmann & Nikolaou (2009)).

²⁵ See also Griffith-Jones & J. A. Ocampo (2010), and J. A. Ocampo (2003).

This approach would have a double advantage. The first and obvious one would be to induce financial intermediaries to fund their long term investments with long-term liabilities. The second is that it would prevent financial actors to increase the size of their balance-sheet irrespective of the funding of the assets bought. The balance-sheet could still increase in times of boom, but in a less aggressive form than without the introduction of mark-to funding.

Moreover, maturity mismatches being the symbol of the diffusion of systemic risk within the economic system, one approach could be to integrate this approach to the capital requirements. Indeed, as suggested by the Geneva report capital requirements should be positively related to maturity mismatch as well as leverage: *“if capital is to be risk sensitive, it must be sensitive not just to the risk of assets, but to the risk of the combination of the asset and its funding, which includes the leverage and maturity mismatch”*.

Another approach is presented by Tymoigne (2009). However, this solution would perhaps necessitate too much information from financial actors. Indeed, the solution proposed would imply knowing the intentions of financial intermediaries when buying financial assets: *“An entity whose high credit worthiness rest mainly on the expected capacity to resell its encumbered assets at higher prices should have a AAA_L rating, where L stands for liquidation. On the contrary, an entity for which the capacity to repay is mainly based on its normal economic activities should have a AAA_I rating, where I stands for income”*. This should give an idea of how the repayment will be made and not only whether it will be made. In this respect, it gives an idea on how the financial industry pays its debts. A high AAA_I/AAA_L would then mean that debt repayments are mainly carried out through normal economic activities and not liquidation which could trigger haircut and balance sheet spirals²⁶. This approach is extended in Tymoigne (2011), providing financial fragility indexes for household and financial businesses based on the degree of refinancing and liquidation risk²⁷. The financial fragility index for financial business is based on total liabilities, net worth, monetary instruments

²⁶ One could also think of charging more capital requirements for assets which are bought to be liquidated relatively to the others.

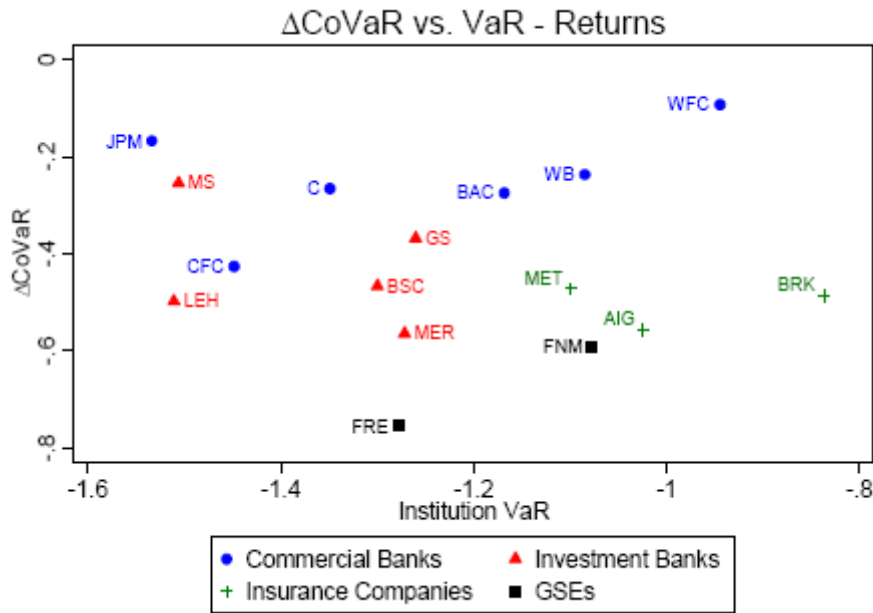
²⁷ The index for household is based on total liabilities, net worth, debt-servicing ratio, monetary instruments relative outstanding liabilities, proportion of cash-out refinancing mortgage loans in mortgage refinancing loans, and proportion of revolving consumer debts (See Tymoigne (2011)). This ratio was very high (meaning a high level of financial fragility) before the beginning of the crisis.

relative to outstanding liabilities while the debt-service ratio is approximated by the Interest Service ratio while refinancing pressures are the proportion of short-term debts relative to total debt for corporate sector and are estimated for financial businesses by the “*sum of money-market mutual fund liabilities, federal funds and security repurchase agreements, and open-market paper outstanding. Monetary authorities’ liabilities were removed from the liabilities of the financial business sector*”. From this index, one can easily notice that the crisis is the consequence of a period of growing financial fragility from 2004 to 2007. Ty-moigne (2011) also shows that the financial sector is much more prone to financial fragility than the corporate sector.

The conditional, comovement, contagion or contributing value at risk model: CoVaR

During financial crises, financial assets and liabilities comovements tend to increase. In this respect it is said that “*such increases of comovement give rise to systemic risk - the risk that institutional distress spreads widely and distorts the supply of credit and capital to the real economy*” (Adrian & Brunnermeier (2010)). This comovement can be direct or indirect, through liquidity and balance sheet spirals.

When qualifying the degree of risk of an asset, financial institutions focus mainly on the riskiness of the underlying institutions, in isolation, which can lead to an excessive risk profile for the whole economic system. Then Adrian & Brunnermeier (2010) propose a measure of systemic risk which could be implemented in a countercyclical way: “*institution i 's CoVaR relative to the system is defined as the VaR of the whole financial sector conditional on institution i being in distress. The difference between the CoVaR conditional on the distress of an institution and the CoVaR conditional on the normal state of the institution, ΔCoVaR , captures the marginal contribution of a particular institution (in a non-causal sense) to the overall systemic risk*”. If two financial institutions have the same VaR while having different ΔCoVaR , stricter capital requirements will be imposed on the institution which contributes the most to the occurrence of systemic risk. Indeed, these two measures can differ greatly:



In Adrian & Brunnermeier (2010)

Moreover, as stated by the authors, there is no reason to believe that an increase of risk for institution j following institution i activities should equal the increase of risk in institution i after the one of institution j . In other words, there is no reason to believe that $\Delta CoVaR^{ji}$ should equal $\Delta CoVaR^{ij}$.

In order to come with a countercyclical measure of risk, Adrian & Brunnermeier (2010) relate estimates of time-varying $\Delta CoVaR$, conditional on a vector of state variables²⁸, to characteristics of financial institutions such as leverage, maturity mismatch and size, notably. In this respect, “ $\Delta CoVaR_t^i$ measures the marginal contribution of institution i to overall systemic risk”. They first show, based on a panel of 1269 financial institutions divided in 4 sectors, commercial banks, security broker-dealer (including investment banks), insurance companies and real estate from the first quarter 1986 to the first quarter 2010, that firms with “higher leverage, more maturity mismatch, and larger size tend to be associated with larger systemic risk contributions”. They find, for example, that an institution that has 1 trillion in total market-valued assets, an increase of leverage from 15 to 16 would translate in a 165 billion of systemic risk contribution. If the level of systemic risk contribution for each finan-

²⁸ Stock market volatility, short-term liquidity risk, change in the three-month Treasury bill rate, change in the slope of the yield curve (difference between the ten-year Treasury rate and the three-month bill rate obtained from the Fed), change in credit spread, among others (Adrian & Brunnermeier (2010)).

cial institution is fixed, while capital requirement ratio for a small banks is fixed at 7%, an increase in market share of a large banks of 0,1 percentage point, would imply that the $\Delta CoVaR$ per unit of capital of the large bank would be 0,4 percentage point higher than the small bank $\Delta CoVaR$. In order to have the same $\Delta CoVaR$ by unit of capital in the two banks, the large bank must reduce its leverage from 14 to 11. The large bank should be required to hold 9% of capital requirements (Adrian & Brunnermeier (2010)). However, the large bank could have taken other decisions in order to reduce its contribution to the systemic risk.

$\Delta CoVaR$ is then a measure of risk which is both i) larger in its content and ii) systemic in nature. In fact it synthesises most of the suggestions put forward in the Geneva report. One of the major advances of the Geneva report was to focus on maturity mismatch as a symbol of systemic risk building and as one of the main triggers of the crisis. $\Delta CoVaR$ can go a bit deeper and state how much more systemic risk larger maturity mismatches will add to the system and the possible ways of regulation. In this respect, $\Delta CoVaR$ could be used for assessing the capital required. This is not taken into account in the Basel III framework.

Asset-based reserve requirements:

It has been suggested that maturity mismatch could be limited through the use of mark-to-funding method. This would both favour long-term funding of long-term investments while limiting the increase of financial institutions' balance-sheet during periods of boom. It has also been suggested to classify assets with regard to their final use (liquidation or income purposes). Finally, it has been shown that it was possible to integer a measure of systemic risk contribution of financial institutions, following any change in business, in order to regulate them. A last measure could be to assess financial activities with regards to their impact on sectoral imbalances²⁹. The concept of asset-based reserve requirements should be central for this purpose:

“By varying the level of reserve requirements on asset categories, monetary authorities can adjust the relative attractiveness of various holdings, thereby discouraging unduly risky portfolio choices” (Palley (2000)).

²⁹ Sectoral can here refer to the real characteristics of the production or the splitting between financial and real economic activities.

Such a tool would allow monetary authorities to enter the jungle of financial innovations in a differentiated way. In other words, it would allow monetary authorities to intervene on a sectoral basis, without limiting its possibility to regulate financial markets globally by imposing higher reserve requirements globally.

Asset-based reserve requirements require financial institutions to hold reserves against each class of assets. The regulatory power decides how much, for each class of assets, should be set aside as reserve, given its type of risk, its growth of expansion, its market prices, etc... Such tools would imply to go into more detail than the credit-to-growth metric in order to regulate its expansion. It would also signify that the regulatory authority should have an idea of the type of balanced growth it is looking at. This system would imply, once reserve requirements for different types of assets are decided, that the relative costs associated to the different class of assets are changing. If the monetary authority intends to limit house price increases, it could do so by raising reserve requirement on new residential mortgages³⁰. In the opposite direction, reserve requirements could be lowered when the funds are invested in specific sectors. Lower reserve requirements on a particular asset category, such as green industry development loans, would increase their relative return and attract capital. This point seems to be shared by Claessens & al. (2010):

“Additional regulatory tools may be needed. Policies may target specific sources of risks (e.g., limits on sectoral loan concentration, tighter eligibility and collateral requirements for certain categories of loans, limits on foreign exchange exposure, and maturity mismatch regulations).”

Moreover, in a boom period, the rise in prices and lending will increase the demand for reserves, leading to monetary tightening. In times of crisis, when an asset is written off, *“it automatically releases reserves and contributes to monetary expansion”*.

This approach would be countercyclical and would remove part of the procyclical patterns of the risk-weighted approach, magnified under the Advanced Internal Ratings Based approach, allowing large financial institutions to run their own risk models. This conceptual framework could also be fuelled by the mark-to-funding model or the CoVaR measure for estimating reserve requirements.

³⁰ See also S. Griffith-Jones & J. A. Ocampo (2010).

Finally, following Keister & McAndrews (2009), one could think that banks have excess reserves following liquidity injections from central banks: *“The total level of reserves in the banking system is determined almost entirely by the actions of the central bank and is not affected by private banks’ lending decisions”*. While putting the different banks on different states, it still means that globally the banking system is holding excess reserves. In the BCBS regulations, reserves held at the central bank are classified as assets *“to the extent that they can be drawn down in times of stress”*. If this means that reserves exceeding the requirements are liquid assets, banks that hold a large amount of excess reserves at the central bank on a regular basis will be better able to meet the requirements. This assessment is shared by Palley (2010) while Keister & McAndrews (2009) explain why banks are holding so many excess reserves.:

“Regulatory transitions often involve costly disruption, but the current environment means those costs can be avoided. That is because banks are flooded with liquidity, as reflected in their holdings of excess reserves. Consequently, imposing ABRR now would likely have a near-zero impact because banks have more liquidity than they need. In the language of microeconomics, the economic constraint imposed by ABRR would be non-binding so that it would not immediately impact the lending and business activity of banks” (Palley (2010)).

4. The impact on growth:

The debate on the impact of the implementation of the Basel III agreement on growth is mainly taking place between the Institute of International Finance (IIF) and the Basel Committee on Banking Supervision (BCBS) at the Bank for International Settlements (BIS). However, the comparison between the two is not an easy task as the studies are not conducted in the same way, with the same data, in the assumptions used and in the types of analysis. There are two studies conducted by the BCBS and one by the IIF.

However, because the positive effects on growth following the introduction of the Basel III is only taken into account in the long-term in the BCBS study and disregarded in the IIF one, the core of the discussion should lie in its impact on costs, and then on lending rates and growth³¹. In addition, one should look at academic studies focusing on the decrease in costs following Basel III implementation.

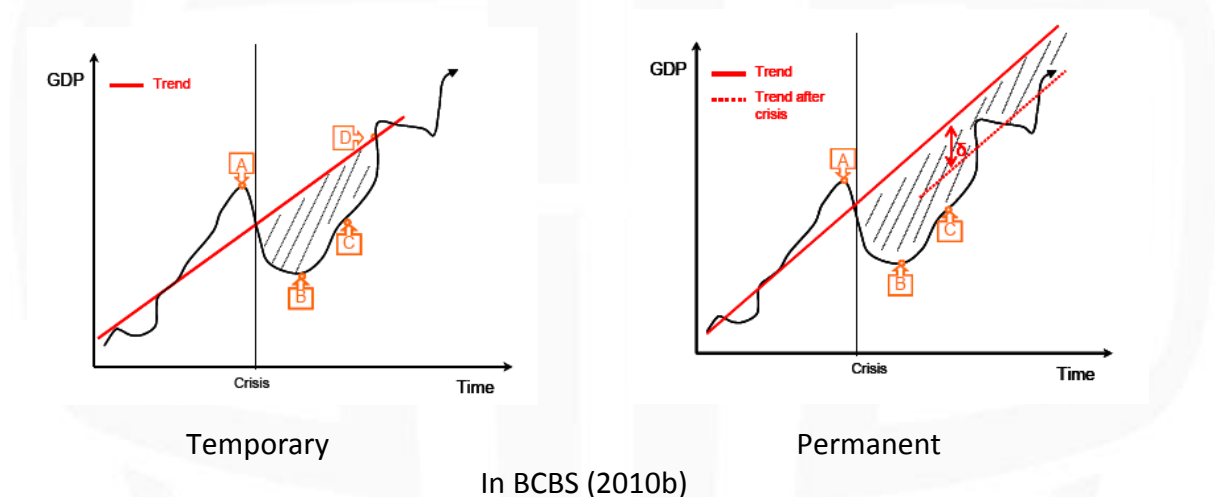
The benefits of regulation:

The two studies refer to the positive impact of the Basel III regulation on growth. However, the IIF study, while mentioning the benefits of regulation, does not include them in the net cumulative impact of the proposal because *“We think there are some serious limitations to what the studies published so far can tell us about the likely benefits of the regulation currently under discussion”* (IIF (2010)). The implementation of the regulation would decrease the probability of crisis while also limiting the extent of the crisis. However, the BCBS study also adds its impact on the volatility of output. The Basel III agreement would limit the amplitude of the normal business cycle. For the IIF, it is not possible to link the regulatory framework to the probability of crisis because *“they essentially average over a number of highly idiosyncratic crises. Crises originated and centered in the banking industry are treated alongside those associated with other key causes – such as inappropriate monetary, fiscal and exchange rate policies – where casualties in the banking sector are a second round effect”* (IIF (2010)). In fact they even go further stipulating that *“After all, the deregulation of*

³¹ In addition, as will be shown below, methodologies used to assess the positive effect of regulation seem to be weak.

the late 1990s was intended to deliver the same outcome, with market forces left free to level out any friction and ensure the most efficient equilibrium” (IIF (2010)). However, the deregulation of the 1990s led to a major crisis which should prevent the dominance of such ideological arguments. It should be remembered that it has never been demonstrated that the economic system, independently of any external intervention, could reach a state of equilibrium satisfying people’s preferences (Kirman (1989)). While it is true that one can expect regulatory arbitrage, especially given the role and importance of an unregulated shadow banking system³², following the implantation of the reforms, they cannot be known in advance, this cannot be a good argument for rejecting the positive effects of regulation.

The BCBS studies the positive effects of regulation taking into account two main scenarios, one when the effect of the crisis is said to be permanent, the other when the effect of the crisis is said to be temporary:



From the data of the banking crises in the BCBS member countries since 1985, the studies of Reinhart & Rogoff (2008) and of Larven & Valencia (2008), the committee finds the following estimates:

³² Right after the US regulatory reforms mid-2010, as stated by Jenkins & Masters (2010), regulated financial institutions have been created their own hedge funds and private equity funds, and “oil companies such as Total and BP and traders including Cargill and Vitol are in effect shadow banks for the commodities industry, replicating the services that the likes of Goldman Sachs and Morgan Stanley monopolised for years”.

Expected annual benefits of reducing the annual probability of crises¹

| Reduction in probability of crises (in percentage points) | Crises have no permanent effect on output | Crises have a long-lasting or small permanent effect on output | Crises have a large permanent effect on output |
|---|---|--|--|
| 1 | 0.19 | 0.63 | 1.58 |
| 2 | 0.38 | 1.26 | 3.16 |
| 3 | 0.57 | 1.89 | 4.74 |

¹ The expected annual benefits are measured as the reduction in the annual probability of a crisis times the (discounted) cumulative output losses due to a banking crisis. Cumulative output losses are 19% (no permanent effect), 63% (small permanent or long-lasting) and 158% (large permanent). All the figures are in percentages of long-run GDP per year.

In BCBS (2010b)

The benefit is calculated as the reduction in the annual probability of a crisis multiplied the cost of a crisis, measured as the discounted present value of the cumulative loss. Given these estimates, they use two types of model based on i) the statistical relationship between the incidence of crisis episodes and aggregate data on banks' leverage and liquidity; ii) the impact of higher regulatory requirements on the probability of systemic crises by treating the system as a portfolio of banks – each bank being the analogue of a security in a portfolio. The results show that the implementation of the Basel III agreement will limit the probability of crisis:

The impact of capital and liquidity on the probability of systemic banking crises

(In percent)

| TCE/RWA | All models | Models unable to assess changes in liquid assets | Models incorporating changes in liquid assets | | |
|----------|----------------------------|--|---|--------------------------------------|--------------------------|
| | No change in liquid assets | No change in liquid assets | No change in liquid assets | Meeting NSFR (NSFR = 1) ¹ | NSFR = 1.12 ² |
| 6 | 7.2 | 8.7 | 5.8 | 4.8 | 2.7 |
| 7 | 4.6 | 5.1 | 4.1 | 3.3 | 1.8 |
| 8 | 3.0 | 3.1 | 2.8 | 2.3 | 1.2 |
| 9 | 1.9 | 1.9 | 2.0 | 1.6 | 0.9 |
| 10 | 1.4 | 1.3 | 1.5 | 1.2 | 0.7 |
| 11 | 1.0 | 0.9 | 1.1 | 0.9 | 0.5 |
| 12 | 0.7 | 0.6 | 0.8 | 0.7 | 0.4 |
| 13 | 0.5 | 0.5 | 0.6 | 0.5 | 0.3 |
| 14 | 0.4 | 0.4 | 0.5 | 0.4 | 0.2 |
| 15 | 0.3 | 0.3 | 0.3 | 0.3 | 0.2 |
| # models | 6 | 3 | 3 | 3 | 3 |

¹ Meeting the NSFR is modelled as a 12.5% increase in the ratio of liquid assets over total assets. ² The NSFR equals 1.12 if liquid assets increase by 50% for the average bank.

In BCBS (2010b)

This shows that the likelihood of a banking crisis at higher levels of capitalisation and liquidity for the banking system as a whole is reduced. This is true both for the models that focus only on capital (shown in third column from the left) and those that incorporate liquidity effects (shown in the fourth column)³³.

They also find that the higher the capital ratio in the banking system, the lower the volatility in output will be. This effect is accentuated if one adds to this regulation the introduction of a countercyclical capital requirement.

³³ Increasing the capital ratio (tangible common equity/RWA) from 7% to 8%, with no change in liquid assets, reduces the probability of a banking crisis by one third (eg from 4.6% to 3.0%). Looking at the models that incorporate changes in liquid assets, increasing the liquidity ratio to meet the NSFR while keeping a capital ratio of 7% reduces the likelihood of systemic banking crises from 4.1% to 3.3%. The reduction in the probability of crises continues as capital and liquidity levels increase, as can be seen by comparing figures down the rows (for capital) and across the three columns on the right-hand side (for liquidity). In fact, if the liquid assets to total assets ratio exceeds the proposed liquidity requirement, at a 7% TCE/RWA ratio, the estimated reduction in the probability of crises is about the same as that associated with an increase of 2 percentage points in the capital ratio (from 7% to 9%). (see BCBS (2010b)).

Altogether, these positive effects of regulation on output loss during less probable crises could imply that the implementation of the Basel III agreement can lead to increase potential growth, at least in the long term.

The transitional costs:

The two institutions run models in order to know the costs of the implementation of the Basel III agreement and its impact on lending and growth. The BCBS provide estimates if one allows the implementation period to vary, over 2, 4 and 6 years, until 2018. The IIF provides estimates until 2020. The two studies agree on the fact that a longer period of implementation should decrease the costs of the implementation.

In the BCBS model, in the case where the implementation period is four years, a 1 percentage point increase in the targeted capital ratio would increase lending spreads by 15 basis points after 18 quarters and 16 after 32 quarters. Globally the BCBS estimates that:

Estimated deviations of lending spreads and volumes from baseline forecasts

| Scenario | Lending volume (in per cent) | | Lending spreads (in basis points) | |
|---|------------------------------|--------------|-----------------------------------|--------------|
| | 18th quarter | 32nd quarter | 18th quarter | 32nd quarter |
| Capital target increases 1 percentage point | | | | |
| <i>over two years</i> | | | | |
| Median | -1.4 | -1.9 | 17.3 | 15.3 |
| Maximum | -0.7 | -0.8 | 25.0 | 25.6 |
| Minimum | -3.6 | -3.6 | 5.1 | 5.1 |
| <i>over four years</i> | | | | |
| Median | -1.4 | -1.9 | 15.4 | 16.1 |
| Maximum | -0.6 | -0.7 | 27.8 | 27.6 |
| Minimum | -3.6 | -3.6 | 4.9 | 5.1 |

In BCBS (2010f)

In the BCBS study, stronger liquidity requirements were estimated by translating higher liquid asset holdings into wider lending spreads (BCBS (2010f)):

Estimated deviations of GDP from baseline forecasts
In per cent

| Scenario | Standard approach ¹ | | Alternative approaches | | | |
|----------|--------------------------------|--------------|----------------------------|--------------|---------------------|--------------|
| | | | Bank-augmented DSGE models | | Reduced-form models | |
| | 18th quarter | 32nd quarter | 18th quarter | 32nd quarter | 18th quarter | 32nd quarter |

Liquid assets/total assets increases 25%
over two years

| | | | | | | |
|---------|-------|-------|-------|-------|-------|-------|
| Median | -0.11 | -0.12 | -0.14 | -0.12 | -1.20 | -1.56 |
| Maximum | -0.02 | -0.01 | -0.02 | -0.01 | 0.61 | -0.08 |
| Minimum | -0.35 | -0.29 | -0.31 | -0.20 | -2.02 | -2.62 |

over four years

| | | | | | | |
|---------|-------|-------|-------|-------|-------|-------|
| Median | -0.08 | -0.13 | -0.15 | -0.09 | -1.32 | -1.67 |
| Maximum | -0.01 | -0.02 | -0.09 | -0.04 | -0.12 | -0.25 |
| Minimum | -0.35 | -0.28 | -0.29 | -0.20 | -1.75 | -2.45 |

In BCBS (2010f)

However, this effect is put aside by the BCBS, stating that *“members were more uncertain about these results than those for capital, noting that the statistical relationship between liquidity ratios and lending spreads tended to be weak”*. If these results were to be interpreted strictly, an increase of 25% in liquid asset holdings implemented over four years should result in a fall in GDP of 0.08% relative to the baseline after four and half years, and that at the end of the simulation GDP should fall further to 0.13% below the baseline scenario.

These impacts of a 1 percentage point increase in the capital ratio target on lending spreads and volumes translate as follows in GDP deviation from the baseline scenario:

Estimated deviations of GDP from baseline forecasts

In per cent

| Scenario | Standard approach ¹ | | Alternative approaches | | | |
|--|--------------------------------|--------------|----------------------------|--------------|---------------------|--------------|
| | 18th quarter | 32nd quarter | Bank-augmented DSGE models | | Reduced-form models | |
| | | | 18th quarter | 32nd quarter | 18th quarter | 32nd quarter |
| Capital target increases 1 percentage point | | | | | | |
| <i>over two years</i> | | | | | | |
| Median | -0.12 | -0.10 | -0.11 | -0.07 | -0.30 | -0.24 |
| Maximum | 0.39 | 0.03 | -0.01 | -0.02 | 0.18 | 0.02 |
| Minimum | -0.96 | -1.34 | -0.41 | -0.25 | -0.87 | -0.88 |
| <i>over four years</i> | | | | | | |
| Median | -0.16 | -0.10 | -0.14 | -0.08 | -0.36 | -0.39 |
| Maximum | -0.02 | 0.09 | -0.01 | -0.01 | 0.19 | 0.04 |
| Minimum | -0.99 | -1.25 | -0.40 | -0.30 | -1.14 | -0.55 |

In BCBS (2010f)

This means that a 1 percentage point increase in the target capital ratio and liquidity requirements in the case where the agreement is implemented over 4 years will lead to a decrease in GDP of 0,16% below the baseline scenario after 4 years and half, followed by a recovery of GDP to some 0,10% below its trend level after 8 years. After 8 years, of which 4 were implementation, a 1 percentage point increase lead to a decrease in GDP of 0,10% below its baseline. Coupling this result with the benefits following the implementation of the agreement, i.e. skipping the implementation period³⁴, allows the BCBS to state the following results suggesting a reasonable range of manoeuvre for the implementation of stricter financial regulation could exist:

³⁴ This is a comparative static method, and surely a 1 percentage point increase in the capital ratio does not bring the same effects than a X% increase. However, this is the case in the BIS studies. Hicks' Traverse analysis (1939, 1965, 1973) suggests important changes could happen during the adaptation period leading the economy to tend towards an equilibrium which was not the one expected when doing comparative statics analysis.

Expected long-run annual benefits and costs of tighter regulatory standards¹
(benefits and costs are measured by the percentage impact on the *level* of output per year)

| Capital ratio ² | Expected costs ³ | Expected benefits (moderate permanent effect) ⁴ | Net benefits (moderate permanent effect) ⁵ | Net benefits (no permanent effect) ⁵ | Net benefits (large permanent effect) ⁵ |
|--------------------------------------|-----------------------------|--|---|---|--|
| Liquidity requirement not met | | | | | |
| 7% | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8% | 0.09 | 0.96 | 0.87 | 0.20 | 2.32 |
| 9% | 0.18 | 1.62 | 1.44 | 0.31 | 3.87 |
| 10% | 0.27 | 1.98 | 1.71 | 0.33 | 4.70 |
| 11% | 0.36 | 2.23 | 1.87 | 0.31 | 5.23 |
| 12% | 0.45 | 2.39 | 1.94 | 0.27 | 5.54 |
| 13% | 0.54 | 2.50 | 1.96 | 0.21 | 5.73 |
| 14% | 0.63 | 2.58 | 1.95 | 0.15 | 5.84 |
| 15% | 0.72 | 2.64 | 1.92 | 0.08 | 5.90 |
| Liquidity requirement met | | | | | |
| 7% | 0.08 | 0.76 | 0.68 | 0.15 | 1.83 |
| 8% | 0.17 | 1.40 | 1.23 | 0.25 | 3.33 |
| 9% | 0.26 | 1.82 | 1.56 | 0.29 | 4.30 |
| 10% | 0.35 | 2.10 | 1.75 | 0.28 | 4.91 |
| 11% | 0.44 | 2.29 | 1.85 | 0.25 | 5.30 |
| 12% | 0.53 | 2.42 | 1.89 | 0.20 | 5.55 |
| 13% | 0.62 | 2.52 | 1.90 | 0.14 | 5.70 |
| 14% | 0.71 | 2.60 | 1.89 | 0.07 | 5.80 |
| 15% | 0.80 | 2.65 | 1.85 | 0.00 | 5.85 |

1 The starting point of the net-benefit analysis corresponds to the pre-reform steady state, approximated by historical averages for total capital ratios (7%) and the average probability of banking crises. ² The capital ratio is defined as TCE over RWA. ³ To meet the liquidity requirement, the annual expected output cost is estimated to be 0.08%. Each 1 percentage point increase in the capital ratio starting at 7% thereafter results in a 0.09% fall in the level of output below the baseline. ⁴ Expected benefits equal the estimated reduction in the annual probability of crisis times the (discounted) cost of a crisis using the median estimate of the cost of crises equal to 63% of pre-crisis output (moderate permanent effect). ⁵ Net benefits are the difference between expected benefits and costs; expected benefits are calculated assuming a crisis has a moderate permanent effect (cost of a crisis equals 63%), no permanent effect (cost of a crisis equals 19%) and large permanent effect (cost of a crisis equals 158%).

In BCBS (2010b)

In the IIF study, the implementation of the Basel III agreement would induce a reduction of GDP of 3,1% after the implementation period. This must be compared to the 0,16% multiplied two = 0,32% (Tier 1 capital requirement must increase by 2 percentage points). The impact of the agreement in the IIF study is 8 times larger than the one found by the BCBS. In terms of its impact on growth rates the IIF estimates translate into a 0.6 percentage point reduction per year compared with 0.08 percentage points for the BCBS.

| Cumulative Effects Results in Summary | | |
|---|--------------|--------------|
| <i>difference between regulatory change and base scenario</i> | | |
| <i>Difference in average rates:</i> | 2011-15 | 2011-20 |
| Real lending rate (bps) | | |
| United States | 169 | 136 |
| Euro Area | 134 | 97 |
| Japan | 76 | 60 |
| G3 (asset-weighted) | 132 | 99 |
| Real GDP growth difference | | |
| United States | -0.5 | -0.3 |
| Euro Area | -0.9 | -0.5 |
| Japan | -0.4 | -0.1 |
| G3 (GDP-weighted) | -0.6 | -0.3 |
| <i>Difference in end-period values:</i> | Through 2015 | Through 2020 |
| Core Tier 1 capital (\$bn) | | |
| United States | 247 | 260 |
| Euro Area | 273 | 738 |
| Japan | 156 | 169 |
| G3 | 676 | 1167 |
| Nominal GDP (\$ bn) | | |
| United States | -951 | -1297 |
| Euro Area | -920 | -1109 |
| Japan | -130 | -105 |
| G3 | -2001 | -2510 |
| Real GDP (% difference) | | |
| United States | -2.6 | -2.7 |
| Euro Area | -4.3 | -4.4 |
| Japan | -1.9 | -1.5 |
| G3 (GDP-weighted) | -3.1 | -3.1 |
| Employment (million) | | |
| United States | -4.58 | -4.87 |
| Euro Area | -4.68 | -4.83 |
| Japan | -0.46 | -0.43 |
| G3 | -9.73 | -10.12 |

In IIF (2010a)

Discussion:

Two distinct areas of discussion must be approached. One on the different results between the IIF and the BCBS studies, the other on the weight of the assumptions used in the models and their impact on the level of lending and growth in the economy. Moreover, in addition to these points, one should keep in mind that it does not seem to be a relationship between loan costs, lending spread, growth rates and capital ratios³⁵.

The BCBS study does not integrate the effects of the redefinition of Tier 1 capital assets, as shown earlier on the assessment of the impact of the Basel III agreement for different regions and different types of banks. The IIF states that if the capital ratio were increased by 6 percentage points then growth would be lower. The IIF study can also be viewed as a “subset” of the of the BCBS led-study. Indeed, the IIF study is using less data than the one led by the BCBS: *“the IIF sample of three countries account for 57 out of the 89 country studies done in the BIS-led work”* (IIF (2010b)). However, integrating the IMF and the Bank of Canada estimates of international spillover, integrating a response by monetary policy following the implementation of the agreement, leads to *“a temporary output loss of 0.19% relative to the baseline trend four and a half years after implementation, and 0.12% eight years after implementation, for each percentage point increase in the target capital ratio. In terms of annual growth rates, this translates into a reduction in the annual growth rate of 0.04 percentage points during the four and a half years following implementation. After the 18th quarter, annual growth increases by 0.02 percentage points for the next three and a half years”* (BCBS (2010b)).

Finally, the IIF study integrates the implementation of the counter-cyclical buffer, of the liquidity coverage ratio and of the net stable funding ratio, while the BCBS study assumes that that the requirement of an increase of 25% of liquid assets held by the banking sector is weakly linked to variations in lending spreads and lending volumes. Moreover the IIF estimates assume that, without any strengthening of regulation, banks will increase their leverage, that the financial firms’ required return on equity will rise as the government safety net is weakened.

³⁵ See Hanson & al. (2011) and Miles & al. (2011).

However, these estimates, coming either from the BCBS or the IIF are conservative in nature. While the implementation of the agreement can be met by a new issuance of equity; by reducing dividend; by raising margins between borrowing and lending rates; by lowering the size of loans portfolio and/or by change in composition of the balance-sheet, the two studies directly link the increase in cost to the increase in spreads leading to a decrease in lending, and a decrease in growth. In the IIF model, targeted returns on equity following the implementation of the agreement are higher than prevailing returns on equity, in order to attract capital, while in the BCBS one, targeted returns on equity are the average of returns on equity in the last 15 years. The representative balance sheet in the BCBS model is the average of the balance sheet data in each 13 countries in the last 25 years. However, the last 15 years have been marked by a deregulation of financial markets which led to very high returns on equity, compared to returns in the real economy, based on balance sheet management which ultimately must be assessed as unsustainable. This point is supported by Admati (2011) following the estimates of bank profits in 2010, and the consequent rise in dividends: *“This action is misguided. It puts the needs of bankers and their shareholders ahead of those of the economy. US banks paid large dividends leading up to the financial crisis, continuing even while credit was restricted and capital seemed scarce. Had they withheld some of the dividends they paid in 2007 and 2008, the government would have needed to provide significantly less support under the troubled asset relief programme”*. On average, the BCBS finds that *“a 2 percentage point fall in ROE, is sufficient to absorb a 1 percentage point increase in the capital-to-RWA ratio”* (BCBS (2010b)). This point is shared by Ötcker & al (2010) who find the capital ratios required by the agreement will lead to more LCFIs failing to meet the capital requirement (including the 2,5% of capital conservation buffer), if not accompanied with earnings retention, will be higher than with:

The Impact of the Gradual Phase-in Period¹

(All dates as of January 1 of respective year)

| Number of Banks Below Minimum Common Equity Common Ratio (incl. Capital Conservation Buffer) | | | | |
|--|---------------------------|------------------------|--|---|
| | Without Retained Earnings | With Retained Earnings | Thresholds: Capital to reach Minimum Common Equity Cap Ratio + Cap Conservation Buffer | Phase-In Deductions from Common Equity Tier 1 |
| 2013 | 0 | 0 | 3.50% | 0% |
| 2014 | 0 | 0 | 4.00% | 20% |
| 2015 | 1 | 0 | 4.50% | 40% |
| 2016 | 4 | 1 | 5.125% | 60% |
| 2017 | 17 | 2 | 5.75% | 80% |
| 2018 | 32 | 6 | 6.375% | 100% |
| 2019 | 48 | 10 | 7.00% | 100% |

¹ Estimates with earnings at 50 percent of average 2004-07 earnings per bank; and earning retention rate at 60 percent.

Moreover, in the two studies, interest costs and equity risk premiums are not supposed to decrease in reaction to the decrease in leverage:

“Given their reduced leverage, the cost of bank debt should fall. And investors in bank equity may demand lower risk premia due to a reduction in the likelihood of extreme events” (Bank of England, (2010));

“The key question is to what extent there is an offset to the impact upon a bank’s overall cost of funds of using more equity because the risk of that equity is reduced and so the return it needs to offer is lowered. Some of the reasons that this offset will be less than full are well known and apply to both banks and non-financial companies. The most obvious one is the tax treatment of debt and equity” (Miles & al. (2011));

“there are good reasons to believe that the cost of capital would decline in response to a reduction in bank leverage. As capital levels increase and the bank becomes safer, both of these costs should decline, further reducing the impact on lending spreads” (BCBS (2010b)).

This opinion is shared by many economists. As stated by many academics in a letter to the Financial Times on November 9th, 2010, the fact that the implantation of the Basel III agreement must increase the overall funding costs should be viewed as a “fallacy”:

“Using more equity changes how risk and reward are divided between equity holders and debt holders, but it does not itself affect funding costs. Tax codes that provide advantages to debt financing over equity encourage banks to borrow too much. It is paradoxical to subsidise debt that generates systemic risk and then regulate to try to limit debt. Debt and equity should at least compete on even terms. (...) If handled properly, the transition to much higher equity re-

quirements could be implemented quickly and would not have adverse effects on the economy” (Admati & al. (2010));

“The risk of equity, and hence its required return, is not a constant, but rather declines as leverage falls. Indeed, when all the Modigliani and Miller conditions hold, this effect is just enough to offset the increased weight of the more expensive equity in the capital structure so that the overall cost of capitals stays fixed as bank leverage varies” (Hanson & al. (2001));

“Given their leverage, therefore, it is not surprising that holders of bank equity expect high returns. But it does not follow that if banks are forced to hold significantly more equity their overall cost of funds is bound to be higher. As banks hold more equity their leverage will fall – and if they originally held only a sliver even a small increase in equity will bring down their leverage sharply. And that should significantly reduce the required rate of return on both existing and new equity. Fail to factor this in to any analysis, and one would dramatically overstate the impact of reforms like Basel III on bank funding costs” (Miles (2010)).

On the tax aspect, one should not be over pessimistic on its impact on lending rates. As stated in Miles & al. (2011), extra tax payment, while it is money lost for financial institutions, it remains in the economy and is a revenue for government and could offset any extra costs to banks: *“Indeed the extra tax receipts could, in principle, be used to neutralise the impact on the wider economy of any increase in banks’ funding costs. So it is not clear that in estimating the wider economic cost of having banks use more equity, and less debt, we should include the cost to banks of paying higher taxes (...). Arguably if banks pay more tax as leverage falls the value of the extra tax revenue to the government pretty much exactly offsets the loss to banks. So from the point of view of measuring true economic costs it should be ignored”*. However, the integration of a tax effect as a cost does not seem to affect lending and growth rates very negatively: *“The costs of stricter capital requirements are fairly small even if we assume a substantial departure from the MM [Modigliani-Miller] theorem and assume that any extra tax paid by banks is a loss to society”*.

In addition, banks could counter the supposed increase in costs by investing in less risky assets, and then perhaps less profitable. They could even invest more in less risky businesses. In this respect the return on equity would be lowered while the amount of profits would remain constant. In terms of global growth, this could imply a decrease in growth (compared to the potential growth if the system were not regulated), i.e. the quantitative aspect, but a more sustainable growth. One could even go further and suggest that a rise in lending to SMEs coupled to a decrease in risky financial activities could indeed lead to a decrease in

growth (compared to the baseline scenario) while improving employment. Such an outcome could also be reached through the use of asset-based reserve requirements.

Moreover, large Swiss banks were able to meet tighter regulatory requirements in 2009 rapidly and with little impact on domestic credit markets, because despite a weak economy they had large holdings of non-loan assets that they were able to sell relatively quickly and could restore their profitability:

“In other words banks deleverage their non-core assets (such as trading assets) to a greater extent than they reduce their loan books. This result, which is consistent with the response of the Swiss banking system to the imposition of tighter capital requirements in 2009 suggests that banks employ a “pecking order” approach, in which they seek to achieve higher capital ratio targets by cutting non-core asset categories before reducing lending” (BCBS (2010b)).

Finally, Wells Fargo, the fourth-biggest bank by assets, is now arguing that banks should retain most of the loans they create, instead of selling them to investors, a process known as securitisation³⁶:

“The point we are making, unlike others, is that risk retention is a good idea” (Gibbons³⁷ in Kapner (2010)).

³⁶ This point is shared by Lordon (2008) who suggests to limit at 5% the share of securitised loans or to increase to 100% the capital requirements for such financial products. In that case, securitisation could be considered as a refinancing tool.

³⁷ Executive vice-president with Wells Fargo Home Mortgage.

Conclusion:

Evidently, if one wants to limit the diffusion of systemic risk in the economy, it seems necessary that the regulatory reforms should be applied to all financial intermediaries: *“The problem is the capitalisation, and also the liquidity, of the shadow banking system”* (Mehrling (2010)). In this respect, while the Basel III agreement is increasing capital and liquidity buffers, the accord does not tackle the impact of the securitisation/leverage nexus in a deregulated and environment on the diffusion of systemic risk. If one were pessimistic, it could even represent an incentive towards more securitisation within the shadow parallel banking system: *“To the extent that bank regulation is burdensome, this creates a powerful pressure for banking assets to be securitized and to migrate out of the formal banking system. Absent some form of harmonization that puts shadow banks and traditional banks on more of an equal regulatory footing, this pressure is likely to intensify as capital requirements on banks are raised in the wake of the crisis”* (Stein (2010)); *“While higher capital and liquidity requirements on banks will no doubt help to insulate banks from the consequences of large shocks, the danger is that, given the intensity of competition in financial services, they will also drive a larger share of intermediation into the shadow banking realm. . For example, perhaps an increasing fraction of corporate and consumer loans will be securitized and in their securitized form will end up being held by a variety of highly leveraged investors who are not subject to the usual bank-oriented capital regulation. If so, the individual regulated banks may be safer than they were before, but the overall system of credit creation may not”* (Hanson & al. (2011)).

In this respect, the increase in capital requirement and liquidity buffers in the Basel III agreement is answering the question on how to safeguard individual banks in a non procyclical manner but leaves aside the question of the increasing fragility of the entire financial system. As remarkably stated by the Geneva report, macroeconomic prudential regulation is not the sum of the micro regulation principles. A few set of tools and concepts have been put on the table, which could complement the Basel III agreement in trying to tackle systemic risk propagation. They are all countercyclical in nature while tackling the propagation of systemic risk in the economy.

Finally, following the consequence of financial deregulation on global macroeconomic imbalances, it has been argued that financial actors' profitability should be reduced, or/and that balance-sheet management should decrease in size and be directed toward the retention of risk, limiting the extent of securitisation and leverage. Compared to a baseline scenario where no regulatory reforms were implemented, this could perhaps decrease potential growth but increase the stability of the financial system, limiting the propagation of systemic risk and finally, lead to a more sustainable and job-creating accumulation path.



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