

*Facoltà: Economia*  
*Corso di Laurea: Economics and Business*  
*Cattedra: Antitrust and Regulations*

**TITOLO:**

*“The Global Regulator and the Banking Sector:  
a dog that chases its tail”*

RELATORE  
Prof. Andrea Renda

CANDIDATO  
Alberto Loddo  
Matr. 142961

ANNO ACCADEMICO 2009/2010

**Table of Contents**

<b>ABSTRACT</b>	<b>3</b>
<b>ABOUT THE BANK FOR INTERNATIONAL SETTLEMENTS AND THE BASEL COMMITTEE FOR BANKING SUPERVISION</b>	<b>4</b>
<b>BASEL I</b>	<b>7</b>
<b>CORE CAPITAL</b>	<b>8</b>
<b>SUPPLEMENTARY CAPITAL</b>	<b>8</b>
<b>DEDUCTIONS</b>	<b>9</b>
<b>RISK-WEIGHTINGS</b>	<b>9</b>
<b>BASEL II</b>	<b>14</b>
<b>PILLAR 1: MINIMUM CAPITAL REQUIREMENTS</b>	<b>16</b>
CREDIT RISK	16
OPERATIONAL RISK	25
MARKET RISK	30
TOTAL CAPITAL REQUIREMENTS	36
<b>PILLAR 2 – SUPERVISORY REVIEW</b>	<b>36</b>
<b>PILLAR 3 – MARKET DISCIPLINE</b>	<b>39</b>
<b>CONSIDERATIONS ON BASEL II IMPLEMENTATION AND IMPACT ON THE BAKING SECTOR</b>	<b>42</b>
<b>THE FINANCIAL CRISIS AND BASEL II</b>	<b>47</b>
<b>BASEL III</b>	<b>52</b>
<b>RAISING THE QUALITY, CONSISTENCY AND TRANSPARENCY OF THE CAPITAL BASE</b>	<b>54</b>
<b>RISK COVERAGE ENHANCEMENTS</b>	<b>56</b>
<b>THE LEVERAGE RATIO</b>	<b>58</b>
<b>DEALING WITH PRO-CYCLICALITY</b>	<b>59</b>
CAPITAL CONSERVATION BUFFER	60
COUNTER-CYCLICAL CAPITAL BUFFER	61
<b>ADDRESSING SYSTEMICALLY IMPORTANT FINANCIAL INSTITUTIONS</b>	<b>63</b>
<b>THE NEW LIQUIDITY FRAMEWORK</b>	<b>65</b>
THE LIQUIDITY COVERAGE RATIO	66
THE NET STABLE FUNDING RATIO	67
<b>PROPOSED IMPLEMENTATION TIMELINE</b>	<b>68</b>
<b>RESULTS OF THE QUANTITATIVE IMPACT ASSESSMENT</b>	<b>69</b>
ECONOMIC BENEFITS	69
ECONOMIC COSTS	71
NET BENEFITS	73
<b>CONSIDERATIONS ON BASEL III IMPLEMENTATION AND IMPACT ON BANKS AND THE ECONOMY</b>	<b>74</b>
<b>CONCLUSIONS</b>	<b>79</b>
<b>REFERENCES</b>	<b>81</b>

## **Abstract**

Soon after the beginning of the financial crisis, the global regulators were under pressure from the world to understand the causes of the crisis and to formulate new laws to prevent that these catastrophes happen again. However, there's an old joke in finance that says that never again means every five years. Who knows... Besides jokes, the world decision makers are about to formalize a new reform in banking regulation, the so-called Basel III, which draws on the lessons of the crisis and tries to make the banking sector more resilient to periods of financial stress and to prevent the massive government interventions experienced during these years.

This thesis tries to give an overview of the achievements of the Basel Committee on Banking Supervision, the part of the Bank for International Settlements, which is in charge of the global co-ordination of banking sector supervisory rules.

The first part of the document includes an overview of the history and working of the BIS and the BCBS.

The second part of the text analyzes the first international capital accord of 1988, referred to as Basel I, with a view on the premises and outcomes of the agreement.

The third part tries to give a comprehensive overview of the main changes in banking regulation brought by the introduction of the much more complex Basel II agreement, which has introduced a more risk sensitive and flexible framework.

Some of the effects of Basel II on the banking sector and a discussion about its presumed relation with the financial crisis are discussed in the fourth and fifth sections respectively.

The newly proposed reforms of the Basel III package are discussed next along with the results of the official quantitative impact assessment.

The final section of the document contains an analysis, based on the current news headlines and recent industry consultations, of the possible effects of the new capital and liquidity framework on the banking sector and on the macro-economy.

The conclusion summarizes the result of the study on past experiences and prospects for the future, arguing that regulation cannot be the sole protection against banking crises.

## **About the Bank for International Settlements and the Basel Committee for Banking Supervision**

The Bank for International Settlements (BIS) is an international organization of central banks, which fosters monetary and financial cooperation and serves as a bank for its 57 members' central banks.

BIS was founded in 1930 in Basel, Switzerland, by the German and English central banks governors. The initial aim of the organization was facilitating the settlement of obligations that rose from the peace treaty of Versailles (1919), which formally ended World War I, by imposing severe monetary and territorial fines to Germany.

In the first fifteen years of operations, allegations rose about the fact that many components of the BIS board of directors were members of the Nazi party and there were claims that the Bank was helping the German government to confiscate assets from the occupied territories.

As a result of these rumors, at the end of WWII, during the Bretton-Woods conference, many European countries and the United States guided by Roosevelt voted for the dissolution of the BIS. One of the strongest opponents of this decision was John Maynard Keynes, head of the British delegation. Even if the bill had passed, the dissolution never took place because the Truman administration reversed the decision in 1948.

Ever since, the BIS has worked with other intergovernmental organizations to fulfill its historical goal of *“creating a well designed financial safety net, supported by strong prudential regulation and supervision, effective laws that are enforced, and sound accounting and disclosure regimes”*<sup>1</sup>. Despite this very ambitious role, BIS has had little power to enforce the recommendations it issues and the final implementation is left entirely to national regulators.

The main activities carried out nowadays include: regular meetings of the central banks representatives to discuss the world economy and financial markets' challenges and policies; economic, monetary, legal and financial research and statistics; seminars and workshops to familiarize the financial regulators with the proposals of its committees to foster harmonization in practices; it offers various financial services to central banks to help foreign exchange reserves management.

---

<sup>1</sup>This is the BIZ: An exhibition celebrating 75 years of the Bank for International Settlements, September 2005

Since 2004, the bank publishes its accounts in terms of IMF's Special Drawing Rights (SDR), a claim to foreign currencies for which it may be exchanged<sup>2</sup>, whose value is derived from a basket of currencies; specifically, a fixed amount of Japanese Yen, US Dollars, Sterling and Euro. It is defined as a quasi-currency, because it is a debt security (pays interest) used for transactions and accounting purposes.

To pursue its goal of Monetary and Financial Stability, it provides several committees related to different areas of intervention. These include: the Basel Committee for Banking Supervision, the Committee on the Global Financial System, Committee Payment and Settlements Systems, the Financial Stability Institute, and other sector-specific agencies.

One of the most active and important working groups is, indeed, the Basel Committee for Banking Supervision (BCBS).

The BCBS is not a classical international agency. It has no founding treaty, and it was never meant to issue binding regulations. Rather, it formulates broad supervisory standards and guidelines with the expectation that national authorities will agree to implement them through detailed directives, which are best suited to their own regulatory systems.

In this way, the Committee encourages convergence towards common approaches and common standards to foster global cooperation on banking supervisory matters.

One important objective of the Committee's work has been to close gaps in international supervisory coverage in pursuit of two basic principles: that *"no foreign banking establishment should escape supervision; and that supervision should be adequate"*.<sup>3</sup>

The most discussed argument ever since its creation in 1974 was that of capital adequacy of international banks, to contrast the emergence of possible instabilities of the financial system, mostly for highly indebted countries. However, it is involved in the supervision of many areas of international banking and investment management which raise specific concerns, like the growth of Offshore Financial Centers (OFCs), Highly-Levered Institutions (HLIs), Large and Complex Financial Institutions (LCFIs) and the spread of money laundering and accounting scandals.

In recent years, it has devoted a lot of efforts to help risk management practices and regulations in hope for a solid financial system able to resist to periods of stress caused

---

<sup>2</sup> 1 Euro = 0.87 SDR as of 20/09/2010

<sup>3</sup> *Report on the supervision of banks' foreign establishments – Concordat, Basel Committee on Banking Supervision, September 1975*

by systemic risk.

This is the risk of an entire financial system to collapse “*caused or exacerbated by idiosyncratic events or conditions in financial intermediaries*”(Daula, 2005). It refers to the risks imposed by global financial interlinkages and interdependencies, where the failure of a single entity can cause a domino like failure, which could potentially bankrupt or bring down the entire system.

One of the main reasons for regulation in the banking sector is to reduce systemic risk. However, financial engineering can, sometimes, get around the regulatory requirements by exploiting differences between economic substance and regulations. It consists of creating new financial products that will lower the risk of an asset (securitization) or relocating the business in a less regulated sector or geographical area. This practice is referred to as regulatory arbitrage and one of its most prominent exercises is, indeed, to avoid capital requirements in the banking sector. For example a bank may transform how its assets are risk weighted by introducing a security with a high credit rating, which is supposed to be backed by an asset with high credit risk. This would result in lower overall capital requirements (lower “façade” risk), even though the same risks are being absorbed.

This shows that regulatory arbitrage restores systemic risk. Thus, rules cannot be the sole protection against systemic risks.

Modern ways to quantify systemic exposures include classifications of FIs as “Too Big to Fail” (TBTF) and “Too Interconnected to Fail” (TICTF). However, this taxonomy gives rise to a problem of moral hazard, in the sense that these kinds of institution could have incentives to take on extra risks knowing that they cannot fail.

The most important achievements of the BCBS so far have resulted in international accords to harmonize regulations and the next section will describe each of them separately with a focus on the premises and outcomes of each of them.

## **Basel I**

In the early 1980s, the economy was witnessing the growth of public debt in most of the industrialized economies. This led to increases in the probabilities of credit default (the risk of counterparty failure) for international banks. Meanwhile, the same financial institutions were moving to high levels of leverage, with continuous deteriorations of their capital ratios. If a bank suffered from credit defaults, this could have worsened if not totally eliminated its capital base, leading to large losses and failures not only for itself, but also for all other institutions to which it was linked. In the worst cases, an entire nation or the world economy could have collapsed. Because of these concerns, the Committee was determined to halt the erosion of capital in the banking system and to work with global decision makers towards greater convergence in the measurement of capital adequacy to remove regulatory arbitrage opportunities arising from competitive inequalities in different legal environments.

In December 1987, the BCBS issued a consultative document and a request for comments from national authorities and parties at stake.

Throughout the consultations, the Committee in Basel maintained close contact with the authorities of the European Community in Brussels to develop a common solvency ratio to be applied to credit institutions in the Community. The aim was to ensure the maximum degree of consistency between the framework agreed in Basel and the framework to be applied in the Community.

This resulted in the publication of *“International Convergence of Capital Measurement and Capital Standards”*, approved by the G-10 meeting and released to banks in July 1988. This document has been labeled “the 1988 Basel Accord”, or simply “Basel I” and was due to be implemented by the end of 1992.

Since 1988, this framework has been progressively introduced not only in member countries but also in virtually all other countries with active international banks.

The initial version of Basel I was mostly concerned about credit risk, and much consensus was given to a risk based calculation of assets and capital

requirements. In particular, the document gave precise definitions of what counts as capital, its division in different loss-absorbent tiers and the risk weights to assign to each asset class.

The first chapter of the accord specifies the definition of capital.

Capital is divided in Core Capital (or tier 1) and Supplementary Capital (tier 2) the sum of which gives Total Capital. Many elements have to be deducted from the accounting definition of Total Capital to get to Total Regulatory Capital, namely the one subject to minimum requirements. Each constituent of capital will be explained briefly.

### Core Capital

Tier 1 Capital is defined as Common Equity plus Disclosed Reserves, so it is the sum of permanent shareholders capital, retained earnings and other legal and general precise reserves. This stringent definition of capital base is crucial because these are the only elements common to all banking systems, visible in the public accounts and are the ones used by the market to judge the solidity of a bank. Therefore are the ones that affect the most a bank's profit margins and its ability to compete internationally.

The nominal value of core capital was set to be no less than 50% of Total Capital.

### Supplementary Capital

This is the part of a bank's total monetary reserves that can be very different across the world in terms of accounting definitions, legal requirements and business culture. Most importantly the elements considered can largely vary in the level of liquidity. It includes: Undisclosed Reserves, Asset Revaluation Reserves, General loan-loss Reserves, Hybrid debt/equity Instruments and Subordinated Term Debt.

These elements are included in the capital base because they could be used as means of settlement in the case of liquidation of a bank.

However, it must be considered that the value of the reserves are most of the times the result of the bank's financial and fiscal policy, so are less reliable in terms of liquidity.

The accord provides limits to general loan-loss provisions in the order of 1.25%-2% of risky assets, and a discounting factor of 55% for asset revaluation.

Lower reliability is given also to subordinated and convertible debt, since this money is used to cover other liabilities as a last mean or in the case of default. The amount of



subordinated debt is restricted to 50% of tier 1.

For all these reasons this form of financing is defined as supplementary. The total value of tier 2 capital cannot, by means of the Accord, exceed that of tier 1.

### Deductions

The sum of tier 1 and tier 2 constitutes the capital base of a financial institution. Nevertheless, the Committee applied some deductions to this base in order to overcome some major differences in regulations and to limit the subjectivity in financial reporting.

Particularly, goodwill must be deducted from tier one, as it is an asset difficult to quantify and account for.

Another problem addressed by the guidelines is that of “double-leveraging”, which can have drastic systemic effects on a global basis. It happens when a bank holds assets in another financial institution whose not consolidated in the accounting reports. This would therefore result in multiple uses of the same capital source and, in the event of stress periods, translate into cross-holdings failures. The more it is used in the financial system, the greater the effects of interconnection and the losses to the economy. From these considerations stem the decision of the Committee to deduct investments in foreign subsidiaries from the capital base needed for regulatory purposes. In any case, the decision on the amount and elements to be deducted is left entirely to the national regulator.

The remaining capital after the deduction is considered for the computation of the risk-weighted capital ratio, and is called Total Regulatory Capital.

### Risk-Weightings

The second chapter of the document deals with the risk-weights to be assigned to different classes of assets and off-balance-sheet exposures according to their relative riskiness. The risk weights are only five depending on the level of risk: 0%, 10%, 20%, 50% or 100%.

The motives for this strictly mathematical approach for measuring capital adequacy were that it was more useful for international comparison, it incorporated off-balance-sheet exposures and, because the committee believed it was an incentive for banks to hold more liquid or safer assets, fostered liquidity in the system.

Even if there exist many kinds of risk like investment risk, interest rate risk, exchange rate risk etc., the regulator believed the major source of risk for a bank to be credit risk, or the risk of counterparty failure. Therefore, it focused especially on the prevention of it when assigning risk weights to asset classes.

In particular, one kind of credit risk was of major concern, country transfer risk. It is the risk involved in holding securities issued by central governments or government agencies of foreign countries. These securities can be more or less risky than domestic government ones, especially in the case of different currencies. Another important difference put forward is that different States may have different credit standings. Hence, the Committee decided to refer to the OECD countries as a basis for differential weighting coefficients. Those securities issued by an OECD member central bank have a zero weight and those issued by other OECD countries' agencies have a low weight. Weights are higher for non-OECD members' claims.

Short-term Loans granted to other banks are weighted at 20%, as well as claims on domestic public-sector entities that are not competing with the private sector. Loans backed by residential property mortgages are considered to have 50% risk weight under this capital adequacy framework. All other exposures, among which the greatest part is made of corporate debt and loans with low collaterals, are considered 100% risky.

All off-balance-sheet exposures are of great importance and should be addressed within national regulations. The approach agreed by the BCBS to tackle these different instruments and techniques was dividing them into five broad categories of risk, and then multiplying each element of a subgroup for a credit conversion factor. The resulting amount will be weighted, as for on-balance-sheet instruments, according to the nature of the counterparty. The five categories considered are: instruments that substitute for loans (100% converted), transaction-related contingencies (50%), short-term trade-related commitments (20%), commitments with maturity longer than one year (50%) and derivative instruments (swaps, options, futures), which will be converted according to their nature on a case-by-case basis.

The sum of the total risk-weighted assets is the element needed for the computation of the regulatory capital ratio.

The target ratio of total regulatory capital/risk-weighted assets that all international banks should have conformed to by the end of 1992 was set to be 8% (out of which at least 4% be made of the core capital element).

The reach of an international accord on the supervision of the banking industry was well acclaimed by the member states' in the transition years and, by September 1993, a statement was issued confirming that all the banks in the G-10 countries were meeting the minimum requirements laid down in the 1988 Accord. It must be noted, however, that many large banks found those agreements too stringent for their operations and their willingness to take risks. That's why the genius finance directors started to work out ways of getting around the regulation.

One of the most remarkable examples was the implementation, by JPMorgan Chase, of credit default swaps, which let them hold capital equivalent to only 1.6% of assets instead of the needed 8%. These instruments were engineered as to transfer the risk of credit default to third parties in exchange for a series of payments. In this way, the risky assets were transformed in higher rated securities. Even if these instruments do not transfer completely the risk, as interest rate and/or exchange rate risks are still borne by the holder, this is a clear example of regulatory arbitrage intended to lower capital requirements.

A second method through which banks could artificially maintain a low risk profile under Basel I was through the sale and resale of short-term non-OECD bank debt. Since these instruments were weighted at 20% and long-term debt in the same category was weighted at 100%, banks could swap their long-term debt holdings into a series of short-term ones, thereby reducing the risk-weighting of its assets but not the probabilities of credit default in the volatile non-OECD markets.

Anyways, the original capital framework was meant to evolve over time to give greater precision to the requirements after witnessing the impact of the implementation. Indeed, many amendments were passed from its issue until 1999, when works started to replace it with a more comprehensive set of guidelines intended to keep up with the market evolution.

The modifications to the framework include an amendment of 1991 concerning the limit for general loan-loss provisions, which was fixed to 1.25% of risky assets after negotiations with member states.

The 1994 amendment regards the qualifications a country's debt must have to be assigned to the OECD zero or low risk weighting class. Besides being members of the organization, the country should have not rescheduled its sovereign debt in the previous five years.

In April 1995, the Committee issued an amendment to the Capital Accord, to take effect at end-1995, to recognize the effects of bilateral netting of banks' credit exposures in derivative products. This is the process of consolidating swap or other derivative agreements between two parties into a single agreement. As a result, instead of each contract leading to a stream of individual payments, all of the swaps and other derivative contracts of the two banks are netted together so that only one total payment is being made to one party based on the flows of the combined swaps. A major reason for netting is that it adds additional security in the event of a bankruptcy to either party. For example, if there was no bilateral netting, the company going into bankruptcy could collect on all in the money swaps while saying they cannot repay the outward money swaps due to the bankruptcy.

The way in which it was decided to deal with this instruments was leaving the national regulator the freedom to choose between one of two methods: the current method where derivatives are valued according to their market value plus an "add-on" factor relative to the residual risk in the future; the original method in which a credit conversion factor is assigned to each kind of contract that is then treated as a regular asset. Bilateral netting was allowed under the restriction that the netting agreement had the form of a legal obligation and included bilateral agreements on the resolution of the contract in case of insolvency of a party.

The last amendment to Basel I was introduced in 1998 and regarded the list of eligible assets for the 20% risk weight. This last modification did not change much the substance or the scope of the regulation.

In January 1996, nonetheless, the Committee started a round of consultations to decide on a distinct set of regulations to incorporate in the Capital Accord the effects of another source of risk, market risk, which was not at all included in the original framework that only dealt with credit risk. Market risk is the threat arising from banks'

open positions in foreign exchange, traded debt securities, equities, commodities and options. The evolution of the banking sector towards the market using proprietary trading (i.e. trading on their own account, rather than for their clients) as a strategy to increase the profitability of the institution in a less regulated area of their business was the main driver of this so-called Market Risk Amendment.

An important aspect of this amendment is that, as an alternative to a standardized measurement method like that for credit risk in the original supervisory framework, banks are permitted, subject to strict quantitative and qualitative standards, to use internal value-at-risk models as a basis for measuring their market risk capital requirements<sup>4</sup>.

Enforced in January 1998, this improvement in international banking regulation remained an independent document until June 1999 when, recognizing the need for a comprehensive restructuring of the capital accords, the Committee proposed to release a New Accord which would have incorporated other sources of risks including market risk and operational risk, sound practices for supervision and rules for disciplining the financial market.

In the five years following the proposal, a series of consultative documents and quantitative impact studies have been released by the BCBS to request comments and formulate a complete version of what has been called “Basel II”. Finally, in June 2004, the Committee reached agreements with the G-10 central banks’ governors and other involved parties and released the document *“Basel II: International Convergence of Capital Measurement and Capital Standards: A Revised Framework”*.

Updating the Solvency standards was a very important need, especially after the banking crises of 1990s and because in the fifteen years following the release of first international accord many things in the financial world had changed.

Most importantly, risk management practices and models were becoming more and more complex and detailed. The limited scope and general language of the initial framework were not risk sensitive enough and left banks excessive leeway in the interpretation of its rules, allowing them to take improper risks and hold improperly low capital reserves. For example, all loans given to corporate borrowers were subject

---

<sup>4</sup> These aspects will be further investigated in the discussion of the second accord, in which they have been incorporated, in the following section.

to the same capital requirement, without taking into account the ability of the counterparties to repay. Basel I ignored the credit rating, credit history, corporate governance and procedures of different corporations. All companies were considered the same: simply private firms.

The objective of the new agreement was to better align the capital requirements with the risks associated with assets charge-offs of banks. This meant encouraging banks to compete on better risk management standards, since a more detailed risk management structure could mean less regulatory capital requirements.

The structure of the document, along with its subsequent amendments and its implementation in different countries will be reviewed in the next section.

## **Basel II**

Basel II framework, as agreed by the members of the BCBS in the document *“Basel II: International Convergence of Capital Measurement and Capital Standards: A Revised Framework”* follows a three pillars structure:

- The first pillar describes the minimum capital required to cope with the three sources of risk taken into account (Credit Risk, Market Risk and Operational Risk) and the different methods available for its computation.
- The second pillar deals with the supervisory review of compliance with the first pillar, giving regulators much improved controlling “tools”. It also provide a framework to handle all the other risks a bank may face, such as systemic risk, pension risk, strategic risk, reputation risk, liquidity risk and legal risk, which the accord combines under the title “residual risk”.
- The third pillar is aimed at enhancing market discipline in the financial sector. It requires the bank activities to be transparent to the general public. For this, the bank is supposed to release relevant financial data in a timely fashion in order to enable the public to better evaluate a bank condition (i.e. bank probability of failure) and diversify their portfolio accordingly.

The document is addressed to all internationally active banks on a consolidated basis, as was the case for Basel I. This means that deductions will be made in the capital base of groups that totally or partially own other financial institutions which are not consolidated in their financial reports. This decision is in line with what previously agreed in the 1988 accord as it is meant to prevent artificial inflation of capital holdings by banks aimed at lowering solvency requirements. This new framework, however, considers other sources of regulatory “tricking” developed by banks to comply with Basel I. In particular, besides positions in foreign subsidiaries, investments in insurance institutions (a clear move toward a less regulated sector) and commercial businesses will be deducted.

The second accord leaves the constituents of regulatory capital substantially unchanged from its previous version.

Tier 1 Capital includes common equity and disclosed reserves, as well as innovative equity instruments (for example equity denominated in a foreign currency) up to 15% of total tier 1.

Supplementary Capital comprises undisclosed reserves, revaluation reserves (discounted at 55%), general loan-loss provisions (limited to 1.25% of risk-weighted assets in the case the bank is using the standardized approach and to 0.6%RWA in the case of internal ratings based methods), hybrid debt/equity capital instruments and subordinated-term debt (up to 50% of tier 1 capital).

The most important innovation in the definition of capital is that banks may also, at the discretion of their national authority, employ a third tier of capital (“Tier 3”), consisting of short-term subordinated debt, for the purpose of meeting a proportion of the capital requirements for market risk. Whenever included in national provisions, total tier 3 capital is limited to 250% of the part of tier 1 that is required to support market risk. This means that tier 1 capital that is not required to secure the other sources of risk must back at least 28.5% of market risk.

The sum of Tier 1, Tier 2 and Tier 3 (were applicable) constitute the capital base for Basel II compliance subject to the limitations that the core capital must be at least 50% of total capital and consequently, supplementary and market risk capital cannot exceed 100% of tier 1.

Deductions from the capital base to arrive at total regulatory capital again consist of

goodwill form tier 1, cross-holdings and other investments in financial institutions from total capital. The new framework provides a further deduction from core capital. It refers to the gains in equity deriving from the securitization of assets, and it is meant to implicitly disincentive this practice.

### Pillar 1: Minimum Capital Requirements

The first pillar shows the greater expansion since Basel I. It is crafted to achieve a more sensitive measurement of a bank's risk-weighted assets and tries to eliminate the ambiguities in Basel I. It is divided in three sections that treat the three types of risk covered by the agreement.

#### Credit Risk

The first section deals with credit risk and the puts forward three methodologies for the calculation of minimum requirements: the *standardized approach*, the *foundation internal ratings based (IRB)* approach and the *advanced IRB* technique. The framework for credit risk issues also includes a chapter that deals with securitization of assets.

#### Credit Risk : The Standardized approach

The first methodology extends the approach to capital weights applied in the 1988 Accord to include private (external) rating agencies like Standard & Poor's, Moody's, Fitch and so on. The weighting differs for each kind of assets according to their relative riskiness, but still remains fixed disrespectfully of the possible differences among the same asset class (i.e. from client to client). This standardization, however, does not enable an effective risk management since a bank cannot differentiate its lending decisions according to the specific quality/risk of the particular asset.

Even if the standardized approach improves the model of Basel I by adding the external rating presumed reliability, it still preserves its strictly mechanical features and it's believed to yield to higher capital requirements.

The following paragraphs include a review of the weights provided in the Accord to some of the most common elements in the activities account of a bank.

Government debt, instead of being risk-weighted according to the state participation



in the OECD, is now discounted according to the credit rating assigned by an authorized institution.

<b>Credit Assessment</b>	<b>AAA to AA-</b>	<b>A+ to A-</b>	<b>BBB+ to BBB-</b>	<b>BB+ to B-</b>	<b>Below B-</b>	<b>Unrated</b>
<b>Risk Weight</b>	0%	20%	50%	100%	150%	100%

Table 1 Weights of Sovereign Debt<sup>5</sup>

Claims on other Banks or financial institutions that have not been consolidated or deducted will be weighted in one of two ways according to the national regulator preferences.

The first option is to risk-weight a bank's debt one step less favorable than the sovereign debt of its country. So, for example, a German bank obligation would be weighted 20% since German sovereign debt is rated AAA+.

<b>Credit assessment of Sovereign</b>	<b>AAA to AA-</b>	<b>A+ to A-</b>	<b>BBB+ to BBB-</b>	<b>BB+ to B-</b>	<b>Below B-</b>	<b>Unrated</b>
<b>Risk weight under Option 1</b>	20%	50%	100%	100%	150%	100%

Table 2 Weights of other Banks' debt<sup>6</sup>

If the bank chooses to follow the second option, its holdings of other banks debt are weighed according to the external credit rating attached to the asset. Lower weights are assigned to short-term bank debt (i.e. debt with a maturity of three months or lower, like Euribor concessions and repos).

<b>Credit assessment of Banks</b>	<b>AAA to AA-</b>	<b>A+ to A-</b>	<b>BBB+ to BBB-</b>	<b>BB+ to B-</b>	<b>Below B-</b>	<b>Unrated</b>
<b>Risk weight under Option 2</b>	20%	50%	50%	100%	150%	50%
<b>Risk weight for short-term</b>	20%	20%	20%	50%	150%	20%

Table 3 Alternative weights for claims on other banks<sup>4</sup>

Claims on Public Service Agencies (PSEs), Multilateral Development Banks (MDBs) and other financial entities are weighted using the second options for the evaluation of

<sup>5</sup> Source: paragraph 53 of the original framework.

<sup>6</sup> Source: paragraph 63 of the original framework.

bank debt.

Corporate debt is also subject to external credit rating and is therefore weighted as banks' and governments' liabilities according to the class into which they are assigned.

<b>Credit assessment</b>	<b>AAA to AA-</b>	<b>A+ to A-</b>	<b>BBB+ to BB-</b>	<b>Below BB-</b>	<b>Unrated</b>
<b>Risk weight</b>	20%	50%	100%	150%	100%

Table 4 Corporate Bonds<sup>7</sup>

Not all the assets in an international bank's consolidated balance sheet are subject to a rating agency's scrutiny, so the standardized approach features a new set of weights for these activities.

Retail exposures like Credit cards, loans for cars and accounts overdrafts, are assigned a 75% fixed weight. Moreover, for loans backed by residential properties a standard 35% risk-weight is applied.

With respect to Off-balance-sheet exposures, the standardized approach leaves unchanged the methodology agreed in the Basel I accord. These instruments will be converted into real assets according to a predefined conversion factor relative to their intrinsic riskiness. Note that some of these financial products, remarkably securitization of loans, receive ratings and are risk weighted accordingly. The third sub-section of the credit risk capital requirements deals exclusively with securitizations matters.

### Credit Risk : The Internal Rating Based Approaches

Beyond the standardized approach, which is very similar to the risk-weighting procedure of Basel I, the BCBS proposes –and incentivizes– two alternative models for considering the riskiness of a bank's assets, known as Internal Rating Based Approaches, or simply IRB. As the name suggests, these methods encourage banks to create their own internal systems to evaluate risk. This is consistent with the view of the Committee that no other institution but the bank itself knows the probabilities of credit default it is facing.

Basel II offers the possibility of lower reserve holdings, thus higher freely available capital and higher potential profits, if a bank opts for one of these internal approaches.

<sup>7</sup> Source: paragraph 66 of the original framework.

By applying a scaling factor of 1.06 to total RWA in case the bank decides to use the standardized approach, it explicitly increases the capital ratio needed.

The structure of the calculation of the minimum requirements is common for both approaches. The accord provides different treatments for different asset classes, sets out the major components of risk, the risk-weights functions for each asset category and the minimum requirement a bank must fulfill to be granted the permission to use one of the two models.

The different types of claims reflect the different riskiness related to each of them.

There are five broad categories, each having its sub-categories. These are:

- Sovereign claims
- Bank debt
- Corporate obligations (for which the bank is allowed to differentiate between Big Firms and Small & Medium Enterprises (SMEs))
- Retail Exposures (loans to physical persons)
- Equity positions in commercial or financial institutions (wherever these latter have not been deducted).

The following figure shows the probability distribution of credit default for a given period. It seems reasonable that the mean value is rather skewed to the left as most of the losses resulting from a loan are of small amounts and are already considered in the ordinary business of a bank, which covers them with general provisions in its balance sheet. These accounts are included in tier 2 capital up to a certain amount. Capital has to be put aside to cover unexpected losses. The committee has agreed that a bank is required to hold capital reserves to cover unexpected losses within the 99.9% confidence interval. Beyond that point losses are so great that it would be useless to back them with capital, since they would surely lead to bank failure.

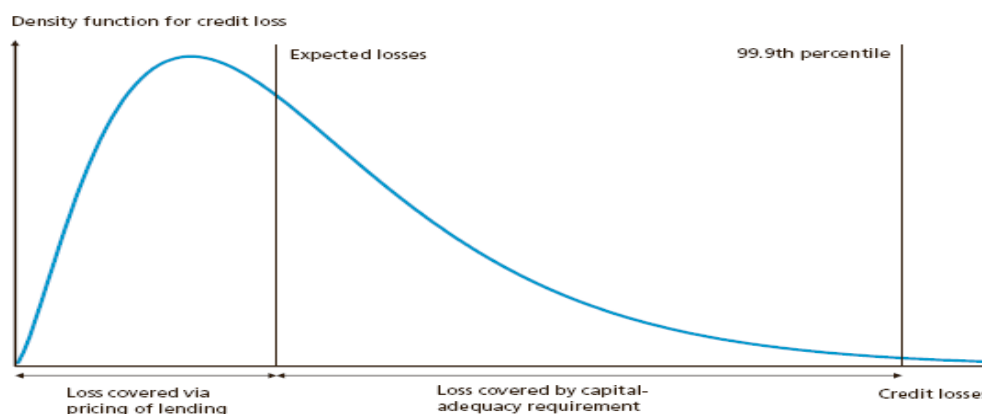


Figure 1 Credit Losses Probability Distribution<sup>8</sup>

The parameters used for quantifying the amount of unexpected loss, UL, for each client or group of clients are:

- Probability of Default (PD)
- Exposure at Default (EAD)
- Loss Given Default (LGD)
- Effective Maturity (M)

The probability of default is the likelihood that a loan will not be repaid and will fall into default. The credit history of the counterparty and nature of the investment are taken into account to calculate the PD.

Exposure at default for loan commitments measures the amount of money that is likely to be drawn if a default occurs.

Loss given default can be defined as the portion of the exposure that will be lost in case of failure to fulfill the obligation. Of course, this parameter is transaction-sensitive since it depends on factors like collaterals and guarantees.

Lastly, Maturity measures the remaining economic maturity of the exposure.

The foundation and advanced IRB approaches differ primarily in terms of the inputs provided by the bank based on its own estimates and those specified by the supervisor. Specifically, if a bank chooses to follow a foundation approach it's only meant to provide PD estimates, while if it decides on the advanced IRB it is allowed to formulate its own values for all the parameters needed. Clearly, the bank opting for the A-IRB approach will have to meet more stringent requirements and scrutiny. This

<sup>8</sup> Source: Denmark National Banken, Financial Stability (2006), available at [http://www.nationalbanken.dk/C1256BE9004F6416/site/Financial\\_Stability\\_2006/\\$file/fin\\_2006\\_web.pdf](http://www.nationalbanken.dk/C1256BE9004F6416/site/Financial_Stability_2006/$file/fin_2006_web.pdf)

is meant to assure consistency in the requirements across different types of banks and across different regional areas.

For what concerns equity investments, the Accord provides that bank must develop internal based calculations for daily capital charges related to changes in Value at Risk (VaR) brought by stock prices volatility. This is a technique used to estimate the probability of portfolio losses based on the statistical analysis of historical price trends and volatilities. The calculations must respect the requirements brought by the agreements.

The equations to determine minimum capital requirements for each asset class are based on the conditional probability of default of a single borrower with normally distributed asset returns. Even if this is just a theoretical construct, they can be considered valid for regulatory purposes. Pillar 2 outlines the possible risks associated with the assumptions underlying the IRB equations.

The internal rating based approaches increase the risk sensitivity of the capital requirements compared to both Basel I and the standardized approach. By using one of these methodologies, the minimum capital reflects more closely the riskiness of a loan. The figure below shows the different treatments of a corporate loan under the different rules of Basel I, the standardized approach and the IRB.

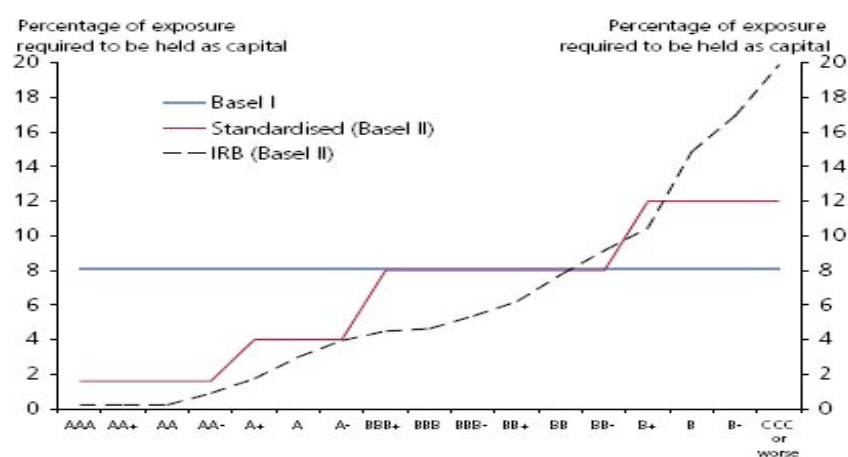


Figure 2 Comparison of Minimum Capital Requirements under different approaches<sup>9</sup>

As it can be seen from the graph, the use of the internal ratings smooth out the differences in capital requirements for each client of the bank. This is clearly a benefit for customers with lower probability of default, who will be granted credit on more favorable conditions. It is also a benefit for banks that prefer corporate clients that are

<sup>9</sup> Source: Jeffrey Liando, Adrew Yey, James Twaddle and Mike Frith. Basel II: A new capital framework. RBNZ Bulletin, Vol. 68, No. 3, September 2005, available at [http://www.rbnz.govt.nz/research/bulletin/2002\\_2006/2005sep68\\_3yehtwaddlefrith.pdf](http://www.rbnz.govt.nz/research/bulletin/2002_2006/2005sep68_3yehtwaddlefrith.pdf)

more solid and less risky. SMEs are also advantaged since they are treated differently from corporations.

Overall, the major benefit is the incentive for banks to invest on the least risky assets if they wish to hold less capital reserves. This is clearly a matter of risk/return preferences, as every investment opportunity.

On the other hand, the very strength of these two models – their quantitative and technical focus – can be also considered one of their fallacies, as they can have limited understandings among policy (political) circles, causing them to be misinterpreted and misused in many of the worlds political economies.

### Credit Risk : Securitization

A stand-alone chapter of Basel II is related to the issue of securitization of assets. This is the practice of pooling together different loans of a bank, often by selling them to a special purpose vehicle (SPV), and then selling them to the market in the form of securities. The most common example of this practice is that of mortgage-backed securities. They are financial products sold to pension funds, other financial institutions or the stock market, which entitle the owner to a stream of cash flows, much like a bond. The cash flows the bank pays to investors are those received by the single mortgage holders. By doing so, the bank is able to increase liquidity because it receives more quickly the nominal value of the mortgages and, at the same time, it is able to transfer the risk of default of the mortgage borrower to third parties. These securities are considered to be a very good hedging tool, since they are covered by a mortgage like a residential property, which is not supposed to lose much value. They also produce profits for the bank, which earns interest rate spreads.

Anyways, since these instruments transform a risky asset into a capital source, they need to be treated separately from capital considerations and from general assets classes because they actually result in higher leverage than what it might appear from financial performance measurement ratios.

Basel II allows the international bank to choose among the different models available for assets' risk weighting (i.e. Standardized and IRB), but sets out specific provisions for securitized pools.

For the standardized approach, investment grade securitized exposures receive fixed risk weights according to the rating they receive, much like other assets. This leaves

open the regulatory issue of the trustworthiness of the rating agencies.

The following table summarizes the risk weights assigned to securitized loans based on their maturity, using the standardized approach.

Long-term rating category <sup>58</sup>					
External Credit Assessment	AAA to AA-	A+ to A-	BBB+ to BBB-	BB+ to BB-	B+ and below or unrated
Risk Weight	20%	50%	100%	350%	Deduction

Short-term rating category				
External Credit Assessment	A-1/P-1	A-2/P-2	A-3/P-3	All other ratings or unrated
Risk Weight	20%	50%	100%	Deduction

Table 5 risk- weights of securitized exposures – standardized approach<sup>10</sup>

Some securitized loans are sold in over-the-counter transactions and therefore do not appear in the consolidated balance sheets. Again, the framework considers these exposures by attaching a credit conversion factor before actually risk weighting them, as it is the case for other off-balance-sheet exposures.

For banks using the IRB approaches, securitizations are treated more comprehensively. IRB incorporates more information on the nature of the collateral pool and security structure. An important feature of the securitization included in the statistical unexpected losses models is granularity. Highly granular means a relatively large number of small loans, usually more than 100 unique obligors. Another information included in IRB calculations is thickness, or how large and senior the obligors are. The more granular an asset-backed security is, the more capital has to be put aside, while the thicker it is, the lower the capital requirements. Again, banks allowed to use one of the two IRB approaches are in a more favorable position than those using the standardized approach because they can tailor their capital requirements according to the quality of the security and their risk preferences.

The following graph shows the risk weights for different probabilities of default of mortgage-backed securities with different loss given default percentages.

<sup>10</sup> Source: paragraph 568 of the original framework.

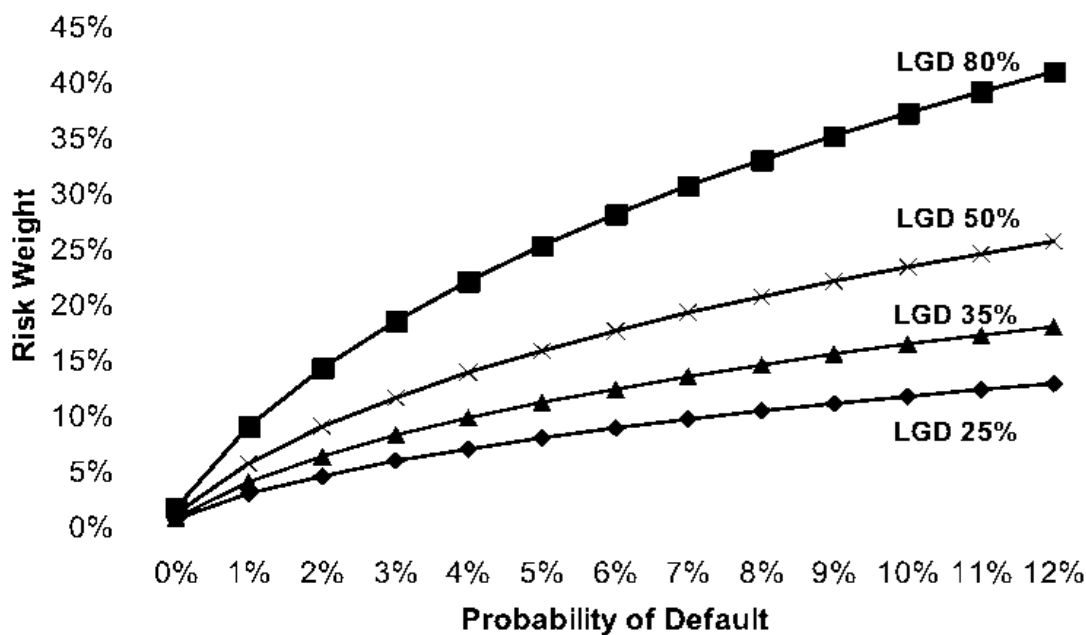


Figure 3 Comparison of risk weights assigned to different loss percentages for residential mortgage-backed securities<sup>11</sup>

As it can be seen, the bank is able to differentiate its risk management decisions across different types of risky securities.

The final paragraphs about credit risk deal with credit risk mitigation, which is another way through which banks can lower their capital requirements. Effectively, the risk associated with a loan decreases the more collateral and guarantees the borrower provides, so Basel II deals with this issue by scaling down the requirements for loans granted to clients that back them with other physical or financial assets. This section provides the different scaling techniques associated with the standardized and the IRB approaches.

<sup>11</sup> Source: Regulatory Framework for Secondary Mortgage Markets, Britt Gwinner, The World Bank, March 10-13, 2003, available at <http://info.worldbank.org/etools/docs/library/156603/housing/pdf/gwinner.ppt>



## Operational Risk

The second section of the minimum capital requirements' pillar covers a completely different risk an international bank faces: Operational Risk. The commonly adopted Basel II definition of Operational Risk is:

*“the risk of loss resulting from inadequate or failed internal processes, people and systems or from external events. The definition includes legal risk but excludes strategic and reputational risk.”*

Legal risk includes, but is not limited to, exposure to fines, penalties, or punitive damages resulting from supervisory actions, as well as private settlements.<sup>12</sup>

The aims of this set of rules were that of being in line with current internal measurement systems, flexible enough to accommodate future developments in operational risk and to be as consistent as possible with approaches to market risk and credit risk.

To calculate the reserves needed to adequately guard against failures in internal processes, the decision-making of individuals, equipments, and other external events, the Committee proposes three mutually exclusive methods: the Basic Indicator Approach (BIA), the Standardized Approach and the Advanced Measurement Approach (AMA). Each of these methodologies will be explained briefly in the following paragraphs.

### Operational Risk: The Basic Indicator Approach

This method of calculation of the minimum capital requirements to cope with the daily risk of an international bank uses a revenue-based proxy at a corporate level, scaled down by a percentage factor relative to the industry-wide level of risk. This means that operational risk is directly related to the activities of the firm. Therefore, capital put aside shall be a portion of positive revenues the consolidated group has

---

<sup>12</sup> Source: Paragraph 644 and footnote of the original framework

generated in the past three years. Basel II fixes this proportion to 15% of revenues, but allows national supervisors to adjust this number according to their risk assessment of each bank. The basic indicator approach formula for the calculation of the requirements is:

$$K_{BIA} = \left[ \sum (GI_{1..n} \times \alpha) \right] / n$$

Where:

- $K_{BIA}$  is capital requirement under basic indicator approach
- $\alpha$  is the scaling factor of 15% (or whatever national regulator decides)
- GI stands for annual gross income of the group (whenever positive) in the previous three years.
- N is the number of years in which income was positive in the period considered.

### Operational Risk: The Standardized Approach

The committee proposed a standardized approach also the part of total capital requirements attributed to operational risk. This approach features a set of fixed reserve targets related to the revenues of each individual business line the international bank operates in. It therefore considers operational risk at a more targeted level.

The total capital charge is calculated as the average of the three years positive incomes of each business lines scaled by a fixed  $\beta$  factor decided by the Commission. The standardized approach formula is:

$$K_{TSA} = \left\{ \sum_{\text{years } 1-3} \max \left[ \sum (GI_{1-8} \times \beta_{1-8}), 0 \right] \right\} / 3$$

where:

- $K_{TSA}$  is capital requirement under the standardized approach
- $GI_{1-8}$  is the yearly gross income of the eight business lines an international bank may have, as identified by the committee
- $\beta_{1-8}$  is the different scaling factor for each business line, as fixed by the committee

The different betas presented in the document are:

<b>Business Lines</b>	<b>Beta Factors</b>
Corporate finance ( $\beta_1$ )	18%
Trading and sales ( $\beta_2$ )	18%
Retail banking ( $\beta_3$ )	12%
Commercial banking ( $\beta_4$ )	15%
Payment and settlement ( $\beta_5$ )	18%
Agency services ( $\beta_6$ )	15%
Asset management ( $\beta_7$ )	12%
Retail brokerage ( $\beta_8$ )	12%

Table 6 Beta Factors for scaling down the gross income of business lines in the calculation on minimum operational requirements<sup>13</sup>

As shown in the table, less operationally risky business lines, such as retail banking, have lower reserve target, while more variable and risky business lines, like corporate finance, have higher targets.

In order for a bank to apply the standardized approach, it must comply to some qualifying criteria accorded with the national supervisor concerning board of directors' involvement, operational risk resources, incentives, bonuses, objectives etc.

Some weaknesses in the treatment of operational risk in these two approaches can be easily identified. Evidently, income is a poor proxy for the risks of failure of internal procedures, fraudulent conduct of managers and other day-to-day exposures of this kind. Moreover, these models provide no differentiation in capital requirements for different institutions' size or better management.

Other limitations of these mathematical models is that they are inconsistent with the approaches for evaluation of market risk and credit risk, in the sense that they are catch-all methods and do not set forward specific provisions for each kind of operational risk. Another point is that no link is provided to any internal operational risk management process. They are only linked via the qualifying criteria to comply.

<sup>13</sup> Source: paragraph 654 of the original framework

For those banks that use risk transfer to other entities such as insurances, capital requirements deductions are not recognized.

Finally, it can be assessed that both the BIA and the Standardized approaches provide few incentives to reduce operational risk capital.

### Operational Risk: Advanced Measurement Approach

This approach, much like the IRB approaches is an attempt to bring self-surveillance into banking legislation and to incentivize better risk management for lowering capital requirements.

AMA allows significant flexibility in using internal risk measurement as the basis for regulatory capital. The models developed must be based on internal losses history and can be updated overtime to follow advances in risk management practices. Of course, the internal system of each bank must be approved by the national supervisor.

Improvements on flexibility mean that no fixed minimum requirement for operational risk is defined. This amount is allowed to vary between and within banks, but it must be consistent with industry peers' values.

The agreement leaves the selection of the level of analysis to the bank, being it at a subsidiary level or on a group-wide basis. The state authorities are, anyways, allowed to fix this decision based on considerations of their internal market landscape.

The model also covers operational risk mitigation techniques. Specifically, insurance coverage of risk is now allowed but limited on the amount of coverage, length of the contracts and communication requirements to supervising bodies.

The shortcomings of the BIA and the standardized approaches are, therefore, reduced under this methodology thanks to more stringent qualifying criteria and more specific risks' categorization.

The qualifying criteria for eligibility make sure that the processes are self-supervising. In particular, to be granted the permission to use AMA, the bank must have an independent risk management function whose actions must be constantly monitored by the Board of Directors. Moreover, all the internal systems must be audited and

validated by national regulators to guarantee compliance with Basel II soundness standards. These standards concern the quality of internal loss data, the factors reflecting the business environment, the comparisons with external data and scenario analysis.

To improve the precision of risk management analysis, the accord created seven “risky events” categories, which classify losses for regulatory purposes. Each of the seven broad categories is then divided into specific loss-causing events (level 2) and supported by examples of these occurrences. The table below summarizes the seven risk categories and their level two subdivisions.

<b>Event-Type Categories (Level 1)</b>	<b>Categories (Level 2)</b>
<b>Internal Theft and Fraud</b>	Unauthorized Activity Theft & Fraud
<b>External Theft and Fraud</b>	Theft & Fraud Systems Security
<b>Employment Practices and Workplace Safety</b>	Employee Relations Safe Environment Diversity & Discrimination
<b>Clients, Products &amp; Business Practices</b>	Suitability, Disclosure & Fiduciary Improper Business or Market Practices Product Flaws Selection, Sponsorship & Exposure Advisory Activities
<b>Damage to Physical Assets</b>	Disasters and other events
<b>Business Disruption and Systems Failures</b>	Systems
<b>Execution Delivery and Process Management</b>	Transaction Capture, Execution & Maintenance Monitoring and Reporting Customer Intake and Documentation Customer/ Client Account Management Trade Counterparties Vendors and Suppliers

Table 7 Risk categories under AMA<sup>14</sup>

<sup>14</sup> This is a simplification of Annex 9 of the original framework. Source: Operational Risk Mitigation and Requirements under Basel II, Hansruedi Schütter, ©2006 RiskBusiness International Limited, available at: <http://www.ifc.org/ifcext/rbcp.nsf/attachmentsbytitle/opriskmitigationeng.pps>

Pillars two and three deal with the supervisory review and disclosure requirements related to AMA more specifically.

### Market Risk

The last section in Pillar I of the Basel II accord attempts to quantify the reserves needed to be held by banks due to market risk: the risk of loss in the portfolio of a bank due to movements in asset prices in financial markets.

As already mentioned, the treatment of market risk by the Basel Committee began in 1996 with the *“Amendment of the Capital Accord to Incorporate Market Risk”*, a publication aimed at implementing the Basel I accord. This amendment has been included in the new framework preserving its structure, with very few modifications.

Market risk is greater the larger and more complex the trading book of a bank is. This means that the more a bank trades on the market on its own account to profit directly and the more brokerage services it provides in order to benefit from the bid/ask spreads, the higher the risks of unexpected loss.

Market risk is indeed a catch-all name that refers to all the risks coming from market transactions both in stock markets and in over-the-counter transactions. Specifically, the risks coming from the market can be interest rate risk, equities’ volatility risk, exchange rate risk, commodities’ prices risk and others.

That is why, the agreement includes different provisions for positions in the market. The financial instruments that are considered in the document include:

- Fixed Income Securities (various types of obligations)
- Equity positions
- Commodities trading
- Foreign currencies exchanges
- Commodities
- Derivative products (Both regulated trading and OTC)

Since these instruments’ value changes over time in relation to the nature of the contracts, macroeconomic environment, market sentiment, and many other variables,

they need to be prudently valued on a daily basis before assessing the market risk attached to them and the consequent reserve requirements. The accord provides three different methodologies for evaluating their trading book price for regulatory purposes.

Mark-to-market, which the Committee deems the most accurate, refers to valuing the instruments according to their daily closing price in the stock exchanges or wherever they are traded.

Where mark-to-market is not possible (for example because the securities are not traded in official exchanges), banks are allowed to mark-to-model the price. This practice is defined as any valuation which has to be benchmarked or extrapolated from a market input. This methodology has to pass the approval of the supervising body, which is in charge of demonstrating its prudent nature.

The third way for pricing market positions is by entrusting an independent agency for the valuation of the trading book of a bank. This approach is the least preferred both by banks and by the BCBS, but can prevent conflicts of interest in the management of market risk.

As it was agreed for credit and operational risk, two approaches are proposed for measuring capital charges to prevent market risk: a standardized approach and an internally developed one. Each of them has its own general criteria, compliance standards and specifications for each financial instrument class. The two approaches will be explained briefly.

#### Market Risk: The Standardized Measurement Method

Under this approach market risk is computed for portfolios exposed to interest rate risk, exchange risk, equity risk and commodity risk. The agreement provides a special treatment for options.

The total capital charge for market risk for banks using the standardized method will be the sum of the charges for each of the covered risky positions.

It is highly conservative, in the sense that it adds up capital charge for each risk type. For this reason, it does not reward prudent diversification and does lead to higher capital charges. Another problem with this method is that it is mainly focused on the short-run, since capital charges are computed on a daily basis. This can magnify risk-mis-estimating issues.

The positive aspect of the standardized model is that it takes into account a large number of market related issues and that it analyzes each component of market risk from a security specific point of view and a trading portfolio overall perspective. Also for each type of risk taken into consideration it offers multiple options for the calculation of minimum capital requirements. For this reason, it would be exhausting and out of the purpose of this paper to provide a full set of explanations for each capital charge calculation model. The table below summarizes the main argument for each charge.

<b>Overview of the Standardized Approach</b>	
<b>Risk Type</b>	<b>Capital charge</b>
<b>Interest rate Risk</b>	
Bonds, loans, other fixed income securities. Can be issuer specific or market related	Specific Risk: fixed charges to each security according to its rating. No offsetting long and short positions General risk: fixed charges to the net trading book of a bank (after offsetting) based on duration or time to maturity
<b>Equity Risk</b>	
Risk brought by volatility of stock market. Accord considers different positions: shares, equity derivatives, stock index arbitrage	Shares are charged both for specific risk and for general risk according to the liquidity of the single shares and total portfolio and to the level of portfolio diversification. Futures, forward and other derivatives can offset equity positions but are subject to specific requirements. Capital surcharge for index arbitrages
<b>ForEx Risk</b>	
Risk of loss in the trading book caused by appreciation and depreciation of currencies.	Capital charge is fixed at 8% of the net foreign currency position(long minus short) of the bank plus net position of gold reserves.
<b>Commodity Risk</b>	
Involves changes in the price due to movements in supply and demand of commodities. The effects vary between spot and forward trading	Three capital charges for different risks identified: Basis risk (the risk of similar commodities overtime), interest rate risk (changes in yield for forward and other derivatives), forward gap risk (the risk for changes in the forward price for reason other than the interest rate).
<b>Options</b>	
Used to hedge positions in other instruments. Different measurement for banks that only trade options and those that underwrite them.	Simplified approach (only traders): capital charge equal to that of underlying security; Delta plus : options will be weighted like the underlying securities plus surcharges for variability in value of the option; Scenario approach: charge according to a matrix of possible situations.

Table 8 Summary of the Standardized approach for market risk requirements



In sum, a bank using the standardized approach to cover the risks coming from the market will pay a capital charge equal to:

*Total Market Risk Charge = Interest Rate Risk Charge + Equity Positions Risk Charge + Foreign Exchange Risk Charge + Commodities Charge + Option Trading Charges.*

### Market Risk: Internal Models Approach

The standardized method gives a useful overview of the positions in the trading book of the international bank but it is oftentimes too requiring and undifferentiated. The Basel II accord gives the opportunity for banks to develop their own internal models for forecasting value at risk (VaR) in their trading book. VaR is a technique used to estimate the probability of portfolio losses (over a given time horizon and assuming normal market behavior) based on the statistical analysis of historical price trends and volatilities.

In order to be permitted to calculate the capital requirements internally, the model developed by the bank must comply with some quantitative and qualitative requirements; it must pass a stress testing procedure and get the approval of the national supervisor.

The qualitative standards require an independent risk control unit responsible for the design and implementation of the bank's risk management system, which should be integrated into top management decisions. The supervising body will validate the internal model initially and overtime. Furthermore, regular back-testing for system deficiencies and exceptional market movements are required to be performed internally and lead to a surcharge.

The quantitative parameters for internal VaR models require that calculations be based on the following inputs:

- “Value-at-risk” must be computed on a daily basis
- In calculating the value-at-risk, a 99th percentile, one-tailed confidence interval is to be used

- “Holding period” of a security is fixed at ten trading days
- “Effective” historical observation period for the security must be at least one year
- Banks should update their data sets once every three months and should also reassess them whenever market prices are subject to substantial changes

No particular type of model is prescribed to any bank that satisfies these requirements, but the statistical system should capture all the material risks run by the bank including the unique risks associated with options within each of the broad risk categories

Each bank must meet, on a daily basis, a capital requirement expressed as the higher of its previous day’s value-at-risk number measured according to the quantitative parameters and an average of the daily value-at-risk measures on each of the preceding sixty business days, times a multiplication factor.

The multiplication factor represents a violation penalty. A violation involves the actual negative returns exceeding the VaR forecast negative returns for a given day. This factor is subject to an absolute minimum of 3.

Daily capital charges are computed as follows:

$$DCC_t = \sup \left\{ -(3+k) \overline{VaR}_{60}, -VaR_{t-1} \right\}$$

where:

- $DCC_t$  is daily capital charges, which is the higher of  $-(3+k) \cdot (VaR)_{60}$  and  $-VaR_{t-1}$ ,
- VaR is Value-at-Risk for day t,
- $VaR_{60}$  is the mean VaR over the previous 60 working days,
- $(3+k)$  is the multiplication factor for violations. k is a variable related to the number of violations in a working day. It is fixed by the accord according to the following scheme:

Zone	Number of Exceptions	Potential Increase in $k$
Green	0 to 4	0.00
Yellow	5	0.40
	6	0.50
	7	0.65
	8	0.75
	9	0.85
Red	$\geq 10$	1.00

Table 9 Violation penalties under Internal model Approach<sup>15</sup>

Following the quantitative and qualitative requirements many statistical models have been developed in the banking sector worldwide to forecast value at risk. For a detailed description of the most common models see McAleer et Al. (2009)

Once the models are tested for compliance with the standards, the bank should perform a stress test on its trading portfolio.

Stress testing refers to a simulation technique used on trade portfolios to determine their reactions to different financial situations. Changing factors could include interest rates, lending requirements and financial market downturns. For the purpose of validating a VaR model, stress tests need to identify events or influences that could greatly impact banks. Stress scenarios need to cover a range of factors that can create extraordinary losses or gains in trading. The Committee suggests that stress tests should be both of a quantitative and qualitative nature, incorporating both market risk and liquidity aspects of market fluctuations. Banks usually perform these tests through computer-generated simulation models that test hypothetical scenarios. These scenario analyses are also used in the ordinary businesses of banks to spot undetected weaknesses in their portfolio.

Finally, the whole internally developed model is required to pass the approval of the national authority or of an external auditor.

The benefits for a bank using IMA are numerous. First of all, internal VaR systems are supposed to be more precise since they account for correlations in asset returns. This improved risk sensitivity is likely to result in lower market risk capital charges. Moreover, with improvements in risk measurement techniques, IMA will enable

---

<sup>15</sup> Source: Annex 10a of the original framework

capital charge to be even more precise enhancing a better alignment of regulatory capital requirements with economic capital. The prospect for lower requirements also encourages innovation in risk management techniques and leads to higher competitiveness in best practices of risk and capital management, generating operational efficiencies hence reduced costs.

### Total Capital Requirements

Because of the wide range of methodologies used by banks and the diversity of bank loan-books, Basel II allows a great deal of variation in its calculated reserve requirements. Once it has calculated its total risk-weighted assets and the additional reserves needed to guard against operational and market risk, it can establish the total reserves considered necessary to achieve “capital adequacy” as defined by Basel II

The agreement leaves unchanged the capital requirement for credit risk at 8% of its risk weighted assets, out of which at least 4% must be met with tier 1 capital reserves. The rest of the requirements will be covered by tier 2 capital, whose amount is fixed at 100% of tier 1. Tier 3 is allowed to cover portfolio risk up to 250% of tier 1. In sum, total reserves needed for capital adequacy are:

$$\text{Reserves} = .08 * \text{Risk Weighted Assets} + \text{Operational Risk Reserves} + \text{Market Risk Reserves}$$

### Pillar 2 – Supervisory Review

Pillar 1 of Basel II addresses the most important risks (credit, operational, trading and securitization) that a bank faces but there are several other uncertainties that threaten banks activities. The main intention of the supervisory review process is, indeed, to ensure that banks have adequate capital to support all of the material risks in their business. Pillar II does so by addressing regulator-bank interaction and by extending the rights of the regulator in bank supervision and dissolution.

The Committee acknowledges that the ultimate responsibility for business decisions and strategy is in the hand of the bank’s management, so it is their job to ensure that

the entity is adequately capitalized to support the risks beyond the core minimum requirements covered in pillar 1. Consequently, compliance with pillar 2 requires firstly that a bank develop its internal risk management strategies and a consistent process to set capital targets that are appropriate with their overall risk profile (including pillar 1 risks).

Pillar 2 also emphasizes that national supervisors should monitor each individual bank capital adequacy, in order to prevent the economy-wide implications of a bank failure. For this reason, the accord requires that regulator evaluate how banks assess their capital needs (i.e. review the models used for pillar 1 compliance and other internal risk monitoring processes) and intervene where appropriate.

Basel II puts forward four guiding principles of the supervisory review process:

- i. *Banks must have a process for assessing their overall capital adequacy in relation to their risk profile and a strategy for maintaining their capital levels*
- ii. *Supervisors should review and evaluate banks' internal risk assessments and strategies and should take appropriate action if the results of this process are not satisfactory*
- iii. *Supervisors should expect banks to operate above the minimum regulatory capital ratios*
- iv. *Supervisors should seek to intervene at an early stage to prevent capital from falling below the minimum levels required to support the bank's risk characteristics*

The first principle explicits that it is the duty of the bank to address all material risks faced. The supervisor intervention is required only when it is clear that the capital is below the minimum requirements.

The accord provides several examples of supervisory intervention. Three specific issues to be addressed by national authorities under the supervisory review process are considered below.

### Residual Risks of pillar 1 consideration

It is very likely that the measurement methods used by banks to quantify pillar 1 risks do not include all material risks associated with credit default, market movements and operations.

An optimal example of residual risk is credit concentration risk, which refers to the risk of loss magnification caused by assets which are closely related (positively correlated). This means that borrowers in a concentrated portfolio tend to fail to meet obligations together. As a result, PDs and LGDs factors cannot be considered independently in the calculation of MCR and therefore such a portfolio does not possess the characteristics for estimation techniques to work adequately.

It is the job of the supervisor to consider the approach taken by banks to meet model risks, namely those risks arising from the underlying assumptions made in the IRB equation. Supervisors must ensure that a bank takes a conservative approach to capital calculations, especially in the case of concerns about the robustness of model assumptions.

#### Risks not covered by pillar one

Other risks deemed to be important by the commission that are not (but should have been) considered in pillar 1 are included within the supervisory review process. This decision stems from the fact that methods for the calculation of these risks' impact are widely different across banks. Two examples are: Interest Rate Risk in the Banking Book (IRRBB) and Liquidity Risk.

IRRBB is the risk to interest income of a bank that arises from a mismatch between the duration of assets and liabilities. Whereas interest rate risk in the trading book is considered under pillar one, IRRBB is just as important. Basel II provides guidelines to incorporate in the IRB models this kind of risk.

Liquidity is crucial to the viability of a banking institution. Since capital positions can have effects on the ability of a bank to obtain liquidity, especially in times of crisis, each institution is required to have internal systems for measuring, monitoring and controlling liquidity risk. Banks are supposed to evaluate capital adequacy on the basis of their own liquidity profile and that of the market in which they operate.

### Risks posed by the external environment

These are the risks arising as a consequence of the macroeconomic state, so are directly related to business cycle effects. The business cycle can have a number of effects on banks' capital requirements. Most evidently, it is very likely that in the case of a banks' failure during an economic downturn, recovery values for liquidated assets will be lower than normal, leading to a higher LGD values.

For this reason, capital requirements are defined as pro-cyclical: they increase during booms and corrode during recessions. Beyond stress testing to verify the output of the increased LGD values on the bank, pillar 2 provides the supervisor with the possibility to implement a counter-cyclical capital buffer but does not prescribe its adoption.

While pillar 1 framework for capital requirements is relatively advanced, Basel II does not provide clear processes for determining pillar 2 capital requirements.

### Pillar 3 – Market Discipline

The third leg of the second Basel accord deals with disclosure requirements which allow market participants to assess key pieces of information on capital, risk exposures, risk assessment processes, and hence the capital adequacy of the institution.

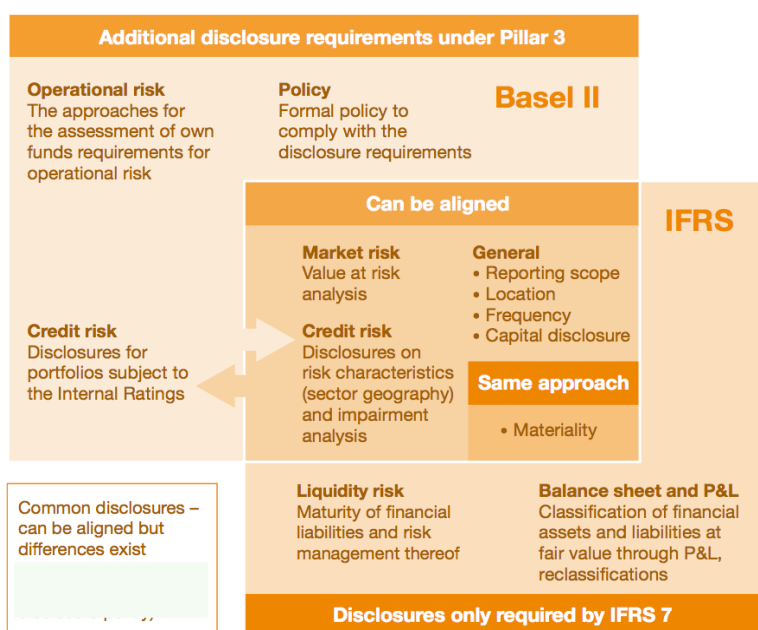
Market participants have an interest in assuring that banks are adequately capitalized and through their actions they can encourage prudent behavior of the bank. The market disciplines itself when enough and comparable information is publicly available.

Statistics such as the aggregate amounts of surplus capital (both Tier 1 and Tier 2) held by a bank, risk-weighted capital adequacy ratios, reserve requirements for credit, market, and operational risk, and a full description (with assumptions) of the risk

mitigation approaches of a bank are recommended to be released to the general public on a semiannual basis under the Basel II standards.

One important consideration on pillar 3 is its interaction with the international accounting standards, more specifically with IFRS-7 which addresses the additional information about financial instruments that a bank must disclose.<sup>16</sup> Some data required by pillar 3 can be aligned with disclosure standards. For those disclosures that are not mandatory under international regulation, banks can decide to provide the information to the regulator and the public through other means like their corporate website or public repository archives. The most important alignment is that the two regulations follow the same principle of materiality. Information is regarded as material if its omission or misstatement could change or influence the assessment of a user relying on that information to make economic decisions<sup>17</sup>.

The following figure illustrates the main overlaps and differences between pillar 3 and IFRS 7 requirements.



Source: PricewaterhouseCoopers

Figure 4 Analysis of the overlaps between IFRS-7 and Pillar 3 Disclosures<sup>18</sup>

<sup>16</sup> For more information on IFRS-7 visit <http://www.ifrs.com/>

<sup>17</sup> Definition from paragraph 817 of the original framework

<sup>18</sup> Source: Basel II Pillar 3: Challenges for banks, Christophe Cadiou and Monika Mars, PricewaterhouseCoopers (2007). Available at: [http://www.pwc.com/en\\_GX/gx/banking-capital-markets/pdf/basel.pdf](http://www.pwc.com/en_GX/gx/banking-capital-markets/pdf/basel.pdf)



Finally, the transparency requirements of the third pillar apply to material information but not to any proprietary or confidential information that, if made known to the public (hence also to the bank's competitors), could decrease the value of the bank or reduce its competitive advantage.

Since its initial version of June 2004, one amendment was included in the Basel II framework. It was first published as an independent paper in 2005 under the title "*Application of Basel II to Trading Activities and the Treatment of Double Default Effects*". It has then been included in the comprehensive framework in June 2006.

In the original Basel Accord of 2004, banks are allowed to adopt a so-called substitution approach to hedged exposures. Roughly speaking, under this approach a bank can compute the risk-weighted assets for a hedged position as if the credit exposure was a direct exposure to the obligor's guarantor. Therefore, the bank may have only a small or even no benefit in terms of capital requirements from obtaining the protection. Since the 2006 amendment, for each hedged exposure the bank can choose between the substitution approach and the so-called double default treatment. The latter, takes into account that the default of a hedged exposure only occurs if both the obligor and the guarantor default ("double default") and thus seems to be more sophisticated and realistic than the substitution approach.

No further modifications have been made to the document. Anyways, since the accord is just a "gentlemen's agreement" and not a binding regulation, each country was allowed to implement it in their national legal systems with discretion and phasing time differences.

The next section of this paper deals with the implementation of Basel II in the different economies with particular regard to the differences across countries.

## **Considerations on Basel II implementation and impact on the banking sector**

One of the most difficult aspects of implementing an international agreement is the need to accommodate differing cultures, varying structural models, and the complexities of public policy and existing regulation. Banks' senior management will determine corporate strategy, as well as the country in which to base a particular type of business, based in part on how Basel II is ultimately interpreted by various countries' legislatures and regulators.

Basel II is much more complex than its predecessor, so complex indeed that implementation around the globe posed several problems. The changes required both in the regulation and supervision of banks, in their risk management and ordinary activities are so far-reaching that it may be considered as one of the most important elements of the global financial system. Moreover, its adoption can influence international political negotiations in finance sharply. This means that different implementing bodies have an interest which transcends from the purely technical impact on the banking sector. These conflicts of interest have led to differences in implementation timelines and particulars around the globe.

With a view of achieving the greatest possible consistency and in order to be able to monitor and review the application of the framework around the globe, the BCBS established the Accord Implementation Group (AIG), to encourage national supervisors to exchanging information on implementation approaches.

As it was the case for the implementation of the first accord, the European Commission worked in close contact with the BCBS to realize a EU version of the Basel II framework. Indeed, the European regulators were the first to implement the second agreement. By June 14<sup>th</sup> 2006 the EP voted for the enactment of two pieces of legislation, 2006/48/EC and 2006/49/EC, the so-called Capital Requirement Directive (CRD). The former directive relates to the taking up and pursuit of the business of credit institutions while the latter regards the treatment of capital adequacy of investment firms and credit institutions. The major difference with the Basel II accord is that the CRD scope is widened to all credit institutions (including national banks, building societies and all investment firms) in the European territory, instead of

addressing only international banking issues as it is the case for Basel II. In order to smooth the transition to the new regulatory framework of such a large population of FIs varying in size and sophistication, the EC introduced some EU-specific solutions such as the possibility for credit institutions to use the IRB for some exposures and the SA for others. In addition, the CRD stipulates how supervision must be exercised and how the cooperation among the supervisory authorities within the EU should be arranged.

Like many other Europe wide legislations, the implementation of the CRD followed a Lamfalussy Process, named after its creator Alexander Lamfalussy. It is composed of four "levels," each focusing on a specific stage of the implementation of legislation.

At the first level, the European Parliament and Council of the European Union adopt a piece of legislation, establishing the core values of a law and building guidelines on its implementation. The law then progresses to the second level, where sector-specific committees and regulators advise on technical details, then bring it to a vote in front of member-state representatives. At the third level, national regulators work on coordinating new regulations with other nations. The fourth level involves compliance and enforcement of the new rules and laws. The following figure represents the steps in the decision making process for the implementation of the CRD in European Countries.

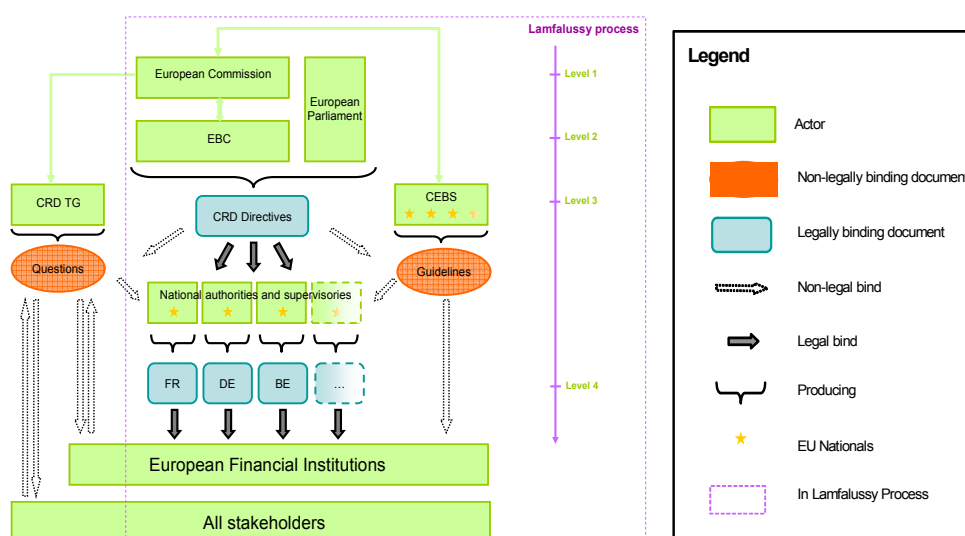


Figure 5 Lamfalussy Process for the implementation of the CRD<sup>19</sup>

<sup>19</sup> Source: "What are the building Blocks for implementing Basel II in Europe?", CEPS Task Force Report, June 2008

In light of the Basel II developments in Europe, it is important to analyze the US decisions concerning the implementation of the framework to American Banks. The debate on the application of the second Basel accord was very controversial since many types of state-related and private influential institutions lobbied aggressively to protect their specific interests. Indeed, the final publication and adoption of the Notice of Proposed Rulemaking (NPR), issued by the Federal Reserve by the end of 2006, was not accomplished until November 2007. The figure below highlights the main players involved in the finalization of the NPR for the implementation of Basel II in the USA.

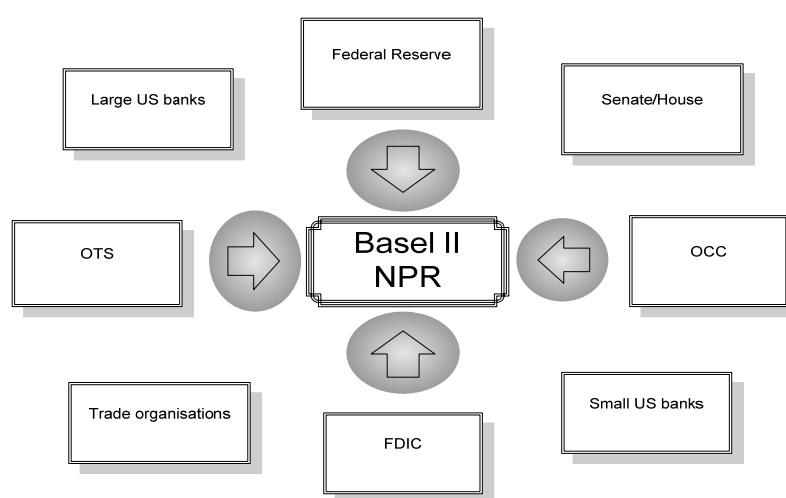


Figure 6 Basel II decision-making stakeholders in the US<sup>20</sup>

Each player depicted had its own perspective about the implementation and this caused slow compliance timelines along with inconsistencies in application of the new rules with respect to other implementing countries (especially the EU).

There are three major variations between the American approach and the European approach for the implementation of Basel II. Most importantly, the scope of the application is different: Only a few financial institutions have to implement Basel II in the United States, that is, only core banks (\$250 billion or more consolidated total assets, or \$10 billion or more total on-balance sheet foreign exposure). These banks will implement the advanced approaches only. Indeed, the US rules on the standardized approach have been published only in 2008 and adopted in 2009 to include the rest of the US banking system in the regulatory landscape.

<sup>20</sup> Source: "Will Basel II be implemented consistently around the globe?", CEPS Task Force, June 2008

All financial institutions have to implement Basel II in the European Economic Area. These banks do not have to implement the advanced approaches only. They may implement simpler approaches, especially for a part of their portfolio.

Another important inconsistency in the regulatory perspectives concerns pillar 2 requirements. Financial institutions in the European Economic Area have to implement the detailed guidelines of the Committee of European Banking Supervisors (CEBS) for the application of the Supervisory Review Process. The rules in the United States are more general. There are fewer guidelines or details.

Finally, the two continents differ in their definition of default of a banking institution. In the United States, for wholesale exposures, default is triggered by the non-accrual status, i.e. it includes secured past due amounts. For retail exposures, there are two benchmarks at 180 days and 120 days respectively. In the European Union they follow the general 90 days definition of the Basel II agreement.

The Asia-Pacific region presents a relatively unique situation from a banking regulation perspective, both in a regional and global context. The region comprises a range of vastly different financial markets spread out across the development spectrum. Furthermore, and unlike Europe and USA, no continent-wide regulation framework exists. These unique circumstances have shaped how Basel II is implemented. The most advanced markets like Australia, Japan, Hong Kong and Singapore have a solid financial system and are currently adopting even stricter capital requirements than Basel II. In countries with emerging financial markets such as China, India, Thailand, Malaysia and other Southeast Asian countries, adoption plans and implementation timelines vary, but have favored the international accords.

Implementation of Basel II in most emerging economies is much harder task as those countries with developing financial markets may lack the expertise needed for the internal calculations models, may not have sufficient funds to have their securities rated by certified rating agencies; their national regulatory framework may not be as technical as Basel II, or the market may be in a situation in which the market participants are not as prepared and informed as the readers of the financial

statements in the industrialized economies and therefore might not impose a strong market discipline.

The latest survey on the worldwide implementation of Basel II, carried out by the Financial Stability Institute in August 2010<sup>21</sup>, shows that 64 countries around the globe have implemented the three pillars and a total of 112 jurisdictions will finalize the implementation of the second capital adequacy framework by 2015. The next table shows the results of the survey concerning the implementation timeline.

**Overview of Basel II implementation - timeline**  
(by number of jurisdictions; cumulative figures over time)

Region	2008	2009	2010	2011	2012	2013-2015*
Africa	1	1	4	6	8	15
Americas**	2	2	5	5	9	17
Asia	7	9	12	13	14	17
Caribbean	-	1	1	1	1	8
Europe	29	32	35	38	38	45
Middle East	4	4	7	7	8	10
Total	43	49	64	70	78	112

\* including jurisdictions that have not indicated a definite timeframe for implementation of all three pillars.

\*\* includes the United States, Canada and Latin America.

Table 10 Overview of Basel II implementation – timeline<sup>19</sup>

As it can be observed from the table, Basel II has been widely implemented across the world. The survey also shows that the Standardized approach is the most commonly used technique for assessing credit risk (96 jurisdictions out of 112), while only about one half of the implementing countries (the more advanced economies) intend to offer the two internal ratings based measurements. The Basic Indicator Approach is the most employed technique for quantifying operational risk.

Overall, the 2010 survey indicates that a large number of regulatory bodies will be offering the advanced approaches for credit risk and operational risk under pillar 1. As many as 61 jurisdictions will allow the use of A-IRB for credit risk and 59 will be offering AMA for operational risk by 2015.

<sup>21</sup> “2010 FSI Survey on the implementation of the new Capital Adequacy Framework”, August 2010, FSI Occasional Paper No9.

Pillar 2 and Pillar three are also widely implemented. The result of the study indicates that 90 countries are implementing pillar 2 in their legal systems and 93 of them are embodying pillar 3 disclosure requirements.

All the results of the 2010 survey can be considered satisfying but the study shows a comparison with the same survey carried out in 2008, which demonstrates a marginal decline, both in the short-run and in the long-run, of the number of countries implementing Basel II. The reason for this decline can be ascribed to the busy agenda and the budget constraints of the governments that, in the current years, are dealing with the effects of another “little” mistake of the banking industry in primis and of the financial sector in general, which has led to disastrous outcomes in worldwide Real economies.

The systemic crisis that was tried to be prevented by means of the Basel II capital requirements has indeed shown up. Starting from the US, the interconnectedness of the financial system has caused huge losses across the whole world. There have been a lot of claims that Basel II played a role in the crisis, the following paragraphs will present some stylized facts about the recent financial crisis and the arguments raised by Basel critics.

## **The Financial Crisis and Basel II**

The 2007-2008 financial crisis, which erupted in the US sub-prime mortgage sector, has its roots in the evolution of the business model of banks, especially in the Anglo-Saxon's world. Major international banks have gradually changed the nature of their operations from granting a loan and then holding it until maturity (buy and hold), to a business model where loans are first originated and then securitized (originate-to-distribute, OTD). This practice has pros and cons: it is certainly good because loans are now re-sold and money circulates, thus giving thrust to the economy as a whole, but, on the other hand, it favors a high level of leverage and a likely reduction in the intermediaries' incentives to monitor the risks in their loanbooks.

Banks originating sub-prime loans have subsequently sold these mortgages to other institutions, often unregulated ones, and used the revenues for granting new loans. The pools of securitized loans have been tranching according to their creditworthiness by rating agencies and sold in the market. When the quality of the subprime mortgages started to deteriorate, due to the fall in US housing prices and rising interest rates, the securities started to lose value, causing losses to their investors. By the summer of 2007 the subprime market had collapsed, the banks in the USA had lost so much money and were experiencing liquidity shortages. All this mess caused widespread disruptions in the interbank market also because problems in the subprime sector have then affected the markets of other structured financial products, which were too complex and illiquid to be correctly valued by market participants in times of stress. Throughout 2008, the world has witnessed a large number of bank failures, the most remarkable of which is that of Lehman Brothers Inc, in 15 September 2008, which was a very systemically important piece of the banking sector, both in terms of size and interconnectedness levels. Indeed, the bank had a huge exposure to subprime mortgages and eventually lost all its capital for paying their debts until bankruptcy. What was even the worse, is that many banks around the globe held Lehman Brothers assets or shares and had consequently many write-offs in their balance sheet. Lehman Brothers is just an example; most of the huge American and European Banks were experiencing the same problems because of these toxic assets and their worldwide interconnectedness. Moreover, the market had lost its confidence in the banking sector, making things even worse.

In order to prevent the collapse of the entire financial system or, some say, of the entire capitalism, the governments of the industrialized economies had to undertake a large number of nationalizations of financial institutions (e.g. Fannie Mae and Freddie Mac in the USA, Northern Rock in the UK) and very expensive bailouts (more than \$700billion only in the US and about as much in Europe). By spending all this money in the salvation of banks, though, the countries run huge budget deficits, forcing them to cut public expenditures and therefore making their citizens sustain the burden of sacrifice of the crisis.

Most importantly, since banks' profitability and liquidity decreased drastically, the financial crisis turn into an economic crisis, were banks could not grant credit to companies and companies stopped investing. This, in turn, led to losses on output and



more than two years of worldwide recession. The next figure shows the negative GDP of most industrialized countries at the bottom of the cycle.

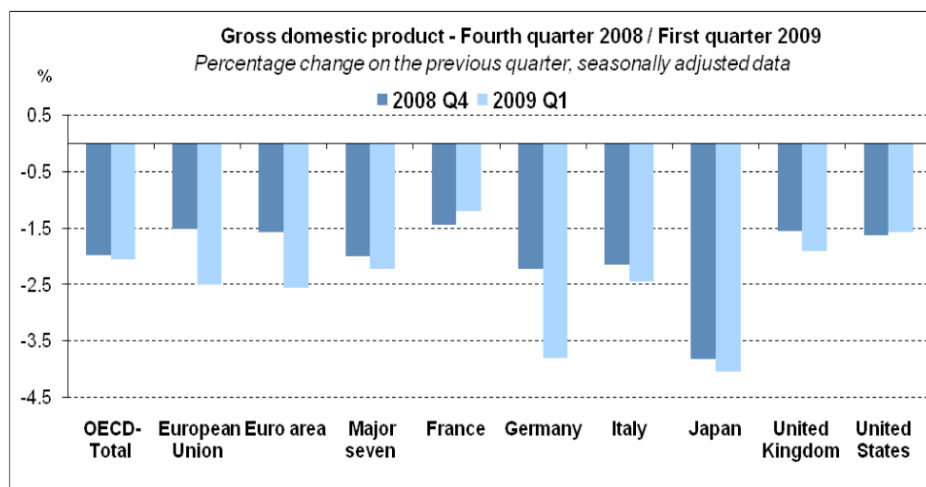


Figure 7 OECD Recession Figures<sup>22</sup>

Even if most countries' GDP has started to grow again by Q4 2009, they are still far back from the pre-crisis aggregate production and the workforce of the world is paying the price for this. Unemployment levels are at their highest since decades consistently across the industrialized economies, millions of people have lost their job and the recovery seems slow. For all these reasons, the financial crisis has led people to think of it as the worst period since the great depression of the 30's.

Going back to Basel II, the first and most loud argument about its involvement in the roots of the financial crisis is that the new framework had caused a decrease in the total overall capital requirements of banks, despite the excessive risks they were undertaking, and could not cope the huge losses of the crisis. Indeed, after Basel II capital requirements of most banks have been lower, as shown in the next table, which shows the change in minimum capital requirements from the 1988 Accord.

<sup>22</sup> Source: <http://www.oecd.org/crisisresponse>

<b>Approach</b>	<b>'Most likely'</b>	<b>RSA</b>	<b>FIRB</b>	<b>AIRB</b>
G10 Group	(6.8)	1.7	(1.3)	(7.1)
G10 Group 2	(11.3)	(1.3)	(12.3)	(26.7)
CEBS Group 1	(7.7)	(0.9)	(3.2)	(8.3)
CEBS Group 2	(15.4)	(3.0)	(16.6)	(26.6)
Other non-G10 Group 1	(20.7)	1.8	(16.2)	(29.0)
Other non-G10 Group 2	19.5	38.2	11.4	(1.0)

\* Figures do not take into account of the transitional floors.

Notes: RSA = Standardised approach; FIRB = Foundation internal ratings-based approach; AIRB = Advanced internal ratings-based approach; 'most likely approach' = the only approach for which a bank provided data and which it is expected to adopt after implementation is reported.

Group 1 banks fulfil all of the following three criteria: Tier 1 capital in excess of €3 billion, the bank is diversified and the bank is internationally active.

Table 11 Changes in MCR from the 1988 accord<sup>23</sup>

Even if capital requirements could have been lower due to the incentives for using the advanced approaches, the timing of the crisis has prevented banks from fully carrying out this self-assessment and increasing capital cushions as well as supervisory authorities to check their adequacy.

Another strong critique of the framework has been that capital requirements based on Basel II calculations are cyclical and therefore tend to reinforce business cycle fluctuations. Since Basel II entails greater sensitivity to risk of minimum capital requirements, cyclicity is the result of both changes of capital levels and fluctuations of risk-weighted assets (due to the migration of customers from better to worse rating classes). Also this critique is founded but, in defense of the accord, it can be argued that pillar 2 provides regulators with tools for dealing with this shortcoming.

Other opinions on the guiltiness of Basel II include: the conflicts of interest of the rating agencies as central for credit assessment; the critique that internal models for credit risk are not superior as expected; and that the framework provides incentives to take off-balance-sheet some very risky exposures. For a detailed discussion of these issues see *Cannata and Quagliariello (2009)*

<sup>23</sup> Source: "What are the impacts of risk-sensitive capital requirements?" – CEPS Task Force, June 2008

The most important remark on the connection between Basel II and the financial crisis is that, indeed, in the United States, which were the epicenter of the crisis, the full implementation of the three pillars of Basel II had been postponed to 2010 (and in Europe full implementation was reached in 2008). Therefore, the financial turmoil occurred under the Basel I framework, making very palpable its shortcomings, particularly its low risk-sensitivity and the scarce adaptability to financial innovation.

However, the crisis has been caused by banks and has shown some shortcomings of the framework and of banking supervision and regulation in general.

Having experienced the effects on the financial disaster on the real economy and on the government budgets, the leaders of the world have started to think new, tougher, regulation for the banking and financial sectors. Some of the recently approved rules include CRD II & III and the Obama Financial Reform.

The CRD II, covering amendments related to own funds, large exposures, supervisory arrangements, qualitative standards for liquidity risk management and securitization, was adopted by Member States and the European Parliament in September 2009 and will enter into force on 31 December 2010<sup>24</sup>.

CRD III, addressing capital requirements for the trading book and re-securitization, disclosure of securitization exposures, and remuneration policies reflects consultation with Member States, banking supervisors and industry. It is now under revision from the European Parliament and the Council of Ministers for final adoption<sup>25</sup>.

The recently passed USA financial reform, aims at strengthening existing rules for financial firms, financial markets and consumer protection. Furthermore it deals with

---

<sup>24</sup> For more information on CRD II visit the official site of the Basel ii Compliance Professionals Association (BCPA) [www.crd-ii-com](http://www.crd-ii-com)

<sup>25</sup> For more information on CRD III visit the official site of the Basel ii Compliance Professionals Association (BCPA) [www.crd-iii-com](http://www.crd-iii-com)

international operation of banks, and allocates new supervisory powers to the SEC and the FED<sup>26</sup>.

Besides these actions taken by individual legislators to prevent a new systemic crisis, in 2008, the Basel Committee for Banking Supervision started a round of consultations with member states, sectorial organizations and financial market participants, to agree on a new set of rules that would modify the Basel II agreement, without modifying its three pillars structure, with the same aim of deterring the event of a new financial crisis. The following sections will analyze the set of documents included in the new prudential regulations along with a discussion on the implementation timeline, the results from the quantitative impact studies carried out and the possible outcomes on the world economy of what has been labeled the “Basel III” agreement.

### **Basel III**

Soon after the wake of the financial crisis, the BCBS started, in conjunction with other international organizations like the FSB, to gather data on the possible causes of the crisis, in order to develop a set of rules for preventing new failures in the financial system. The objective of the BCBS proposed reforms is to improve the banking sector’s ability to absorb shocks arising from financial and economic stress, whatever the source, thus reducing the risk of spillover from the banking sector to the financial one and to the real economy, as a consequence of the interlinkages among these areas. The quantitative and consultative process resulted in a set of documents supposed to amend the Basel II framework and to add other prudential measures that deal with other important fallacies in the regulatory system that have been highlighted during the recent financial turmoil. The new proposals contained in the BCBS publications, which many are calling Basel III, are likely to have a strong impact on the European Banking Sector firstly (as usual the EU lawmakers are developing the CRD IV, which

---

<sup>26</sup> For more information on the Obama Financial Reform visit <http://blogs.wsj.com/washwire/2009/06/17/obamas-financial-reform-plan-the-condensed-version/>

will implement Basel III in the European continent, in parallel with the Basel Committee), and will set the tone for local regulations all over the world.

At the time speaking, however, the national governments have not yet formalized the adoption of the new framework. This rulemaking agreement is expected by November 2010 G20's meeting in Seoul, but already in September of this year the BCBS members announced their commitment to implementation.

The first two consultative documents, issued for comment in December 2009, comprise the Basel III proposals' structure and benchmark figures for the new standards, but postpone the fixing of the new requirements until after the comments are received and the results of the impact assessment and stress tests have come out. These are called: *“Strengthening the Resilience of the Banking Sector”* and *“International Framework for Liquidity Risk Measurement, Standards and Monitoring”*.

Indeed, during the spring of 2010, official quantitative impact assessments and stress tests have been conducted on international banks by the BCBS itself and other organizations like the FSB, the EBF, the FSA and private consulting firms, which showed that both the short term and long term impact of the stronger capital and liquidity requirements would carry extremely high costs in the short-run to arrive at more stable and resilient banking sector. This, coupled with the slow recovery for the world economy and aggressive lobbying by the banking sector, has led to a relaxation of the implementation timeline. The results of the QIS6 will be presented after the discussion of the proposed changes.

There are other two consultative documents, issued between July and August 2010, which together with the December 2009, constitute the Basel III compendium. These are: *“Countercyclical Capital Buffer Proposal”* and *“Proposal to ensure the loss-absorbency of capital at the point of non-viability”*.<sup>27</sup> The purpose of these documents is the specification of measures that in the earlier documents were only mentioned and that could have been formulated only after the comments were received and the QISs carried out.

The new proposed reforms address the market failures revealed by the crisis. These reforms strengthen bank-level regulation to raise the resilience of individual banking institutions to future periods of stress. At the same time, the reforms address risks that

---

<sup>27</sup> The full text of the four documents cited in this page can be found at: <http://www.bis.org/list/basel3/index.htm>

can build up across the banking sector as well as the pro-cyclical amplification of these risks overtime. Clearly, these two micro- and macro-prudential approaches to supervision are interrelated, as greater resilience at the individual bank level reduces the risks of system wide shocks.

In sum, the key proposed elements under the new regulatory framework are:

1. The quality, consistency and transparency of the capital base will be raised to increase loss absorbency.
2. The risk coverage of the framework will be expanded to cover risk exposures arising from derivatives, repos and securities financing activities. This will increase incentives to move such transactions from the OTC market to some form of central clearing house or exchange.
3. A leverage ratio will be introduced as a supplementary measure to the risk based framework in order to contain the build of excessive leverage in the system and to help address model risk.
4. A countercyclical capital framework to promote the build up of capital in good times that can be drawn upon in periods of stress.
5. Introduction of new global minimum liquidity standards.
6. Special measures addressed at systemically important institutions (i.e. TBTF, TITF).

The remainder of this section analyzes each of these key reform proposals in detail, to arrive at a complete picture of the Basel III framework, in order to discuss its probable effects on banks and the whole economy.

### Raising the Quality, Consistency and Transparency of the Capital Base

An important lesson learned from the crisis is that the regulatory framework must not only capture the key risks to which a bank is exposed, but these risks must be backed by a high quality capital base that is capable of absorbing losses as they occur. Indeed, the banking sector entered the crisis with insufficient quality of capital because of certain flaws in the current definition of capital. Most importantly, regulatory adjustments are not deducted from common equity (i.e. core tier 1), but from total tier

1 or total capital. This allows banks to report a high tier 1 ratio while holding as little as 2% common equity net of regulatory adjustments. Secondly, the regulatory capital base application across different nations varies substantially, undermining the consistency of the framework. Lastly, the disclosure provided by banks about the capital base is often deficient, thus making less transparent to the market the real economic situation of a bank. These shortcomings highlighted by the crisis are tried to be resolved by the Basel III requirements.

The quality and consistency of capital is raised by recognizing a core tier 1 element composed only of common equity (common stock + retained earnings). All the regulatory deductions, for example goodwill, will be done to core tier 1. Other elements comprising tier 1 capital will have to meet more stringent criteria in order to ensure loss absorbency during the going concern of the bank. These elements need to be subordinated, need not to have a maturity date nor any incentive to redeem. Any form of innovative instruments, like step-ups, options on common stock and other complex financial products will be phased out from tier 1. Tier 2 capital will be simplified to include instruments capable of absorbing losses when the bank has gone concern. All the elements composing it must be in the form of subordinated debt with maturity of less than five years. Recognition of these instruments as regulatory capital will also be amortized on a straight-line basis during the final five years to maturity. The option to recognize a tier 3 capital for market risk at national discretion is now dropped to achieve greater consistency in regulation across the countries.

Measures aimed at improving transparency and market discipline include the requirements for banks to disclose the full documentation concerning all the regulatory capital elements, ratios and features in their financial statements and on their corporate website.

In order to make banks more resilient to periods of stress, the Committee decided to change the limits and minimum capital requirements. A separate minimum for core tier 1 has been set to 4.5% of RWA, while total tier 1 must be at least 6%. The restriction that tier 2 cannot exceed tier 1 has been abolished. The remaining capital requirement can be, however, cover with tier 2.

Given the significant strengthening to the level and quality of capital, the BCBS has proposed a gradual transition phase that will last until 2019 before the full requirements be met.

Furthermore, since during the recent crisis many close-to-failure institutions have been rescued by capital injections from the public sector in the form of common equity, tier 2 instruments did not absorb the losses incurred by rescued banks. The Committee provides a mechanism to ensure the loss absorbency of these instruments when a failed bank is rescued by the public sector. This refers to the requirement that all non-core tier 1 and tier 2 instruments must have a clause that requires them to be written off in the occurrence of the trigger event, which is the earlier of: the decision to make a public injection; the recognition that the next asset write-off would make the institution insolvent.

### Risk Coverage Enhancements

Another important need evidenced by the crisis has been that of strengthening the risk coverage of the capital framework. The new measures included in the reform for this purpose regard mainly modifications to the Basel II risk calculations and new inputs for better risk management practices.

In July 2009, the Committee issued a document<sup>28</sup> that provided changes to the market risk framework by raising capital requirements for the trading book and complex securitization exposures, a major source of losses during the financial downturn. Furthermore, the reform introduced a stressed VaR capital surcharge based on a 12-months period of financial stress, that adds up to the general 10-days VaR requirement. Also, the standards for pillar 2 supervision of market risk management and pillar 3 market discipline disclosure requirements have been raised. The Basel III measures are conceived so that, overtime, also credit risk should, to the extent that it involves market-related risks, be treated in an integrated manner with market risk.

The Committee identified several areas in the Basel II framework where capital charges for counterparty credit risk (CCR) proved to be inadequate. First of all, the Basel III

---

<sup>28</sup> *“Enhancements to the Basel II framework and Revisions to the Basel II market risk framework” BCBS, 2009.*



proposals specify a new metric for calculation of CCR based on stressed input values, calibrated over a three-year period, which include the one-year stressed VaR computed for market risk. The use of the credit assets stressed period allows to obtain EADs that are appropriate for a period of credit downturn.

Another weakness of the previous framework was not addressing Credit Valuation Adjustment (CVA) risk, or the risk arising from mark-to-market deterioration in the creditworthiness of a client. Indeed, Basel II addressed only default risk. To better capture CVA losses, the Committee proposes a “bond-equivalent” approach based on the representation of the potential profits and losses of the credit assets as being a long hypothetical bond issued by the counterparty. The bond’s nominal value would be the asset’s EAD; its maturity would be the asset’s effective maturity (M). A capital charge for the total portfolio of “CVA bonds” will be applied to the bank, considering the effect of hedging tools such as CDS.

Wrong-way risk is another element underestimated in the Basel II framework. It refers to the risk related to the adverse correlation of counterparties’ credit quality with the exposure amount. This kind of risk can be firm-specific and market general, when it stems from a purely designed transaction and when it is related to general market conditions respectively. For general wrong-way risk, the Committee requires banks’ to constantly calculate the exposure amount through stress-tests and scenario analyses and report the findings to the supervising authority, since it is not possible to design a capital charge for this risk. For specific risk, a capital charge for each counterparty that gives rise to measurable wrong-way risk will be applied.

The Committee recognizes that large financial institutions are more interconnected than currently reflected in the capital framework. As a result, during the downturn, banks’ exposure to other financial institutions increased strongly. Evidence shows that correlation is 25% higher for financial firms than non-financial ones. For this reason, a multiplier factor of 1.25, related to the asset value correlation of regulated financial firms with more than \$100bn (initially it was \$25bn) assets and to all the shadow banking system, is included in the Basel III reform.

The accord provides other capital charges and calculation methods for all OTC transactions, posing special attention to derivatives, repos and re-securitization transactions, which were a significant source of losses during the crisis. Furthermore, a

strong incentive to move away from the OTC unregulated transactions to central clearing houses is granted, by assigning a zero risk weight for those transactions, provided that the central clearing house respects risk management certified standards.

Since banks failed to adequately assess and manage credit risk during the crisis, Basel III provides measures to further strengthen risk management requirements and supervisory control. The two issues in consideration are the stress testing and the back-testing practices. The accord requires monthly and quarterly stress testing for all credit exposures singularly and for the whole banking book of a bank, along with complete reporting to the supervisory body under the signature of top management. Back-testing all the internal ratings results is now required on a day-by-day basis, along with historical back-testing monitoring and reporting on the quantitative and qualitative parameters to the supervisor.

The final point about risk assessment the Committee acknowledges in the Basel III proposals concerns the excessive reliance on external rating agencies by banks, and the incentives to do so, during the crisis. Indeed, in many occasions, banks had the incentive to rely on external ratings that would lead to lower requirements. And the external rating agencies had the incentive to give “good” ratings to capture clients. To overcome these problems, banks will be required to internally test the external credit ratings anyways, and adjust the risk weight accordingly. This is an explicit incentive to move to the IRB approaches. Moreover, Basel III allows external credit ratings to be valid for regulatory purposes only if the issuing agency follows the *IOSCO Code of Conduct Fundamentals for Credit Rating Agencies*. This will assure consistency over the ratings worldwide.

#### The Leverage Ratio

During the years preceding the crisis, many large international banks have increased their leverage without decreasing their risk-weighted assets, therefore still showing strong risk based capital ratios. During the most severe part of the recession, banks were forced by the market to deleverage in a manner that pushed asset prices further down. This reinforced the feedback between losses, decline in bank capital and credit availability. To overcome the problem of excessive leverage in the banking system, the

Basel Committee decided to supplement the risk based capital requirements with a simple, non-risk-based measure grounded on gross exposures.

The minimum required ratio of Common Equity to Total Exposures has been fixed to 4%. Common Equity has been selected, as it is the most important form of capital, while Total Exposures refers to total on- and off-balance-sheet assets, netted positions, therefore including also the most leveraged derivatives and financial products.

$$\text{LeverageRatio} = \frac{\text{CoreTier1}}{\text{TotalExposures}} = 4\%$$

The main objectives of this ratio are that of reducing the increase in leverage during economic booms, therefore limiting the risks related to deleveraging; limiting model risk of calculation errors related to risk weights, hence strengthening and complementing the risk based capital measures; improving consistency, ease of understanding and harmonization in international regulations, due to the simplicity of this measure.

Clearly, together with the specific treatment of the exposures to be included, Basel III requires rigorous pillar 3 disclosures including all the components in the calculation and the final calculated value.

### Dealing with Pro-cyclicality

One of the most destabilizing elements of the crisis has been the pro-cyclical amplification of financial shocks throughout the banking system, financial markets and the broader economy. Indeed, business and financial cycles are related, and this crisis has shown how banks have been a transmitter of risk to the financial system and broader economy. The tendency of market participants to behave in a pro-cyclical manner has been amplified through a variety of channels, including through accounting standards, margining practices, and through the build up and release of leverage. The Basel Committee is introducing a number of measures to make banks more resilient to such pro-cyclical dynamics.

Besides the already discussed cyclicity of minimum requirements, due to changes in credit assessment, the Basel III reform presents two innovative capital buffers that will require the build up of capital in periods of economic growth that would be released during downturns. The two buffers address cyclicity at the micro- and macro-prudential level: the *Capital Conservation Buffer* imposes restrictions on redistribution of capital to all banks and the *Counter-cyclical Capital Buffer* will be released by national supervisors when an economy is experiencing excessive credit growth. The proposed framework for the two buffers will be explained briefly.

### Capital Conservation Buffer

At the beginning of the financial crisis, many banks continued to make large distributions of capital in the form of dividends, share buy backs and generous compensation payments, even if their individual conditions and the outlook for the sector were deteriorating. This activity was driven by a signaling problem, where reductions in distributions were perceived as sending a signal of weakness to the market. More recently, many banks have returned to profitability but have not done enough to rebuild their capital buffers to support new lending activity.

For these reasons, a buffer range of 2.5% of RWA is established on top of the regulatory minimum requirement for common equity and constraints on the discretionary distribution of earnings will be imposed to those banks whose core tier 1 capital falls between the range according to a fixed scheme.

Capital conservation range is established above the minimum requirement	
Amount by which a bank's capital exceeds the minimum requirement in terms of a percentage of the size of the conservation range	Minimum Capital Conservation Ratios (expressed as a percentage of earnings)
< 25%	[100%]
[25% - 50%]	[80%]
[50% - 75%]	[60%]
[75% - 100%]	[40%]
> 100%	[0%]

Table 12 Restrictions on the Distribution of earnings associated with excess capital bands<sup>29</sup>

As it can be seen from the table, the distribution constraints imposed on banks as their capital levels fall into the range increase as the banks' capital approaches the minimum requirement. For example a bank that has a core tier 1 ratio of 6.0% will

<sup>29</sup> Source: "Strengthening the Resilience of the Banking Sector" – BCBS, 2009

have, during the following 12 months from the assessment, to retain 60% of its earnings as capital base, since 4.5% is minimum requirement and the 1.5% excess capital is itself 60% of the 2.5% capital buffer range. The bank will be able to payout no more than 40% of its earnings in the form of dividends, share buy-backs and compensation bonuses. If it wishes to pay more, it would have to seek external private sector funding. By design the framework will require no restrictions to banks having a core capital ratio higher than 7%.

These restrictions on management discretion are very helpful in the conservation of capital during downturns and the rebuilt of capital at the early stages of the economic recovery. One issue already identified by the Commission is that banks could formulate their distribution strategies according to the level of capital they want to achieve, thus possibly creating a “competition in the buffer range”. For this reason, the BCBS will allow national supervisor to impose time limits to the time of permanence in the range.

#### Counter-cyclical Capital Buffer

The second measure selected by the Committee to reduce pro-cyclicality takes on a macroeconomic perspective, as it deals with limiting the credit growth in the banking sector of a particular economy.

As witnessed during this and other financial crises, losses incurred in the banking sector during the downturn were preceded by a period of excess credit growth. These losses may destabilize the banking sector, which in turn creates a downturn in the real economy. This in turn further weakens the banking sector. These inter-linkages highlight the particular importance for the banking sector to stock capital in periods when credit has grown to excessive levels. Since capital is more expensive than other forms of funding, additional regulatory capital could help to moderate credit growth therefore helping to prevent extraordinary credit bubbles.

The Basel Committee intends to implement a buffer that is able to be an add-on to the capital conservation buffer, effectively stretching the size of its range, when national supervisors consider that their economy is experiencing a period of aggregate credit growth. Therefore, the buffer will be zero in all other states of the economy.

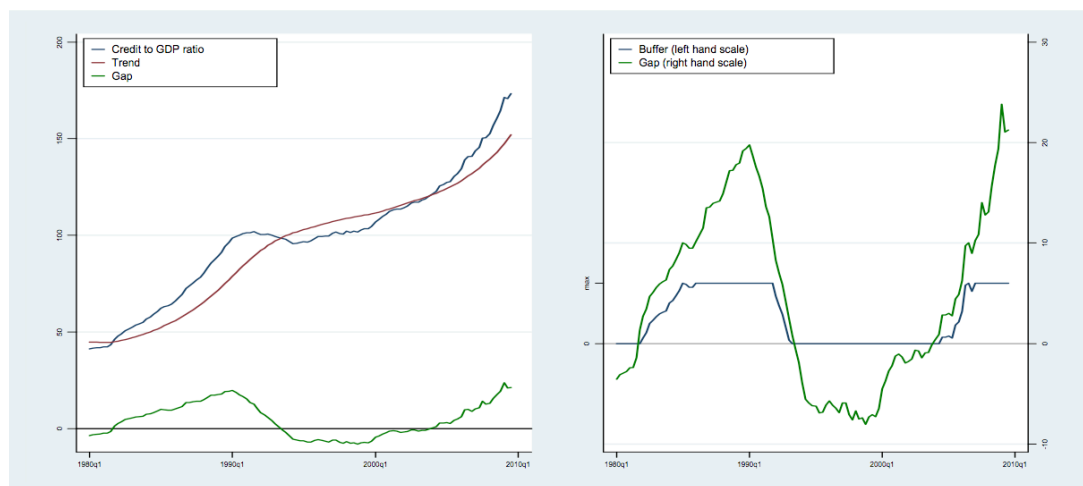
The range fixed for this buffer is between 0%-2.5% of RWA, to be applied, on national discretion, on a case-by-case basis when credit has grown too much and released when there are losses in the banking sector that pose a risk to financial stability, or when there are problems elsewhere in the financial system that have the potential to disrupt the flow of credit which could influence the performance of the real economy.

Recall the example for the 6% core tier 1 ratio bank that would be forced to restrict the distribution of its earnings to 40% by the successive year because it is in the conservation buffer range. If, in the meantime, the bank with the 6% ratio is subject to a countercyclical buffer of 2.5%, the range now widens from 2.5% in excess of MCR to 5% excess. Therefore, the bank has only slightly more than 15% of the buffer covered and, by the successive year, would have to retain 100% of its earnings or to replenish its capital through external capital sources.

The effect of the above is that at any point in time, the sum of the capital conservation and countercyclical buffer requirements will set a target ratio. In 12 months time banks will need their reported Tier 1 capital ratios to be above this target ratio to avoid becoming subject to restrictions on distributions.

The Credit-to-GDP Gap was selected as the variable indicator for the application of the countercyclical capital buffer because, by being based on credit, has the significant advantage over other signaling variables of appealing directly to the objective of the buffer, which is to achieve broad macro-prudential limitation of excessive credit growth.

The variable is defined as the gap between the credit-to-GDP ratio of a country and its long-term historical average. Using the gap has been deemed more appropriate since it includes the historical trend, which is distinctive of every economy. Credit is calculated as total sources of debt funds granted to the private sector. The next figure shows the credit-to-GDP ratio, its long-term historical average and the buffer that would have been applied to British banks during their 1990s credit crunch.



Source: National data, BIS calculations.

Figure 8 The credit-to-GDP ratio and the buffer for the UK

As it can be seen from the graph on the right side, the buffer would have reached its maximum level once the gap became larger.

### Addressing Systemically Important Financial Institutions

Apart from addressing pro-cyclicality, Basel III will also allow for a better handling of the systemic risk due to the interlinkages and common exposures across individual institutions. The key principle in this context is to ensure that the standards are calibrated with respect to the contribution that each institution makes to the system as a whole, not just with respect to its riskiness on a standalone basis. Under the Basel III framework, it has been agreed that these institutions should have loss-absorbing capacity beyond the common standards. Work is still under way to delineate the modalities for addressing systemic risk, but one possibility would be to allow national authorities to establish a systemic capital surcharge for SIFIs, along with bail-in debt and improved resolution regimes.

Before turning to the discussion of the Basel III liquidity framework, it is worth summarizing, with the help of a table, the main changes brought to the Capital Framework by the new agreement.

In percentage of risk-weighted assets	Capital requirements						Additional macroprudential overlay		
	Common equity			Tier 1 capital		Total capital		Counter-cyclical buffer	Additional loss-absorbing capacity for SIFIs*
	Minimum	Conservation buffer	Required	Minimum	Required	Minimum	Required	Range	
<b>Basel II</b>	<b>2</b>			<b>4</b>		<b>8</b>			
<i>Memo:</i>	<i>Equivalent to around 1% for an average international bank under the new definition</i>			<i>Equivalent to around 2% for an average international bank under the new definition</i>					
<b>Basel III New definition and calibration</b>	<b>4.5</b>	<b>2.5</b>	<b>7.0</b>	<b>6</b>	<b>8.5</b>	<b>8</b>	<b>10.5</b>	<b>0-2.5</b>	Capital surcharge for SIFIs?

\* Modalities to be defined.

Table 13 Capital Requirements. What changes from Basel II to Basel III<sup>30</sup>

<sup>30</sup>Source: “Basel III: towards a safer financial system”. Speech by Mr Jaime Caruana, General Manager of the Bank for International Settlements at the 3rd Santander International Banking Conference Madrid, 15 September 2010



## The New Liquidity Framework

Perhaps the most important innovation introduced in the Basel III package of reforms is the introduction of quantitative requirements for the liquidity of banks. Indeed, the crisis has shown the importance of liquidity to the smooth functioning of financial markets. At the onset of crisis, many banks that showed adequate capital levels did not manage their liquidity in a prudent manner. The reversal of market condition caused a rapid evaporation of liquidity and banks necessitated central banks intervention to guarantee the functioning of the money market and the going-concern of their institution.

Recognizing the need for banks to improve their liquidity risk management, the Basel Committee issued in 2008 a document called “*Principles for Sound Liquidity Risk Management and Supervision*”, which included a series of qualitative expectations for supervisory review and banking practices for liquidity risk management. These recommendations included the establishment of internal policies and risk tolerance levels, the development of contingent funding plans and the maintenance of a sufficient level of liquid assets.

To assure the put in practice of these recommendations, the Basel III reform introduces quantitative standards for funding liquidity. The two proposed measures are a 30-day liquidity coverage ratio designed to ensure short-term resilience to liquidity disruptions and a longer-term structural liquidity ratio to address liquidity mismatches and promote the use of stable funding sources. Furthermore, the Committee proposes a set of monitoring metrics to assist supervisors in the analysis of bank-specific and system-wide liquidity risk trends.

Each of the two liquidity requirements will be reviewed in turn, along with some words on the newly proposed supervisory monitoring tools, in the following paragraphs.

## The Liquidity Coverage Ratio

The 30-day liquidity coverage ratio requirement is designed to ensure that the bank has sufficient high-quality liquid resources to survive an acute stress scenario lasting for one month. The Committee specifies the amount of unencumbered<sup>31</sup>, high-quality liquid assets an institution holds that can be used to offset the net cash outflows the institutions would encounter under a short-term stress scenario that includes both specific and systemic shocks. The ratio is calculated as follows:

$$\text{Liquidity Coverage Ratio} = \frac{\text{Stock of High Quality Liquid Assets}}{\text{Net Cash Outflows over a 30-Day Period}}$$

The agreement specifies that each bank must have a liquidity ratio greater than or equal to 100%, which means that all the stressed cash outflows for one month could be fully covered by liquid assets.

The whole liquidity framework is very conservative in the requirements and tries to incorporate all the shocks experienced during the financial crisis in the stress scenario. Assets are considered to be high quality liquid assets if they can be easily and immediately converted into cash at little or no loss of value. The liquidity of an asset depends on the underlying stress scenario, the volume to be monetized and the timeframe considered. For this reason, the eligible elements included in the definition of liquid assets are only cash, central bank reserves, sovereign debt and money market tradable securities (like IMF, PSE, MDB issued securities) which were assigned a 0% weight under Basel II. The accord also allows counting of high-quality corporate bonds and covered bonds, though after a 20%-40% rescaling due to their riskiness.

In order to calculate net cash outflows, run-off rates are applied to each source of funding. Run-off rates represent the part of the funding that would be lost during a 30-days liquidity crisis. The accord provides an extensive set of run-off rates for each source of funding according to the potential magnitude of disruption in the system the fund shortage would cause. The rates are grouped into X broad categories: retail deposits, unsecured wholesale funding (business), other than governmental secured funding. Additional requirements are set for off-balance sheet funding sources like

---

<sup>31</sup> weird word, means not pledged in any way to secure, collateralize or credit enhance any transaction and not held as hedge for any exposure.

liabilities related to derivative collaterals, from maturing ABCP and SPVs. Cumulative Cash outflows are calculated by adding up outstanding balances of these various categories times their relative run-off rate. The same is done for expected cash inflows under stressed conditions, to arrive at Net Cash Outflows for the 30-day stressed scenario. The run-off rates have been selected on the basis of a very pessimistic stress scenario, even more prudential than what occurred during the financial crisis.

### The Net Stable Funding Ratio

This new regulatory ratio aims to “promote more medium and long-term funding of the assets and activities of banking organizations”. NSFR is a very important ratio for the solidity of a bank and compliance with the new regulation is likely to be a significant driver of long-term returns of banks. It is defined as:

$$\text{Net Stable Funding Ratio} = \frac{\text{Available Amount of Stable Funding}}{\text{Required Amount of Stable Funding}}$$

The Net Stable Funding Ratio is calculated, in effect, as the ratio of two weighted sums. The Required Stable Funding (RSF) is a weighted sum of the asset side of the balance sheet, weighting different classes of a bank’s balance sheet items by their time to maturity and liquidity level. The Available Stable Funding (ASF), on the other hand, is a weighted sum of the liability side of the balance sheet, weighting different liability items for their stability and the degree to which they can be relied upon in a crisis. The intention of the Committee is to calibrate the two calculations such that a bank that is adequately long-term funded would have a ratio ASF/RSF of 100% or greater. The next table summarizes the weightings proposed for the Required Stable Funding and the Available Stable Funding.

Assets Side (Required Funding)		Liabilities Side (Available Funding)	
Weight	Element	Weight	Element
0%	cash	100%	Tier 1 + Tier 2
5%	High-quality liquid securities	100%	Liabilities with maturity >1yr
20%	Outstanding Corporate Bonds and covered Bonds	85%	Stable Retail and SME Deposits <1yr
50%	Other Corporate Bonds	70%	Less stable Deposits <1yr
85%	retail loans with maturity <1y	50%	Large Corporate <1y
100%	all loans with maturity >1y	10%	all other credit lines, overdraft facilities, etc

Table 14 Net Stable Funding Ratio Weightings

## Proposed Implementation Timeline

When the first two documents were released for comment, the Basel Committee believed that implementation of the new standards for capital and liquidity could be completed by the end of 2012. However, after the release of the quantitative impact assessment of the new rules and the comments from influential banks, supervisors and other market participants, the implementation phase was stretched until 2019. If implemented so quickly, the new requirements would have caused a strong reduction in credit availability, therefore slowing down the already slow recovery from the past crisis. The results of the QIS and the possible effects that the new requirement could have on the banking system and on the whole economy are presented in the following section. This table summarizes the proposed implementation timeline, agreed upon during the meeting of the Group of Governors and Head of Supervision, on September 15<sup>th</sup>, 2010.

	2011	2012	2013	2014	2015	2016	2017	2018	As of 1 January 2019
Leverage Ratio	Supervisory monitoring		Parallel run 1 Jan 2013 - 1 Jan 2017 Disclosure starts 1 Jan 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 of 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 non-core Tier 1 capital or Tier 2 capital			Phased out over 10 year horizon beginning 2013						
Liquidity coverage ratio	Observation period begins				Introduce minimum standard				
Net stable funding ratio		Observation period begins						Introduce minimum standard	

All dates indicate 1 January start

Table 15 Arrangements for the Implementation of Basel III (shaded = transitional)

## Results of the Quantitative Impact Assessment

As with every important piece of regulation to be enacted, especially those that will have international effects, the Basel III reforms have been calibrated after the examination of the results of the Quantitative Impact Assessment of the long-run effects of the new capital and liquidity measures. The study<sup>32</sup> assesses the economic benefits and costs of stronger capital and liquidity regulation in terms of their impact on output. The sample includes more than 6600 banks from 13 countries member of BCBS. The following paragraphs present the main assumptions and findings of the QIS. It is important to remark that the report focuses on the long-run economic impact so the analysis assumes that banks have completed the transition to the new levels of capital and liquidity.

### Economic benefits

Are measured as *expected yearly output gains from the reduction in the probability and severity of crises*, thus reflecting the real aim of the Commission of a more resilient banking sector. The calculation of the expected benefits involves two steps: estimating the expected discounted cost of crises and estimating the impact of stronger capital and liquidity requirements on those expected costs. The findings are presented for various assumptions including that crises have a long-term effect on the steady-state level of output and crises do not affect the steady-state level of output and different effects for each new capital and liquidity requirement.

Historical evidence shows that crises are expected to occur every 20-25 years, or the probability of a banking crisis is 4%-5% per year. Literature and historical data, needed for the calculation of the expected costs of a crisis in terms of loss in GDP, is extensive. The report averages the results concluding that if a financial crisis is assumed not to have a permanent effect on the potential output, it costs roughly 19 percentage points of GDP from peak to full recovery, while if it is assumed to have a permanent effect, it costs around 158% of GDP, a value almost impossible to recover

---

<sup>32</sup> *“An assessment of the long-term economic impact of stronger capital and liquidity requirements” – BCBS, August 2010*

even in the medium-run. However, the study does not take into account any kind of government intervention, leading to a possible underestimation of the costs of crises.

The expected benefits from reducing the probability of a crisis in terms of output gains are calculated as the amount of the probability reduction times the cost of crisis. The following table shows the results under the various assumptions.

**Expected annual benefits of reducing the annual probability of crises<sup>1</sup>**

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

<sup>1</sup> 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.

Table 16 Source: QIS6, BCBS, 2010

As it can be observed, reductions in the probability of crises can have a strong impact on output. Based on these findings, the study uses various models to estimate the benefits of different capital and liquidity requirements.

A consistent result across different models and methodologies is a significant reduction in the likelihood of a banking crisis at higher levels of capitalization and liquidity for the banking system as a whole. The reduction in the probability of crises continues as capital and liquidity levels increase, though at a decreasing rate. According to the findings, at the 7% currently fixed level of capital (i.e. 4.5% minimum + 2.5% Conservation Buffer) and with the liquidity framework at work, the probability of a banking crisis in any given year would be reduced from 5% to 3.3%.

Higher capital and liquidity standards are likely to reduce not just the probability, but also the severity of banking crises. The data suggest that lower capital-to-asset ratios and lower liquidity ratios are associated with higher output losses during the ensuing crisis. However, the relationship is relatively weak, so they didn't include this finding in the calculations of net benefits.

In addition to the benefits from reducing output losses associated with banking crises, higher capital and liquidity requirements may also reduce the magnitude of normal

(technology caused) business cycles. The basic intuition for the reduction in volatility is straightforward. Higher capital and liquidity ratios permit banks to absorb losses in downturns and restrain lending in a boom, thereby smoothing the supply of credit over the cycle. Based on the results of the study, at the proposed level of capital and liquidity of Basel III, the standard deviation of output would decrease, on average of the sample, by 4.2%. This figure increases to 16.7% when considering also the implementation of the counter-cyclical capital buffer.

### Economic Costs

To compute the long-run costs of the regulation in terms of reduction in steady-state level of output, a fundamental and conservative assumption was formulated, that made possible the use of the more advanced macroeconomic models for a prudential estimation. The experiment assumes that the TCE/RWA ratio is raised by increasing equity and reducing long-term debt correspondingly. Importantly, it assumes that any higher cost of funding associated with this change is fully recovered exclusively by raising loan rates. This means that banks fully pass-through the new requirements to their customers, so as to keep their ROE unchanged. The ROE used for the estimation was the average ROE of the sample from 1993 to 2007, which totaled 14.8%. These assumptions are rather strong, since it is likely that the actual average ROE is lower, and most probably banks will use other means to meet the requirements other than simply amplifying the spread, like for example increase non-interest income (e.g. fees and commissions), or reduce operating expenses. To be as accurate as possible, these assumptions were deemed to be necessary.

The results of the estimations of the BCBS show that in order to keep ROE from changing, each percentage point increase in the Core Tier 1 ratio results in a median increase in lending spreads across countries of 13 basis points. This result is to be considered as if only capital requirements were introduced.

For what concerns the liquidity framework, only the costs associated with the introduction of the NSFR were estimated, because meeting this requirement will have the largest impact on the long-run level of output or, in terms of the study, of the lending rate spread. In order to meet the NSFR, it is assumed that banks make

necessary changes to their assets and liabilities, namely increasing the maturity of their funding and investing more on liquid assets like government bonds. Each of these changes either reduces interest income or raises interest expense, thereby lowering net income. Again, banks are assumed to avoid a fall in their ROE by raising lending spreads. This increase in lending spreads is much higher than that due to higher capital requirements, but the magnitude of the increase depends on if the RWA decrease or not due to the restructuring of banks balance sheets (i.e. high liquid assets = lower risk weight). The results differ markedly depending on this last assumption. Indeed, if no decline in RWA is expected, meeting the NSFR requirement will increase the lending spread by 25bp, while if synergies are allowed for the reduction in RWA, the increase in lending spreads would only be 14bp. The following table summarizes the effects, associated with the new capital and liquidity requirements, on lending spreads.

**Impact of increases in capital and liquidity requirements  
on lending spreads (in basis points)**

Increase in capital ratio (percentage points)	Cost to meet capital (A)	Cost to meet NSFR (B)	Total (A+B)	Cost to meet NSFR (C)	Total (A+C)
		Assuming RWA unchanged		Accounting for decline in RWA	
0	0	25	25	14	14
+1	13	25	38	13	26
+2	26	25	51	13	39
+3	39	24	63	11	50
+4	52	24	76	8	60
+5	65	24	89	6	71
+6	78	23	101	5	83
Inter-quartile range (25th to 75th percentile) for a 1 pp change in capital	9 to 19	16 to 46		11 to 25	

Table 17 Source: QIS6, BCBS, 2010

In light of the recent decision to fix the capital requirement to 7% and to implement the NSFR, when the transition phase will end, this sample predicts a rise in lending spreads on average of between 39-51 basis points, keeping ROE unchanged.

Having forecasted these effects on the lending spreads, the studies tries to predict the economic cost of the new regulation in terms of losses in the steady state level of output. The study tries to combine the findings of the capital and liquidity rules on



lending and models them to the long-run output levels of different countries or group of countries. With the level currently targeted, the reform would cost, in the long-run on average, 37 to 55 basis points reduction in output.

### Net Benefits

The main conclusion of the study is that, on balance, there is considerable room to raise capital and liquidity requirements while still yielding net benefits.

In making an assessment of the net benefits in terms of the level of output per year, the Committee analyzed two scenarios depending on the relationship between banking crises and its effects on output. Higher capital and liquidity reduce the annual probability, and possibly the severity, of banking crises, but the costs of the crisis are not limited to the crisis year, as they have long-lasting, possibly permanent, effects on output. The cost of tighter regulation is the yearly cost in terms of output forgone. The more permanent the effects of a crisis are on output growth, the larger is the annual net benefit.

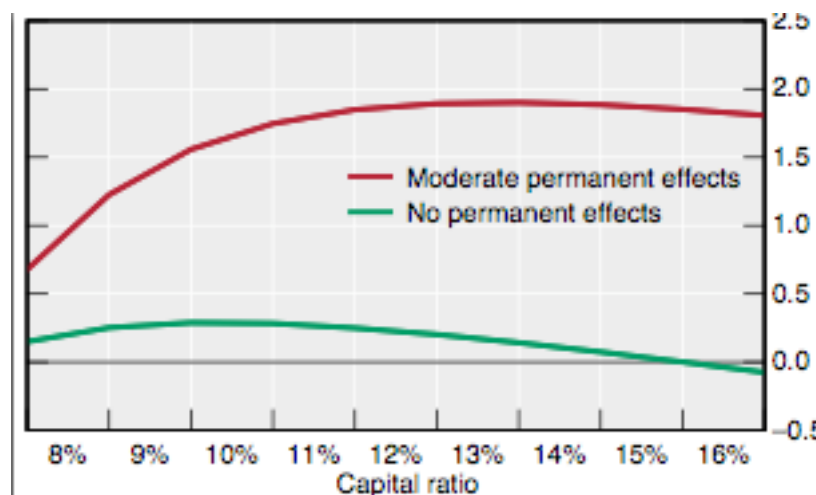


Figure 9 Net Benefits (vertical axis) on the long run level of output of capital and liquidity requirements<sup>33</sup>.

The core message of the graph is that net benefits remain positive for a broad range of capital ratios, with the incremental net benefits from reducing the probability of banking crises gradually declining to become negative beyond a certain range. The sizeable gap between benefits and costs for the range of assumptions formulated, still

<sup>33</sup> Source: QIS6, BCBS, 2010

suggests that in terms of the impact on output there is considerable room to tighten capital and liquidity requirements while still achieving positive net benefits, especially if permanent effects on output are allowed, as it likely to be the case.

Overall, the results of the Quantitative Impact Assessment reveal that, indeed, the Basel III regulation at the minimum levels fixed on September 2010, even in a worst case scenario, would have little effects on the economy in terms of output and that implementation could have been faster than proposed. However, critiques and acclamations, by industry players and regulators, were numerous and loud. For this reason, the bargaining for the level of capital and liquidity fixed and for the implementation timeline for the new reform, was a merely political one and it is still uncertain whether full implementation will be ever reached. The new reform package is due to be agreed and fixed by the G-20 meeting in Seoul, planned for the beginning of November 2010.

While the regulatory and political machine is still at work, it is worth highlighting some of the most influential comments about the possible effects of the reform on the banking sector and on the real economy. The following section deals with these arguments.

### **Considerations on Basel III Implementation and Impact on Banks and the Economy**

In the recent months there have been a lot of debate on the possible effects of the Basel III reform package on the ability of banks to meet the new standards while continuing their job of helping assist the recovery from the recent crisis.

Indeed, members of the BCBS, including for example Mario Draghi, Italy's Central Bank Governor and chairman of the FSB, Jean-Claude Trichet, head of the ECB, Nout Wellink, the Dutch chairman of the Committee, and other regulators acclaimed the strengthening of capital and liquidity requirements as yielding substantial long-run benefits to financial stability and a more secure economic growth, driven by a more secure banking system and more confidence on the resilience of the financial sector.

That's not all the story, however. Other influential commentators, including business and consumer associations, complain that the new minimum requirements are not so stringent as declared and that the 10-years long implementation phase is too relaxed and that a new crisis could erupt even before the implementation is completed. For these reasons, they argue, the new Basel III requirements are just a victory of the banking lobbies.

In fact, from the consultation phase, the banks flooded the Committee's inbox with protests that Basel III would choke off the economic recovery, grounding this argument on the basis of their internal quantitative impact study, which showed a loss of more than 5% points in output for the transitional years and millions of job losses, due to the credit rationing they need for fast recapitalization. The most feared measure to be introduced is that of the NSFR which, bankers say, would cause an excessive hike in funding costs and in borrowing charges for customers. Some executives had argued that the liquidity measures could cost the industry up to €4 trillion in additional costs. An influential impact assessment by McKinsey & Co.<sup>34</sup> rests on the side of European banks, concluding that on average the new reforms would cost to the EU banking industry about €1 trillion for meeting the new minimum capital levels and between €3.4-€5.5 trillion to meet the liquidity requirements. The study states that the reform would cost more than five percentage points decrease in European banks' ROE, keeping all other variables constant, as it is shown in the next figure.

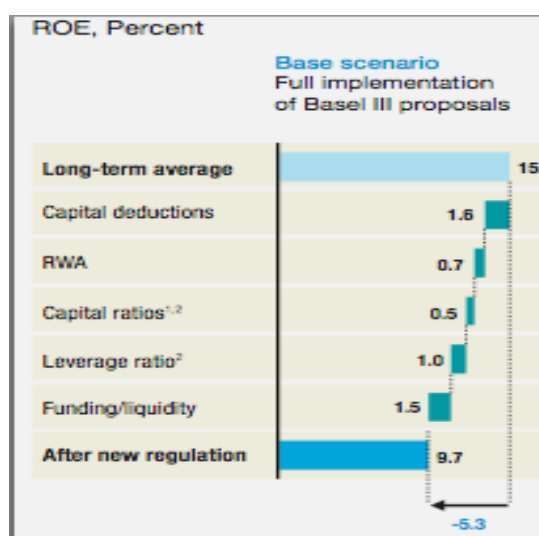
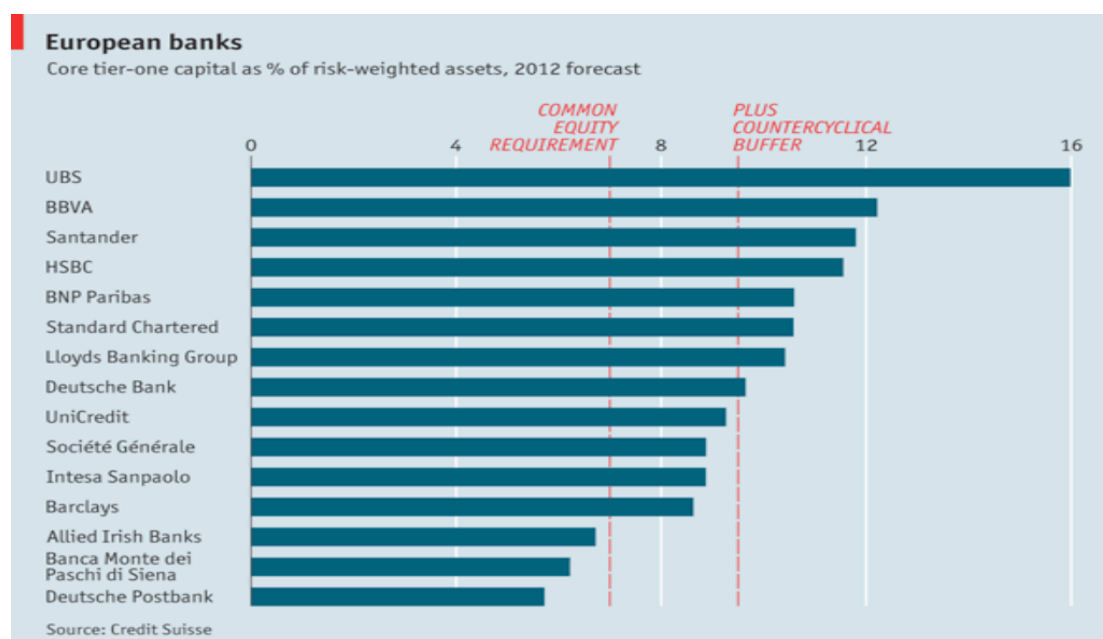


Figure 8 Shrinking in ROE due to new regulation<sup>32</sup>

<sup>34</sup> "Basel III: what the draft proposals might mean for European Banking", Härle, Heuser, Pfetsch, Poppensieker – April 2010 McKinsey Banking & Securities.

In any case, these results must be interpreted with caution, as it must be done with the result of the official QIS. This is because the final decision to relax the transition period until 2018 will leave more than enough time, to banks, for meeting the requirements with solutions other than charging the whole cost of the regulation on customers through lending rates increases and credit rationing, or on shareholders through ROE reductions. The likely response of banks will be a mixture of these options and, most importantly due to the long time for compliance, through earnings retention. This is the main argument that sees the committee ceding to the political pressures of the strong banking lobbies.

These critiques are well founded. For example, an analysis by Credit Suisse, an investment bank, predicts that all but the shakiest European banks will meet these requirements by 2012, as shown in the next picture.



Other fears about the unintended consequences of this new regulation concern the risk that banks, required to increase their return on investment, would reduce activities with modest margins such as lending to small and medium-sized enterprises. Alternatively credit costs would rise or banks would concentrate on the more profitable (and riskier) parts of their portfolios. This would have major detrimental effects on the real economy and on the soundness of the financial system.

The last argument is again stronger when considering the case of European banks. Yet another group of commentators laments that the reforms will have a stronger hit on European banks than on US banks, which were the trigger of the recent crisis. These concerns have been raised during a speech<sup>35</sup> of the EUROFI co-chairman, Mr. Jacques de Larosière, and have received wide consensus. According to their analysis of the crisis, the two main banking systems reacted differently. The Anglo-Saxon “originate and distribute” model developed considerable trading activities and (mostly non-supervised) off-balance sheet vehicles with profitable but risky and opaque products. Banks with this model were heavily hit by the subprime crisis, leading to massive state and central bank interventions designed to avoid contagion. By contrast, continental Europe’s universal banks were more diversified, with retail and corporate lending operations, fund management and other activities mainly concentrated on a client base. Such lenders were preoccupied by the ability of borrowers to repay, rather than by the value of the assets to be financed; their strong deposit bases conferred stability on the system as a whole. This second model almost survived without public bailouts. European banks that did require assistance had mostly adopted the aforementioned riskier “investment bank” practices or had imprudently bought toxic products. Thus, even if the European banks were the most resilient to the crisis even if undercapitalized, they will bear higher costs for meeting the requirements than their US counterparts. This is because in Europe more than 80% of credit is given by banks, while in the USA, roughly one-third of the financing activities is done through banks and the rest is provided by the so-called non-banks business.

This last point brings the discussion to the most important side effect of the Basel III reforms, according to the recent comments. While it is obviously important to impose strong capital and liquidity requirements to create a more solid banking system, especially after what has been witnessed during the recent financial catastrophe, it is equally important that the global regulators deal with all the participants of the financial world. Since the proposed regulatory changes are likely to make all forms of trading, particularly proprietary trading, more expensive by forcing banks to hold more capital in reserve to support their activities, a very probable result is that these high-risk activities will be transferred to the so-called “shadow-banking system”, the sprawling mass of hedge funds, private equity firms, trading houses, even energy

---

<sup>35</sup> Eurofi Financial Forum, Brussels, 29 September 2010

companies, all of which are largely unregulated and free of the capital requirements imposed on the banks. In sum, it would be more expensive in regulatory capital terms to do business with a bank than with a non-bank. This is a powerful incentive to use non-banks as counterparties. With these institutions growing very fast, and being increasingly backed by big pension funds and insurance companies, it can be systemically important whether these funds fail or not, and commentators argue that this sector will be the cause of next crisis. The assumption is well founded, as we are witnessing the behavior of large banks like Goldman Sachs, BNP Paribas and Deutsche Bank, which are creating spin-off hedge funds.

The work, by the Basel Committee, for systemically important financial institutions' regulations is not finished yet, but both Europe and the US are working on the issue of the Shadow banks. For the moment, the US has done the best job. In the new Dodd-Frank legislation for example, hedge funds and big non-banks will be required to register and provide information to the Securities and Exchange Commission, giving US regulators far more oversight of such firms than before. Europe hasn't presented any proposal yet.

For all these reasons, this last argument is the most worrying from the view of preventing the next systemic crisis. In sum, the Basel III reform tackles very important aspects that need to be regulated in a complete way, but the reforms could have been more stringent and expand their reach.

The last observation that can be done on the recent banking sector regulatory landscape is that there are some other important aspects of the banking business that pose risks to the financial stability, that have not been dealt in the Basel III reform. These include limits to short-selling, compensation and bonuses rules, consumer protection mechanisms, accounting standards harmonization, structured financial products supervision and other. For these issues, different and fragmented rules and proposals have been announced by different countries. These differences across regulation undermine the aim of the Basel Committee to create a level playing field in the banking sector by creating new regulatory arbitrage opportunities for banks, which are relocating their operations according to their most favorable legal environment.

## Conclusions

This thesis has tried to review the main achievements in the global regulation of the banking sector and generally of the international banks. This has been done through the analysis of the three international agreements that followed the recommendations of the Bank for International Settlements and its Basel Committee for Banking Supervision. The investigation of the three Basel Accord has been carried out focusing on the premises and outcomes of the reforms.

The main aim of the Basel Committee and of its proposals is that of creating a solid and stable financial system, able to resist periods of stress, and that of the reduction of risk of systemic failure.

The first Basel I accord was introduced in 1988 as a result of the erosion in the capital levels of international banks, caused by the increasing public debt in industrialized countries, coupled with excessive leveraging of institution and the savings and loan crisis of the 80s. It focused too much on credit risk and provided only with a standardized asset risk-weighting framework associated with capital requirements. With the passing of time, financial engineering evolved and banks found ways to trick the requirements through complex financial products, thus achieving low levels of capital while displaying high capital ratios.

This, coupled with the financial crises of late-90s and early 2000, led the way to the development of a second body of recommendations by the BCBS, which in 2004 issued the Basel II agreements. This heavy package of international regulations was aimed at making more risk-sensitive the capital framework. First of all, it introduces a three-pillar structure based on minimum capital requirements, supervisory treatment and market discipline. Secondly, it gives strong incentives for banks to develop their internal models for dealing with market risk, credit risk and operational risk. This had the effect of a general lowering of capital requirements, which lowered the resilience of the banks to the possible systemic effects.

Finally, soon after the regulation was issued, and while not all countries had yet implemented the Basel II framework, the US subprime mortgage market collapsed and the systemic effects related to the interconnectedness of the global banking

system, spread its effects on the banks all over the world. All this mess required massive public interventions and a period of Real Recession that is not over yet. Soon after the beginning of the crisis, the BCBS was back to work to produce a new framework designed to prevent another crisis like the recent one. The new framework modifies the capital requirements with the enlargement of the risk coverage and the introduction of the capital conservation and counter-cyclical capital buffers. It also introduces two liquidity requirements, which are very important to enhance the well functioning of the financial markets.

Overall, the new framework tackles quite well the problems surfaced by the crisis, and propose new measures that will help both the regulators and the banks to prevent these problems from occurring again. However, the accord has not been formalized yet and there are already a lot of worries about its limited scope and stretched implementation timeline.

What is evident from the overall perspective is that regulation in the banking sector is very important for the smooth functioning of the economy, since investing in a bank is perceived as a safe bet and without proper regulation, banks can operate in the marketplace with little or no attention to the risks they pose to the real economy. On the other hand, from the analysis of past experiences it can be concluded that regulation cannot be the sole responsible for the functioning of the market. Political and economical conflicts of interest are always at play and the realm of finance is in constant evolution, especially nowadays that the world is more than ever interconnected and globalized.

Regulation, and global co-ordination of regulations, is coincidental. This means that, as it has been proved from past experiences, regulations are good until the next problem arises. Banking regulators are the dogs that try to bite their own tail, but they will never catch it. Surely, the efforts of the Basel Committee in promoting the convergence of regulation worldwide and its works on the careful formulation of the reforms it proposes must be applauded. The future of the banking sector is going to be shaped by how the latest Basel III reforms will be interpreted and implemented by different country legal systems. On the other hand, the extraordinary speed with which banking psychology has returned to normal business, despite the overwhelming nature of the recent crisis and the extreme scale of the bailouts, signals that the



banking industry is likely to continue its job of creating unearned money in increasingly creative ways. This is because of the extreme moral hazard associated with public rescues of banking institutions, which is a big warning signal for the future.

## **References**

### Official BIS-BCBS:

*Report on the supervision of banks' foreign establishments – Concordat, Basel Committee on Banking Supervision, September 1975*

*An exhibition celebrating 75 years of the Bank for International Settlements, BIS, September 2005*

*International Convergence of Capital Measurement and Capital Standards, Basel Committee on Banking Supervision, Consultative Document, July 1988*

*International Convergence of Capital Measurement and Capital Standards: a Revised Framework; Basel Committee on Banking Supervision, Consultative Document, June 2006*

*Overview of The New Basel Capital Accord, Basel Committee on Banking Supervision, Consultative Document, April 2003*

*Strengthening the resilience of the banking sector, Basel Committee on Banking Supervision, Consultative Document, December 2009*

*International framework for liquidity risk measurement, standards and monitoring, Basel Committee on Banking Supervision, Consultative Document, December 2009*

*Countercyclical capital buffer proposal, Basel Committee on Banking Supervision, Consultative Document, July 2010*

*An assessment of the long-term economic impact of stronger capital and liquidity requirements, Basel Committee on Banking Supervision, August 2010*

*Proposal to ensure the loss absorbency of regulatory capital at the point of non-viability, Basel Committee on Banking Supervision, Consultative Document, August 2010*

*Basel III: towards a safer financial system, Speech by Mr Jaime Caruana; General Manager of the Bank for International Settlements at the 3rd Santander International Banking Conference Madrid; September 2010*

*Group of Governors and Heads of Supervision announces higher global minimum capital standards, BIS Press Release 35/2010*

### Other sources:

*Systemic Risk: Relevance, Risk Management Challenges and Open Questions, Tom Daula, 2005*

*Understanding the framework: Adopting the Basel II Accord in Asia Pacific; Deloitte financial*

*services*

*Council adopts new rules on capital requirements and remuneration policies in the banking sector; Council of the European Union, October 2010*

*Harmonisation of the European Reporting Framework COREP; Committee of European Banking Supervisors CEBS; November 2009*

*Basel II implementation in the midst of turbulence; CEBS Task Force Report, 2008*

*FSA Consultation Paper; Capital Requirements Directive/Basel 2;*

*Pillar II: what it really means; Keith Poley; February 2007*

*Improved modeling of double default effects in Basel II – an endogenous asset drop model without additional correlation; Sebastian Ebert and Eva Lutkebohmert*

*The Basel II Framework – Some thoughts on Pillar II, John F. Laker ; September 2005*

*Risk Analysis in Investment Appraisal, Savvakis C. Savvides, Beech Tree Publishing, 1994*

*Basel II, pillar II: a source of competitive advantage; Moody's KMV Company, November 2007*

*Regulating market risk in banks: a Comparison of Alternative Regulatory Regimes ;Constantinos Stephanou ; The World Bank, Financial Sector Development Department, December 1996*

*Measuring the Market Risk with Value at risk; Pietro Penza and Vipul Bansal, Finance Engineering FE*

*Basel II: A new capital framework, Andrew Yeh, James Twaddle and Mike Frith, Financial Stability Department, Reserve Bank of New Zealand: Bulletin, Vol. 68, No. 3*

*Basel I, Basel II, and Emerging Markets: A Nontechnical Analysis, Bryan J. Balin. The Johns Hopkins University School of Advanced International Studies (SAIS)*

*Basel II Pillar 3: Challenges for banks, Christophe Cadiou and Monika Mars, Global perspectives on challenges and opportunities journal, PriceWaterhouseCoopers*

*The global implementation of Basel II: prospects and outstanding problems, Andrew Cornford, Research Fellow, Financial Markets Center (2005)*

*Implementation of Basel II in the EU (CRD) / Property Valuation, Raymond Trotz, IVSC Information Paper, October 2006*

*2010 FSI Survey on the Implementation of the New Capital Adequacy Framework: Summary of responses to the Basel II implementation survey, Financial Stability Institute, Occasional Paper No 9, August 2010*

*Basel II – the new framework for bank capital, GÖRAN LIND, ECONOMIC REVIEW 2/2005*

*Has the Basel II Accord Encouraged Risk Management*

*During the 2008-09 Financial Crisis?*, McAleer, Jiménez-Martín, Pérez-Amaral, December 2009

*The role of Basel II in the subprime financial crisis: guilty or not guilty?*, Cannata, Quagliariello, Carefin Working Papers 3/09

*The Banker's Guide To the Basel II framework*. South Africa Banking Association, December 2005

*Basel III, What the draft proposals might mean for European banking*; Philipp Härle, Matthias Heuser, Sonja Pfetsch, Thomas Poppensieker ; April 2010

*The new Basel III Framework: Navigating Changes in Bank Capital Management*; October 2010; PwC's Financial Service Institute (FSI)

*Basel III Capital Ratios and Transition Periods Set, but Key Questions Remain*; Mayer Brown Legal Update September 2010

*Basel rules risk punishing the wrong banks*, Speech of the co-chairman of EUROFI, Jacques de Larosière, EUROFI financial forum, September 2010

*Towards A New Framework For Liquidity Risk*, Pasquale La Ganga, Gianluca Trevisan, Carefin Bocconi Working Paper 08/2010

*Stress Testing and Beyond: Are Banks ready for the new regulatory framework?*, A. Vossen, CEBS presentation, April 2010

*A focus on Leverage Ratio and Systemic Banks*, Andrea Sironi, Carefin Bocconi, March 2010

*The Basel Committee Proposals for Mitigating Bank Capital Procyclicality*, Mario Quagliariello, Banca d'Italia, March 2010

*"From Basel II to Basel III – The Impact of the New Regulations on the Real Economy"*, Gonzalo Gasós and Viktorija Proskurovska, European Banking Federation (EBF) with PriceWaterhouseCoopers, June 2010

*Consultation paper on guidelines to Article 122a of the Capital Requirements Directive (CP 40)*, CEBS report, July 2010

*Shelia Bair Remarks, 2007 Risk Management and Allocation Conference, Paris, France, June 25, 2007.*

*Can Basel III work? – Examining the new Capital Stability Rules by the Basel Committee – A Theoretical and Empirical Study of Capital Buffers*, Miu, Ozdemir, Giesinger, February 2010

*After the Storm Creating Value in Banking 2010*, Ranu Dayal, Lars-Uwe Luther, Peter Neu, Tjun Tang; Boston Consulting Group ; February 2010

*Risk and Reward What Banks Should Do About Evolving Financial Regulations*; Philippe Morel, Peter Neu, Pierre Pourquery, Andy Maguire, and Thomas Bulach ; BCG, March 2010

*A better way to measure bank risk*; McKinsey Quarterly Review, august 2010

*Basilea 3: Banche e imprese verso il 2012, Giovanni Carosio, Associazione Bancaria Italiana, May 2010*

Web Press Articles:

*Basel II Implementation - The 4 Most Important Differences Between the USA and the European Union; George J Lekatis, <http://ezinearticles.com/?Basel-II-Implementation---The-4-Most-Important-Differences-Between-the-USA-and-the-European-Union&id=2046189>*

*Reforming The Global Financial System; Financial Times Interactive – ft.com*

*Banks win battle for limits to Basel III, Patrick Jenkins and Brooke Masters – ft.com*  
*Basel must not yield to pressure - ft.com*

*The Basle- Dazzle - ft.com*

*Financial markets: The industry embarks on a fundamental shift – ft.com*

*Financial Regulation: the money moves on – ft.com*

*Basilea 3 ad alto impatto in Europa, Maximilian Cellino - ilsole24ore.com*

*Basilea 3, si torna agli anni 80, Morya Longo - ilsole24ore.com*

*Basel III - The Whimper – economist.com*

*The Battle Over Bank Rules at Basel III, By Yalman Onaran, Simon Clark and Joseph Heaven – businessweek.com*