

Department
of Impresa e Management

Course of Corporate Restructuring & Turnaround

Banking Business Models: the role of the new Shadow Banking. A possible next Financial Crisis?

Prof. Gianluca Oricchio

SUPERVISOR

Prof. Riccardo Tiscini

CO-SUPERVISOR

Daniele Fontana – 695771

CANDIDATE

Academic Year 2018/2019

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Introduction

§ 1 Preamble and scope of the dissertation

In the post-2007/08 economic crisis, it emerged in all its evidence the fragility and inadequacy of the new system that developed in parallel with the traditional banking system: the so-called shadow banking. Originated in the 1980s, it was only in the period immediately preceding the crisis that this system assumed a magnitude sufficient to lead it to hold a primary position in international debate and academic research. However, it will be necessary to postpone until 2011 before obtaining an official definition – provided by the Financial Stability Board, which has identified it as *“a system of credit intermediation that involves entities and activities outside the regular banking system, and raises systemic risk concerns, in particular by maturity/liquidity transformation, leverage and flawed credit risk transfer, and/or regulatory arbitrage concerns”*.

On the basis of this definition, in connection with the evidence that has emerged in recent years, the magnitude of the phenomenon and the characteristics of its agents will be outlined, without however omitting the treatment of the regulatory framework in which shadow banking operates. Moreover, in order to provide a more comprehensive picture, the examined regulatory framework will be compared with that of the traditional banking world, providing evidence about the methods in which the two perimeters enter in contact and questioning whether, the above-mentioned elements can constitute a *humus* on which a possible future financial crisis can boom.

The analysis will commence with a historical digression on the evolution of prudential regulation, starting from the completion of the first Basel agreement – i.e. Basel I – to the analysis of the new requirements introduced by Basel III (*Chapter 1*). The study will then continue, focusing on the introduction of these agreements, analyzing at the same time also the impact, in terms of profitability, on *European banks* with particular emphasis on *Italian banks* (*Chapter 2*).

Once defined the banking regulatory framework, the assessment of *"shadow banking"* will be carried out, defining its dimensions, its main agents and its functioning mechanisms. In relation to this last point, the paper will then analyze the methods through which an interconnection between

the banking world and the non-banking world originates, clarifying how the main drivers of the choice are found in the profitability of the banks – from which the implementation of the banking Business models (*Chapter 3*).

It will then analyses the regulatory system "*in force*" for shadow banking institutions (*Chapter 4*), with particular emphasis on the differences with the traditional banking perimeter in terms of prevention measures – regulatory capital and risk management tools, as well as in terms of crisis resolution measures – *Directive 2013/36/EU*, *Directive 2014/59/EU* and *Directive 2014/49/EU* (*Chapter 5*).

In relation to the above differences, in the last Chapter (*Chapter 6*), it will therefore be necessary to question whether the framework described up to now can constitute an element of fragility on which a possible future crisis could occur.

Chapter 1 – the evolution of the supervisory system

§ 1 *Basel I*

1.1 – Historical Background: 1974

Before starting the discussion on the evolution of the discipline regarding banking supervision, the work starts from the basics: the reason why the foundation of a Committee that regulates and supervises banking institutions.

It is worth to know that before 1988 each country regulated autonomously the adequacy of the capital within the banking system bounded within state lines. This, however, entailed a disparity between banking institutions in terms of profitability and stability. In fact, a greater capital requirement corresponds to a lower competitiveness deriving from increasing rigidity and greater stability to shocks and crises.

The transition from this autonomous system to a "centralized" system, is to be found in 1974. In particular, on 26 June 1974 at 15:30 (Central European Time, C.E.T.), the German authorities ordered the closure of Bankhaus Herstatt, a medium-sized institution very active in currency markets. On that day, the closure of Herstatt triggered a chain reaction that upset payment and liquidation systems spreading like *wildfire* starting from Germany and influencing in a very short time even the New York institutions. These disturbances were further propagated through the multilateral net settlement system used in New York. It is estimated that in the three days following the volume of gross transfers conveyed by this system was reduced by 60%.

The closure of Herstatt represents the first and most serious case of bankruptcy in which the failure to settle foreign exchange transactions has caused serious difficulties in payment and settlement systems.

This event was so significant that led the governors of 13 central banks of the most developed countries to establish the Basel Committee (body originally and still operating within the bank of international settlements based in the Swiss city of Basel from which the deeds then take their

name). In details, the Committee's objective is to *promote and strengthen the stability of the financial systems, the cooperation between the various supervisory authorities of each state, the harmonization of supervisory procedures and the elimination of the conditions of disparity in terms of requirements between banking institutions within the acceding countries*. But the peculiar characteristic of the Committee was and still is the fact that, despite the great contribution that it provides, it has been and continues to be non-supra-national, so that its recommendations are not binding within the legal orders of the single countries.

1.2 – Rules in the calculation of the regulatory capital

Given the main objectives of the Committee – which are recalled to be *strengthen the regulatory capital base and reduce the form of inequality infra banks*, it is worth to note that, given the high level of complexity of the topics covered, the first goal was reached only after some years from the foundation of the Committee: it was in fact in 1988 that the so-called *Basel Accord* (later defined as Basel I) was published. With this accord, were introduced specific requirements regarding the regulatory capital of banks by define some specific capital ratios. Specially the agreement prescribed that each financial institution should have a minimum amount of capital in order to deal (*and prevent*) with two main types of risks: **Credit Risk** and **Market Risk**:

- **Credit Risk** represents the risk that the creditor, in whatever technical form it grants the loan, does not collect all or part of the amount of financial resources used in the transaction due mainly to the event of debtor default (i.e. counterparty risk). This risk may be limited to the sole portion of interest due to the counterparty, or even to the share-capital. Credit risk is therefore generated within any financial transaction;
- **Market Risk** (introduced in 1996 after the revision of the 1988's concordat) is represented by the probability that a financial asset, traded on a sufficiently liquid market, is subject to significant fluctuations in its price, due to the unpredictability of factors capable of influencing it. The measurement of market risk typically aims at quantifying the probability of unexpected loss linked to financial activity, using *Value at Risk* (VaR) measurement models. These models have the objective of calculating the potential loss generated by the

risks defined above, on a given time horizon (T) and with a given level of statistical confidence (alpha).

The minimum capital established by *Basel I* represented a portion of capital to be held in proportion to the loans granted, in order to guarantee sufficient assets to effectively deal with customer insolvency or changes in the market value of a given instrument. The purpose of the rule is to avoid excessive exposure to risk by credit institutions, preventing and minimizing the possibility of their bankruptcy – and therefore also of a "*domino effect*" (e.g. case Bankhaus Herstatt).

Specifically, the Basel I agreements established that each bank should hold a Regulatory Capital of at least 8% of the Risk Weighted Assets (RWA), or in mathematical formulas:

$$\frac{\text{Regulatory Capital}}{\sum \text{Risk Weighted Asset}_i} \geq 8\%$$

About the **Regulatory Capital** present at the numerator, as stated in the agreement, it is composed by 3 different *Tiers*:

- **Tier 1** (core capital): consists of shareholder's equity and retained earnings. It is used to measure a bank's financial health and is used when a bank must absorb losses without ceasing business operations;
- **Tier 2** (supplementary capital): hybrid capital instruments and subordinated term debt, general loan-loss reserves, and undisclosed reserves. Tier 2 capital is supplementary capital because it is less reliable than Tier 1 capital;
- **Tier 3** (introduced only in 1996): composed of subordinated debt and aimed solely at covering market risk.

Risk Weighted Assets (RWA) are instead present in the denominator. The weighting factors are contemplated for the purpose of "*correcting*" the nominal value of the asset to express a more appropriate measurement of its value (or the value adjusted for the risk). The logic of inclusion of the risk within the value of the assets is to assign a weighting coefficient that increases with

increasing risk, so that the calculation produces an increase in RWAs to increase the risk of the assets and decreasing as it decreases.

In detail, the weighting coefficients indicated in the Basel I are:

- 0% (zero risk) in the case of risk assets to central banks of OECD countries and possession of government bonds of OECD countries;
- 20% (minimum risk) in the case of risk assets to banks in OECD countries (non-central) and to public bodies;
- 50% (average risk) in the case of mortgage loans;
- 100% (high risk) in the case of risk assets to banks in non-OECD countries and in the case of loans or participations in private companies.

1.3 – Limits of Basel I

Although there is a strong commitment and effort on the part of the Committee to give a complete and comprehensive form to the concordat, it represents only the first step towards achieving international financial stability.

In particular, the latent limits of the arrangement have been identified in:

- *The amount of capital absorbed has a low degree of sensitivity to risk, not sufficiently differentiated to the extent of reliability:* in other words, capital is formed only considering the type of customer and the technical form, while not taking into account either the characteristics the company (sector of belonging, size, reliability);
- *Weighting coefficients are not affected by the term structure of maturities,* thus leading to the same result as the short, medium and long-term loans;
- *The different degree of risk associated with greater or lesser splitting of the loan portfolio is not sufficiently taken into consideration,* or in other words it does not consider the diversification effect;
- *It encourages "moral hazard"* because, on an equal capital requirement, there is an indirect incentive to prefer riskier and potentially more lucrative loans to the detriment of better quality, but less remunerative loans;

- *In the calculation of the regulatory capital, only credit risk and market risk are taken into consideration*, while it is known that there is a much higher and convoluted number of risks; moreover, they keep the credit risks calculated for the lending activity separate from that specific for the financial activity;

Despite the different corrections made on the original text – e.g. the introduction of market risk in addition to credit risk, the first agreement was inadequate to ensure a stability of the system which, given its constant evolution, “break away” from the regulations. For that reason, in June 1999, the Committee issued a proposal for a new capital adequacy framework to replace the 1988 Accord. This led to the release of a revised capital framework in June 2004 generally known as “Basel II”.

§ 2 *Basel II*

2.1 – Historical background and news

Setting in time the process that lead to Basel II introduction in the different legal systems, we have to anticipate that the final publication of the Committee was preceded by several steps such as:

- First Consultative Paper (1999)
- Second Consultative Paper (2001)
- Third Consultative Paper (2003)
- Final Document (2004)
- Final Version (2006)

As mentioned before, the drivers of the process were the observed and experienced inefficiencies following the application of Basel I. In particular, given the limits mentioned above regarding the 1988 agreement, the objectives pursued with the new agreement aimed to redesign the calculation scheme for minimum capital requirements through a more articulated weighting system, defined according to the specific risks of the various operations.

More in detail, the objectives of the Basel II Accord are to:

- Introduce a risk sensitive framework to robustly quantify the bank's risk profile;
- Introduce incentives for banks to adopt improved risk management practices using the so-called **Internal Rating Based (IRB)** approach;
- Refine regulatory capital charges;
- Align regulatory capital with economic capital;
- Maintain absolute levels of capital in the banking system while recognizing the relative levels of risk across institutions.

Main news of Basel II were the implementation of a more complete e accurate dependency between **regulatory capital requirements and overall risk exposure** of the banks (e.g. **also operational risk, not only credit risk**); an application of different **capital requirements calculation options**, depending on the level of operational and organizational complexity of the banks; introduction of three different control typologies (so-called **3 Pillars**).

About the latter, the different pillars are:

- **Pillar I: Capital Adequacy Requirement**

Within the first pillar are encompass the rules about the minimum capital requirements that should be hold in order to deal with:

- *Credit Risk*: is the probable risk of loss resulting from a borrower's failure to repay a loan or meet contractual obligations. Traditionally, it refers to the risk that a lender may not receive the owed principal and interest, which results in an interruption of cash flows and increased costs for collection¹;
- *Operational Risk*: is defined as the risk of loss resulting from inadequate or failed internal processes, people and systems or from external events. This definition includes legal risk but excludes strategic and reputational risk;

¹ The non-payment therefore causes a change in the financial assets given by the devaluation of the assets and consequent shift of reserves to cover the loss;

- *Market Risk*: is defined as the risk inherent to the possibility that adverse and unexpected fluctuations in prices would cause a reduction in the value of the assets of which the banking book was composed (therefore, the direct investments portfolio).

- **Pillar II: Supervisory review**

The second pillar is essentially based on two principles:

- Encourage banks develop and use better risk management techniques in monitoring and managing their risks finalized to ensure that banks have adequate capital to support all the risks in their business;
- Increase the control powers of the supervisory authorities with the main aim of verify and monitoring the process of the credit institution in the computation of the minimum capital requirements. In particular Supervisors are expected to evaluate how well banks are assessing their capital needs relative to their risks and to intervene, where appropriate.

The second pillar has the aim to encourage and push for an active dialogue between banks and supervisors such that when deficiencies are identified, can be taken prompt and decisive action can be taken to reduce risk or restore capital. In particular, the introduction of this pillar was mainly due to the recognition by the committee of the relationship that exists between the amount of capital held by the bank against its risks and the strength and effectiveness of the bank's risk management and internal control processes².

- **Pillar 3: market discipline**

The Committee aims to encourage market discipline by developing a set of disclosure requirements which will allow market participants to assess key pieces of information on the scope of application, capital, risk exposures, risk assessment processes, and hence the capital adequacy of the institution. In particular the purpose of pillar 3 is to introduce a market discipline to share with the market the minimum capital requirements and the

² Basel Committee on Banking Supervision. International Convergence of Capital Measurement and Capital Standards. A Revised Framework. June 2004

approaches/methodologies used in the measurement (Pillar I) and the supervisory review process (Pillar II). In particular the aim of this pillar is to inform the market about a bank's exposure to those risks and provides a consistent and understandable disclosure framework that enhances comparability and through the comparability put under pressure the banks that are not performing good or have a bad banking behavior in order to correct the situation.

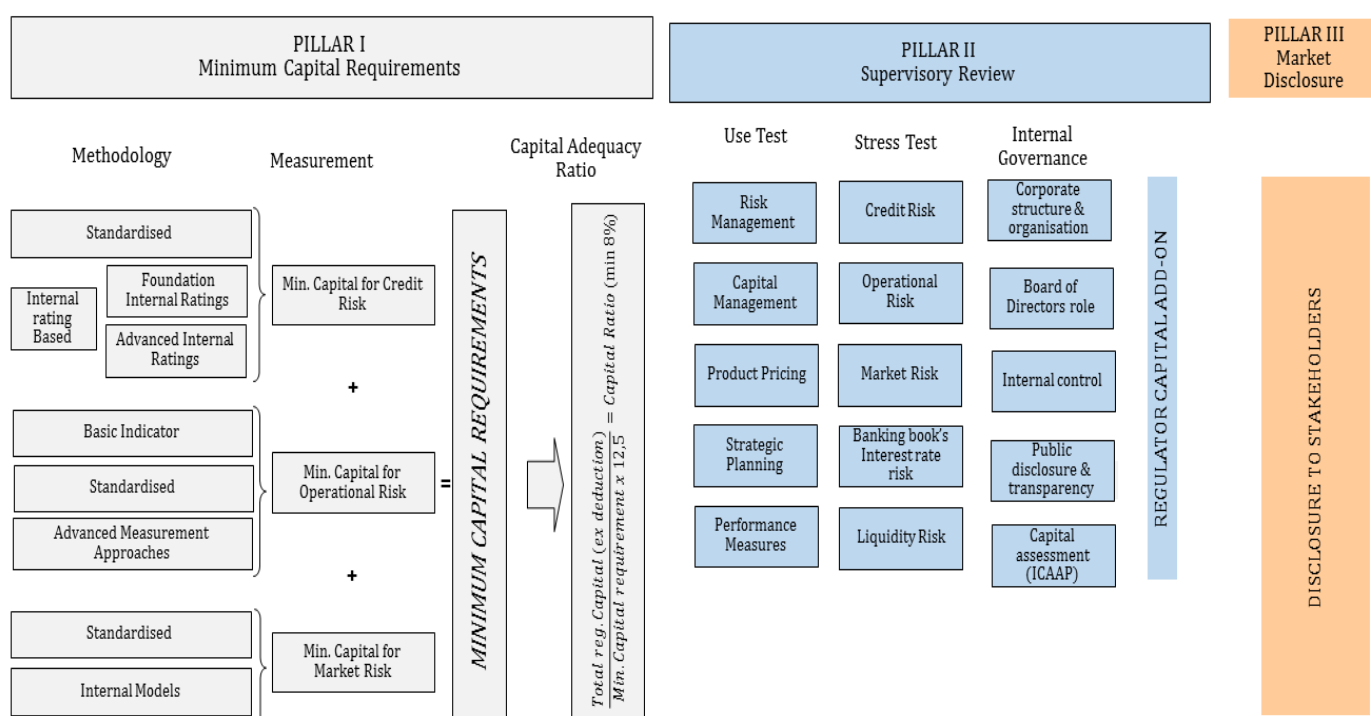


Illustration 1 – The pillars of Basel II. KPMG report: From Basel I to Basel III. 2018.

2.2 – Focus on different pillars

After illustrating the different pillars of Basel II, the present work wants to go to detail in analyzing the contents of each.

2.2.1 – PILLAR I – *Minimum Capital Requirements*

As regards the first Pillar, as previously mention, there are 3 types of risk: credit, operating and market.

2.2.1.1 – *Credit Risk*

For which concern this type of risk, it is defined as the risk of default on a debt deriving from the borrower inability to complies with his contractual obligations to repay the capital or the interest on the credit at the contractual expiration dates.

In particular, the amount of capital requirement to be set aside to cover is risk can be calculated by two different approaches³:

- a) **Standardized approach**: which computes the total amount of loss through a weighting system of rating;
- b) **Internal rating Based Approach**: which is a method by which the regulatory capital is calculated by estimate the Expected and Unexpected losses basing the analysis on the ratings calculated with internal models. The two different methodologies used are:
 - Foundation internal ratings
 - Advanced internal ratings

³ Please note that the ratio $\frac{\text{Regulatory Capital}}{\sum \text{Risk Weighted Assets}_i} \geq 8\%$ remain valid as setted in the first accord. The difference is on the different methods used in order to compute the RWA

- a) With regard to the **Standardized Approach**, it can be considered an evolution of the system envisaged by Basel I: if in fact in the *1988 agreement* the Regulatory Capital is calculated using weighting coefficients that were assigned according to the type of counterparty and transaction, Basel II proposes a more complex system based on external ratings (if present) or on fixed weighting factors⁴.

CREDIT ASSESSMENT		AAA to AA-	A+ to A-	BB+ to BBE	BB+ to B-	Below B-	Unrated
Sovereigns		0%	20%	50%	100%	150%	100%
PSEs (non central government public sector entities)	Option 1	20%	50%	100%	100%	150%	100%
	Option 2	20%	50%	50%	100%	150%	50%
MDBs (multilateral developed banks)		20%	50%	50%	100%	150%	50%
Banks	Option 1	20%	50%	100%	100%	150%	100%
	Option 2	20%	50%	50%	100%	150%	50%
	(Option 2 for short term claims)	20%	20%	20%	50%	150%	20%
Securities firms		20%	50%	100%	100%	150%	100%
Corporates		20%	50%	100%	100%	150%	100%
No profit entities		100%	100%	100%	100%	100%	100%
International Organizations		0%	0%	0%	0%	0%	0%
Retail portfolios		75%	75%	75%	75%	75%	75%
Claims secured by residential property		35%	35%	35%	35%	35%	35%
Claims secured by non-residential property		50%	50%	50%	50%	50%	50%
Past-due Loans	Write off<20% of outstanding amount loan	150%	150%	150%	150%	150%	150%
	Write off>20% of outstanding amount loan	100%	100%	100%	100%	100%	100%
	Write off>50% of outstanding amount loan	50%	50%	50%	50%	50%	50%

Table 1 – Credit assessment for different counterparties

Some clarifications about the scheme above:

- For **Sovereign**, it can be used also the country risk scores assigned by ECAs⁵.
- For **Banks**, as we can easily see there are 2 options:
 - Under to the *first option*, Basel II establishes that for all banks incorporated in a given country will be assigned a risk weight one category less favorable than that assigned to

⁴ If there are no the external ratings, the weighting factors are computed by base the analysis of the segment clients, funding type and the guarantees.

⁵ In particular if are used the ECA's scores, these should be converted in risk weights. In order to do it, ca be use the following table:

ECA risk scores	0 - 1	2	3	4 - 6	7
risk weights	0%	20%	50%	100%	150%

claims on the sovereign of that country (for the credit assessment from BB+ to B– the weighting factor is equal to sovereign at 100%);

- In the *second option* the weighting factors differ from the first option with regard to the category BBB + to BBB– where the weighting factor is at 50%. Under this option, a preferential risk weight may be applied to claims with an original maturity of three months or less, subject to a floor of 20% except for the below B– category where the weight is 150%.
- For **Retail** portfolios, in order to be encompass in this category, claims must meet four criteria: Orientation criterion; product criterion; granularity criterion; low value of individual exposures.

The risk weight factors described above will then be multiplied by the value of the asset in the credit institution's Balance Sheet in order to calculate the value of the exposure Adjusted. in formulas:

For single BS's asset: $Exposure = N * WF$

- *Exposure* is asset's value Adjusted
- *N* is the Balance sheet value
- *WF* is the asset's weighting factor

In addition to the assets present in the banks' BS, Basel II also includes the off-balance sheet items. in particular, off-balance-sheet items under the standardized approach will be converted into credit exposure equivalents through the use of credit conversion factors (CCF)⁶. In formulae:

⁶ As regards the credit conversion factor (CCF), the value depends on the nature of the underlying transaction and on the maturity. In particular we have:

- **0%** for commitments that are unconditionally cancellable at any time by bank without prior notice
- **20%** commitments with an original maturity up to one year
- **50%** commitments with an original maturity over one year
- **100%** in case of posting securities as collateral by banks, including instances where these arise out of repo-style transactions

For single off-BS's item: $Exposure = N * CCF * WF$

- *Exposure* is the asset's value adjusted
- *N* is the off- Balance sheet item value
- *CCF* is the credit conversion factor
- *WF* is the off-BS asset's weighting factor

Once computed the value of the Exposures both for BS's assets and for off-BS's items, the regulatory capital is computed as:

$$Regulatory\ Capital \geq Exposures * 8\%$$

As regard the rating, they should be evaluated by the External credit assessment institution (ECAI) that should meet the eligibility criteria:

- **Objectivity:** the methodology for assigning credit assessments must be rigorous, systematic, and subject to some form of validation based on historical experience⁷;
- **Independence:** the assessment process should be free from any constraints (e.g. conflict of interest of the board of directors or the shareholder structure) and the ECAI should not be subject to political or economic pressures that may influence the rating;
- **International access/transparency:** the rating should be available to both domestic and foreign institutions with simplicity and transparency;
- **Disclosure/ongoing review:** the ECAI should disclose the methodologies used (including the definition of default), the time horizon, the meaning of each rating. Moreover, should be re-evaluated constantly;
- **Resources:** it requested that ECAI should have sufficient resources to ensure an high quality credit assessments; moreover, the resources should be both qualitative and quantitative;
- **Credibility:** is a consequence of the criteria listed above.

⁷ Basel Committee on Banking Supervision. International Convergence of Capital Measurement and Capital Standards. A Revised Framework. June 2004

b) Regarding the **Internal Rating Based** models (IRB), the scheme provided by Basel II, splits the losses in two categories:

- **Expected Losses**, which, as expected, are covered by setting aside reserves as a percentage of the loan granted through an increase in the interest rate in the form of a premium for the greater risk;
- **Unexpected Loss**, which, as they cannot be evaluated *a priori*, are estimated and covered with regulatory capital. In detail, the estimate of the unexpected loss is more complicated and relies upon a mathematical/statistical model based on historical series on the volatility of the losses in relation to each risk factor.

Under this method, the banks that have received supervisory approval should perform some steps:

- *Categories banking-book exposure* into board classes of assets with differential underlying risk characteristics – by divide into corporate, sovereign, bank, retail, securitization, equity and other exposures.

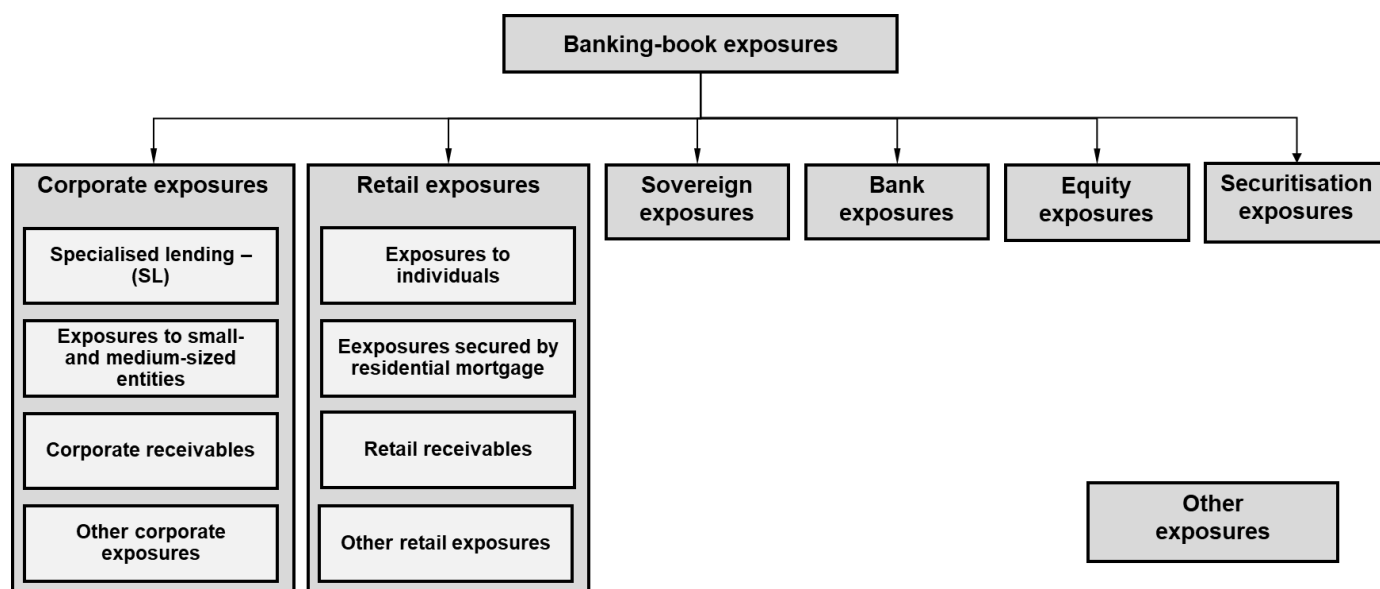


Illustration 2 – scheme for the categorization of banking-book exposure

- *Estimates risk components measures* as the probability of default (PD)⁸, loss given default (LGD)⁹, exposure at default (EAD)¹⁰ and maturity (M)¹¹ in order to compute the ratings relying on internal estimates.

Within the bound of the IRB approach, the Basel II regulation has made available two different approaches that can be used in order to compute the different measures listed above:

- **Foundation approach**, where banks provide their own estimates of PD and rely on supervisory estimates for other risk components;
- **Advanced approach**, where banks provide their own estimates of PD, LGD and EAD, and their own calculation of M, subject to meeting minimum standards.

Category of Exposures		Approaches Available	Specifications of the Approach
corporate exposures	-	Foundation IRB approach	Own estimates: PD Supervisory Parameter: LGD, EAD, M
sovereign exposures	-	Advanced IRB approach	Own estimates: PD, LGD, EAD, M
Bank exposures	-		
retail exposures	-	Foundation = Advanced IRB approach	Own estimates: PD, LGD, EAD, M
Equity exposures	Mkt Based approach	Simple weight Method	weight of 300% for publicly traded equity holdings and 400% for other equity holdings
		Internal models Method	Capital equal to the potential loss on the institution's equity holdings computed using internal value-at-risk models, 99th percentile, one-tailed confidence interval.
	PD/LGD approach	-	PD= same of debt, LGD=90% min equity exposure 100% and max 1250%

Table 2 – IRB foundation and advanced with details on the measures to be estimated

⁸ **PD**, defined as the probability that the counterpart will default in one year (it cannot assume values below 0.03%)

⁹ **LGD**, is the expected credit loss conditional on default. It is equal to 1 minus the recovery rate:

$$LGD = 1 - \frac{1}{E} \left(\sum_j \frac{Recovery\ Payments}{(1+r)^{t_j}} - \sum_i \frac{Recovery\ Costs}{(1+r)^{t_i}} \right)$$

¹⁰ **EAD**, can be defined as the expected value of the exposure at the date of default (this measure is referred to the transaction and not on the entity).

$$EAD = \text{Current Drawn Portion} - (\text{Undrawn Portion} * \text{Probability of Drawn})$$

¹¹ **M**, represent the residual life of the exposure (calculated as the average of the contractual due dates of the payments).

These parameters will be used in order to assign a class (or rating) to the different counterparts over which is possible to compute the expected loss through a mathematical formula¹²:

$$Expected\ Loss = PD * EAD * LGD = PD * EAD * (1 - Recovery\ Rate)$$

The EL, by definition, represents a loss that can be anticipated and so it is covered by revenues (interest rate, fees) and by loan loss provisions (based on the level of expected impairment). The expected loss corresponds to the *mean value* of the credit loss distribution and, being only an average value, it can be easily exceeded.

This represents the reason why Basel II is not limited to the regulation of Expected Loss but also defines the concept of **Unexpected Loss (UL)**. For its estimation, as the Committee imposed, a fundamental step is the determination and modeling of the credit risk losses. This latter element can be divided into three broad categories:

- **Structural models:** it assumes that default can be explained by a specific trigger point. the relation is estimated using the stochastic process¹³;
- **Reduced-form models:** it assumes that default is linked to default intensity that depends on changes in external factors (GDP growth, inflation, interest rates etc.). this relationship is modelled using econometrics techniques applied to historical data¹⁴;
- **Regulatory approach:** analyzed in the following paragraph.

For the convenience of the reader, this work will analyze in detail only the **regulatory approach**¹⁵ that is the model which allows banks to calculate the unexpected loss based on a

¹² This formula is not valid for equity exposures.

¹³ in this category are encompassed: Merton model that derives the probability of default at time t using the Ito's lemma process: $P(A_T < D_T) = \phi\left(\frac{\ln\frac{D_T}{A_T} - \left(\mu_A - \frac{1}{2}\sigma_A^2\right)*(T-t)}{\sigma_A*\sqrt{T-t}}\right)$; KMV model considered as an evolution of the Merton model and which nowadays is used by Moody's.

¹⁴ In this category is embedded the Credit Metrics model, introduced by J.P. Morgan in 1977 and still used. The aim of this latter model is to estimate the distribution of the economic value of the asset one year ahead in order to evaluate the current rating but also the probability of changes in the credit rating in one year horizon (i.e. transition matrix) by using the Monte Carlo Simulation. Expressing it in formula: $\{P_{ij} \sum_{k=2}^T \frac{cN}{(1+R_j^{1,T})^{k-1}} + \frac{N}{(1+R_j^{1,T})^{T-1}}\}_{j=1}$

continuous function depending on *regulatory parameters, credit risk parameter internal estimates* and on the *category of exposures*.

In formulae¹⁶:

$$\frac{\text{Regulatory Capital}}{RWA} \geq 8\%$$

$$RWA = 1.06 * 12.5 * \left\{ LGD * \phi \left[\frac{1}{\sqrt{1-R}} \phi^{-1}(PD) + \sqrt{\frac{R}{1-R}} \phi^{-1}(0,999) \right] - [E(LGD) * PD] \right\} * \frac{1 + (M - 2,5) * b}{1 - 1,5 * b}$$

Where:

1,06 = ad-hoc factor in order to be more conservative

R= correlation factor (that varies across the different category of exposures)

Φ(x) = standard normal distribution function

Φ⁻¹(x) = inverse standard normal distribution function

M = maturity

RWA = risk weighted assets

$\frac{1+(M-2,5)*b}{1-1,5*b}$ = Correction factor for maturity (not used for retail exposures)

¹⁵ The main advantages of the regulatory approach is that is simple and is independent on characteristics of the portfolio. In particular, it relies on several assumptions (not always true): normal distribution of asset values, infinitely diversified portfolio (high granularity), any dependence pattern is only described by correlations, one-factor model (an analogy to the CAPM), PD and LGD are assumed to be mutually independent.

¹⁶ For further information on the calculation: Rosario Autiero, credit risk analytics, www.creditriskmanagement.eu

Graphically:

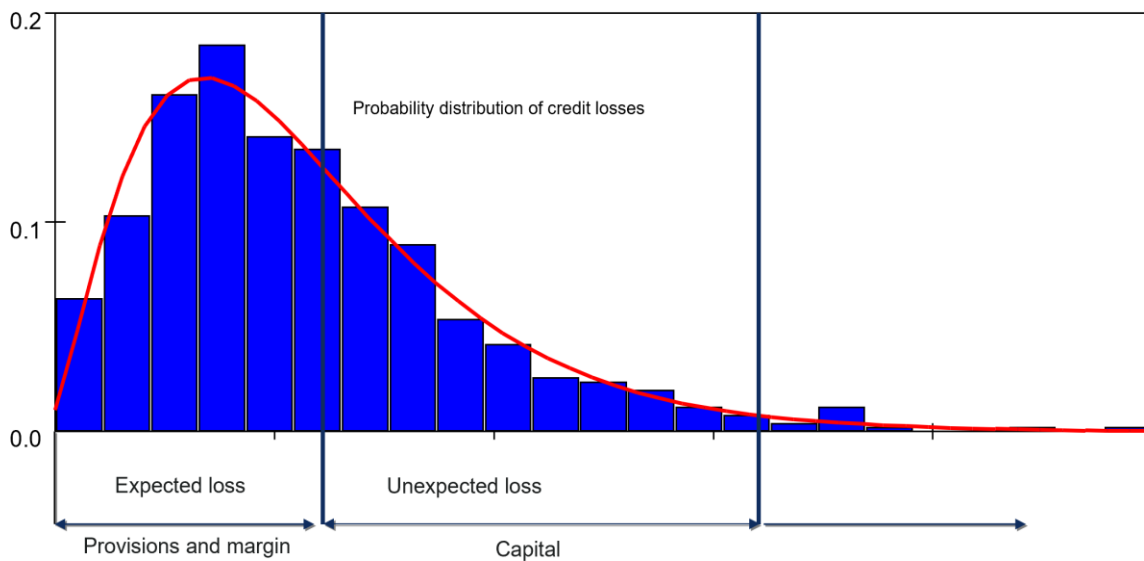


Illustration 3 – Graph representation of Expected and Unexpected loss with probability

About the graphical distribution, it is worth to mention the three key characteristics:

- *It is not symmetrical.* There is a limited upside because the best scenario is when there are no losses. However, there is extremely large downside, so the losses can be huge (Tail risk);
- *It is highly skewed.* The distribution is more concentrated toward small losses, with very few chances of large losses;
- *The distribution has heavy tail, i.e., the probability of large losses reduces very slowly.*

If it is **compared** the two methods, it can easily guess that the standardized method is more “rigid” in terms of calculation since the capital requirement derives from a discrete function. The IRB method is instead based on a continuous function such that the capital requirement will be more sensitive to changes in the various credit risk parameters.

Taking a corporate exposure as an example, assuming a 75% LGD and performing a model on excel, we will have graphically:

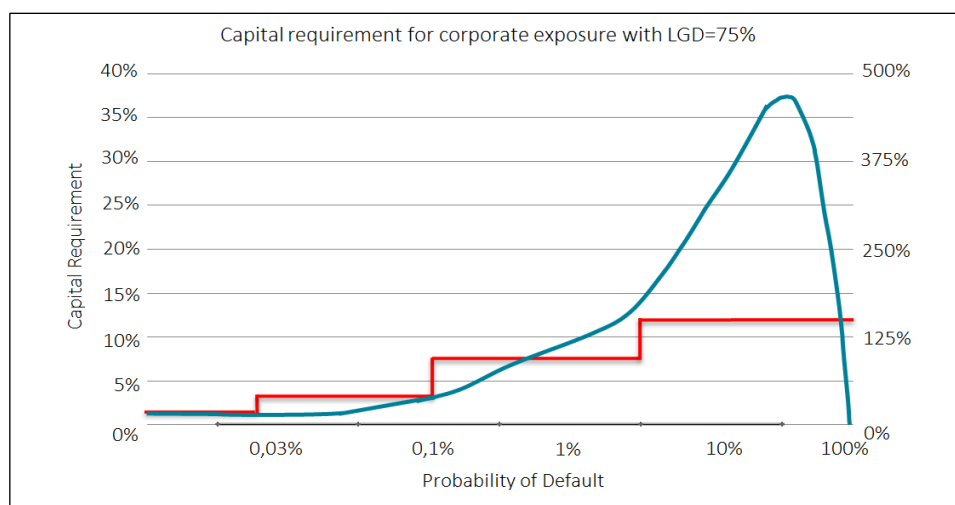


Illustration 4 – Standardized and IRB method Comparison

Where the red line is the capital requirement imposed by the standardized approach in case of corporate exposure; while the blue line is the capital requirement level under the IRB approach.

As we can see in case of low PD, the standardized approach imposes an high level of regulatory capital; while the PD capital increases, exceeding the level of capital imposed by the standardized approach. In particular, the increase in the capital requirement imposed by the IRB approach is justified by the increased risk which is then captured more precisely in the case of the IRB

2.2.1.2 – Operational Risk

The operational risk is defined as the risk of loss resulting from inadequate or failed internal processes, people and systems or from external events. In other words, operational risk refers to potential losses caused by exogenous factors that hinder banking activity, malfunctions of the bank's procedures, personnel and internal systems. This definition includes legal risk but excludes strategic and reputational risk¹⁷.

¹⁷ Legal risk includes, but is not limited to, exposure to fines, penalties, or punitive damages resulting from supervisory actions, as well as private settlements.

In particular, as regards the type of risk, the Basel Committee has identified as main determinants and drivers: *Internal Frauds* (intentional alteration of data, misappropriate property or circumvent regulation, transactions based on confidential information); *External Frauds* (losses due to acts of a type intended to defraud, misappropriate property or circumvent the law as theft, counterfeiting, falsification and software piracy); *Employment Practices and Workplace Safety* (losses deriving from payment of personal injury claims or from acts contrary with health or safety laws or agreements); *Clients, Products and Business Practices* (losses deriving from negligence or failure to meet a professional obligation to specific clients (e.g. abuse of confidential information, money laundering of illicit origin, sale of unauthorized products); *Damage to Physical Assets* (e.g. Losses arising from loss or damage to physical assets from natural disaster (e.g. earthquakes, fires, floods); *Business disruption and system failures* (e.g. loss arising from anomalies of infrastructures and IT applications, telecommunications problems, interruptions in the supply of utilities); *Execution, Delivery & process Management* (e.g. losses deriving from failed transaction processing or process management (e.g. inadequate management of guarantees, incomplete legal documentation, legal disputes with suppliers).

Basel II provides three methods for calculating operational risk capital charges¹⁸:

- (i) **The Basic Indicator Approach**
- (ii) **The Standardized Approach**
- (iii) **Advanced Measurement Approaches (AMA)**

Banks with significant operational risk exposures (for example, specialized processing banks) are expected to use an approach that is more sophisticated than the Basic Indicator Approach and that is appropriate for the risk profile of the institution.

¹⁸ Banks are encouraged to move along the spectrum of available approaches as they develop more sophisticated operational risk measurement systems and practices

(i) The Basic Indicator Approach

Under this approach, banks must hold capital for operational risk equal to the average over the previous three years of a fixed percentage of positive annual gross income¹⁹. In formulae:

$$K_{BIA} = \sum_1^3 \frac{\alpha * GI_{1...n}}{n}$$

where:

K_{BIA} = capital charge under the Basic indicator approach

α = 15%, imposed by Committee

GI = annual gross income over the previous 3 years

n = is equal to 3 (except if present years with negative Gross Income that are not taken into consideration both at the numerator and denominator)

(ii) Standardized Approach

By increasing the complexity of the organization and the numbers of counterparties there is the necessity, by the banks, to adopt some “approaches” that fit better the data in term of risk. This method, called standardized approach, requires the bank to divide the activities into eight business lines: *corporate finance, trading & sales, retail banking, commercial banking, payment & settlement, agency services, asset management, and retail brokerage*²⁰:

¹⁹ Gross income is equal to net interest income plus net non-interest income. this measure should be gross of any provisions (e.g. for unpaid interest), of operating expenses (including fees paid to outsourcing service providers), realized profits/losses from the sale of securities in the banking book and extraordinary or irregular items.

²⁰ Basel Committee on Banking Supervision. International Convergence of Capital Measurement and Capital Standards. September 2005.

Level 1	Level 2	Activity Groups
Corporate Finance	Corporate Finance	Mergers and acquisitions, underwriting, privatisations, securitisation, research, debt (government, high yield), equity, syndications, IPO, secondary private placements
	Municipal/Government Finance	
	Merchant Banking	
	Advisory Services	
Trading & Sales	Sales	Fixed income, equity, foreign exchanges, commodities, credit, funding, own position securities, lending and repos, brokerage, debt, prime brokerage
	Market Making	
	Proprietary Positions	
	Treasury	
Retail Banking	Retail Banking	Retail lending and deposits, banking services, trust and estates
	Private Banking	Private lending and deposits, banking services, trust and estates, investment advice
	Card Services	Merchant/commercial/corporate cards, private labels and retail
Commercial Banking	Commercial Banking	Project finance, real estate, export finance, trade finance, factoring, leasing, lending, guarantees, bills of exchange
Payment and Settlement ¹	External Clients	Payments and collections, funds transfer, clearing and settlement
Agency Services	Custody	Escrow, depository receipts, securities lending (customers) corporate actions
	Corporate Agency	Issuer and paying agents
	Corporate Trust	
Asset Management	Discretionary Fund Management	Pooled, segregated, retail, institutional, closed, open, private equity
	Non-Discretionary Fund Management	Pooled, segregated, retail, institutional, closed, open
Retail Brokerage	Retail Brokerage	Execution and full service

Table 3 – Requirements of the Committee in order to compute the Capital requirements under the Standardized Approach for Operational Risk

Divided into different classes the banking activities, the total capital requirement for operational risk is calculated as the sum of the capital requirements of each business line.

The capital requirement for each business line is calculated by multiplying the gross income (with a historical depth of three years) by a factor (Beta) assigned to this business line. Beta acts as a proxy for the relationship at the sector level between the experience of loss of operational risk for a given business line and the aggregate level of gross income for that line of business. In formulae:

$$K_{TSA} = \sum_{n=1}^8 \frac{\beta_n * GI_{1...n}}{3}$$

Where:

K_{TSA} = the capital charge under the Standardized Approach

$GI_{1...n}$ = annual gross income over the previous 3 years computed differently for each of the eight business lines

β_n = are fixed percentage, already settled by the Committee, varying across the different business line

	Business Lines	Beta Factors
Investment Activities	Corporate Finance	18%
	Trading & Sales	18%
	Asset Management	12%
Banking Activities	Commercial Banking	15%
	Retail Banking	12%
	Retail Brokerage	12%
Other Activities	Payment & Settlements	18%
	Agency Services	15%

Table 4 – Beta Factors of the Standardized Approach for Operational Risk

In order to use this approach, the banks must meet some criteria listed below:

- The operational risk management process must be evaluated and validated;
- The bank must have an operational risk management system with clear responsibilities assigned to an operational risk management function: there should be in place strategies to identify, assess, monitor and control/mitigate operational risk;
- The bank's operational risk assessment system (including the internal validation processes) must be subject to regular review by external auditors and/or supervisors;
- The bank must track systematically the operational risk system and the output must be analyzed and used in the monitoring and controlling process. Moreover, this information must play a considerable role in risk and management reporting;

- There must be regular reporting of operational risk exposures, including material operational losses, to business unit management, senior management, and to the board of directors. The bank must have procedures for taking appropriate action according to the information within the management reports.

(iii) Advanced Measurement Approach (AMA)

The third method proposed by the Committee is the Advanced Measurement Approach (AMA) which is subject to supervisory approval. Under this method, *the regulatory capital requirement will be equal the risk measure generated by the bank's internal operational risk measurement system.*

In order to implement and use this method for operational risk capital, the banks must meet some qualitative and quantitative standards:

Qualitative standards:

- (a) The bank must have an independent operational risk management function that is responsible for the design and implementation of the bank's operational risk management framework. This risk management department should put in place strategies to identify, assess, monitor and control/mitigate operational risk; for design and implementation of a risk-reporting system for operational risk;
- (b) The operational risk measurement system must be linked and integrated with the risk management process of the bank. Moreover, output must be a relevant part of the monitoring and controlling process. The bank must have techniques for allocating operational risk capital to major business lines and for creating incentives to improve the management of operational risk throughout the firm;
- (c) There must be a regular review from Internal and/or external auditors in order to assess how the operational risk management process is performing. In particular the control process should verify that the internal validation processes are operating in a *satisfactory*

manner²¹; assure that data flows and processes associated with the risk measurement system are transparent and accessible.

Quantitative standards:

- (a) *AMA soundness standard:* meaning that bank must demonstrate that its operational risk measure meets a soundness standard comparable to that of the internal ratings–based approach for credit risk with 99th percentile confidence interval (or in other words, the bank should be able to demonstrate that the approach used captures tail loss event);
- (b) *Internal data:* internal data tracking, especially the ones linked with internal losses, is an essential prerequisite to the development and functioning of a credible operational risk measurement system. In order to record data, bank must have documented procedures for assessing the on–going relevance of historical loss data;
- (c) *External data:* bank’s operational risk measurement system must use relevant external data (either public data and/or pooled industry data), especially when there is reason to believe that the bank is exposed to infrequent, yet potentially severe, losses;
- (d) *Scenario analysis:* A bank must use scenario analysis to evaluate its exposure to high–severity events. Over time, such assessments need to be validated and re–assessed through comparison to actual loss experience to ensure their reasonableness;
- (e) *Business environment and internal control factors:* In addition to using loss data, whether actual or scenario–based, a bank’s firm–wide risk assessment methodology must capture key business environment and internal control factors that can change its operational risk profile. These factors will make a bank’s risk assessments more forward–looking, more directly reflect the quality of the bank’s control and operating environments and help align capital assessments with risk management objectives;
- (f) *Detailed criteria:* A bank needs to have a credible, transparent, well–documented and verifiable approach for weighting the quantitative fundamental elements in its overall operational risk measurement system.

²¹ To understand in more in deep the requirements such that the requirement can be defined as "satisfactory", please refer to Basel Committee on Banking Supervision, Consultative Document: *Operational Risk – Supervisory Guidelines for the Advanced Measurement Approaches*. December 2010

Basic Indicator Approach	Standardized Approach	Advanced Measurement Approach
Features: - Low level of sophistication	Features: - Medium level of sophistication	Features: - High level of sophistication
Formulae: $K_{BIA} = \sum_{i=1}^3 \frac{\alpha * GI_{1,...,n}}{n}$	Formulae: $K_{TSA} = \sum_{i=1}^8 \frac{\beta_n * GI_{1,...,n}}{3}$	Formulae: Operational risk capital = Risk measures calculated using the banks measurement system for operational risk

Table 5 – Operational Risk: Basic, Standardized and Advanced Measurement Approach

2.2.1.3 – Market Risk

As regards market risk, the Basel II framework refers, for the determination and quantification of this type of risk, to the “*capital accord to incorporate market risk*” published by Basel Committee in 1996.

The amendment to capital accord, after defining the market risk as the risk of losses in on and off-balance sheet positions arising from movements in market prices, established that banks will be required to measure and apply capital charges in respect of their market risks in addition to their credit risks. In particular the amendment prescribes that the principal form of eligible capital to cover market risks consists of shareholders' equity and retained earnings (Tier 1 capital) and supplementary capital (Tier 2 capital) as defined in the 1988 Accord. But 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 which concern the risks subject to this requirement, are the ones deriving from interest rate related instruments and equities in the trading book and the foreign exchange risk and commodities risk.

In order to define and compute the capital requirement in relation to the market risk, the MRA (market risk amendment) allows to use two different method: (i) **Standardized Measurement Method** and (ii) **Internal Models**

(i) **Standardized Method**

This method requires that the capital requirement for market risk is calculated as the sum of the various components that are identified as the drivers of market risk. Mathematically we will have:

$$K_{Mkt\ risk} = \sum (K_{Int.Rates\ risk} + K_{int.rates\ der.} + K_{Equity} + K_{Foreign\ exchange} + K_{commodities})$$

Where K is the capital requirement.

- **Interest Rates Risk**

Risk deriving from the possibility that the fluctuation in interest rates curve will cause a change in the value of the investment in bonds (called also fixed-income securities).

Following this definition, the Committee imposed the minimum capital requirement in terms of two separately calculated charges: one applying to the "*specific risk*" of each security – whether it is a short or a long position, and the other to "*general risk*" where long and short positions in different securities or instruments in the same portfolio can be offset.

- **Specific risk:**

It is defined as the capital charge in order to protect the institution against an adverse movement in the price of an individual security caused by factors related to the individual issuer. The specific risk capital charges are²²:

²² In November 2005 there was a review of the process there was implemented by introducing the external credit assessment in order to better define the capital requirement. In particular there were three different classes: from AAA to AA-; from BB+ to BB- and unrated. For the first class the capital requirement followed the same scheme of the 1996 work; for the BB+ to BB- class and for unrated there has been an implementation of the discipline concerning both the

Categories	Specific Risk Charge
Government	0%
Qualifying	0,25% (residual term < 6 months)
	1% (residual term 6 - 24 months)
	1,6% (residual term >24 months)
Other	8%

Table 6 – Specific Market Risk Charge under the Standardized method

○ **General Market Risk**

Risk of loss arising from changes in market interest rates. Can be used the “*maturity method*” and a “*duration method*”. For both approaches, the base over which will be performed the computation, is the same and is equal to: net short or long position in the whole trading book summed with a small proportion of the matched positions in each time–band (the “vertical disallowance”) and a larger proportion of the matched positions across different time–bands (the “horizontal disallowance”).

- **Maturity Method:** The first step in the calculation is to weight the positions in each time–band by a factor designed to reflect the price sensitivity of those positions to assume changes in interest rates. The weights are:

Coupon > 3%	Coupon < 3%	Risk Weights
< 1 months	< 1 months	0,00%
1 - 3 months	1 - 3 months	0,20%
3 - 6 months	3 - 6 months	0,40%
6 - 12 months	6 - 12 months	0,70%
1 - 2 years	1.0 - 1.9 years	1,25%
2 - 3 years	1.9 - 2.8 years	1,75%
3 - 4 years	2.8 - 3.6 years	2,25%
4 - 5 years	3.6 - 4.3 years	2,75%
5 - 7 years	4.3 - 5.7 years	3,25%
7 - 10 years	5.7 - 7.3 years	3,75%
10 - 15 years	7.3 - 9.3 years	4,50%
15 - 20 years	9.3 - 10.6 years	5,25%
Over 20 Years	10.6 - 12 years	6,00%
	12 - 20 years	8,00%
	Over 20 years	12,50%

Table 7 –Time–bands of Maturity method with relative Risk Weights

government category and others bringing them both to an 8% requirement. For the Below BB– category the capital risk requirement for market risk was 12%.

- **Duration Method:**

Under the duration method, banks with their supervisors' consent, can use a more accurate method of measuring all of their general market risk by calculating the price sensitivity of each position separately. Banks must elect and use the method on a continuous basis (unless a change in method is approved by the authority) and will be subject to supervisory monitoring of the systems used²³.

- **Equity position Risk**

It can be defined as the minimum capital standard to cover the risk of holding overtaking positions in equities in the trading book. It applies to long and short positions in all instruments that exhibit market behavior similar to equities, but not to non-convertible preference shares. The long or short position in the market must be calculated on a market-by-market basis. The capital charge will be:

- For specific risk equal to 8%, unless the portfolio is both liquid and well diversified, in which case the charge will be 4%;
- For general market risk the charge will be 8%.

- **Foreign Exchange Risk**

The Committee defines the foreign exchange risk as the risk of holding or taking positions in foreign currencies, including gold. In order to be computed must be performed two phases: (i) measure the exposure in a single currency position and (ii) measure the risks inherent in a bank's mix of long and short positions in different currencies.

²³ For a detailed definition of the different risk weights under the Duration method: Basel Committee on Banking Supervision, Amendment to the Capital Accord to incorporate market risk, November 2005

(i) *The position in each currency should be calculated summing:*

- The net spot position as $\sum(\text{assets items} - \text{liability items})$ in the relative currency;
- Net forward position as $\sum(\text{amount to be received} - \text{amount to be paid})$;
- Guarantees (and similar instruments) that are certain to be called and are likely to be irrecoverable;
- Net future income/expenses not yet accrued but already fully hedged

(ii) In order to compute the *risk requirement*, banks will have a choice between two alternative measures at supervisory discretion: a "shorthand" method which treats all currencies equally and for which the capital charge will be 8% of the overall net position; and the use of internal models which takes account of the actual degree of risk dependent on the composition of the bank's portfolio.

- **Commodities Risk**

For commodities, the Committee define the commodities risk as the risk of holding or taking positions in commodities, including precious metals (excluding gold). The methods provide by the Committee, are:

- **Simplified approach**, where all commodities, commodity derivatives and off-balance-sheet position which are affected by changes in commodity prices are included and will be applied a capital charge equal to 15%.
- **Maturity ladder approach**, which relies over two different steps:
 - Express each commodity position (spot plus forward) in terms of the standard unit of measurement (barrels, kilos, grams etc.);
 - Matched, for each time-band, the sum of short and long positions and multiplied first by the spot price for the commodity, and then by the appropriate spread rate for that band:

Time - Band	Spread Rate
> 1 months	1,50%
1 - 3 months	1,50%
3 - 6 months	1,50%
6 - 12 months	1,50%
1 - 2 years	1,50%
2 - 3 years	1,50%
> 3 years	1,50%

Table 8–Time–bands of Maturity ladder approach method with Spread Rate

Computed the value by applying the spread, the bank must compute the capital requirement by apply 15% change either to long or short position.

- **Options Risk**

Aware of the difficulties in measuring price risk for options, Basel Committee define a method called simplified approach in order to define the capital charges for this specific risk type. In detail, for Long or Short cash and for Long Put or Long Call the capital charge will be computed as the market value of the underlying security less the amount the option if is in the money (or bounded by 0) multiplied for 8% in case of currency option or 15% in case of options on commodities.

(ii) **Internal Model**

Regarding the internal model, the Committee has conditioned its use to the explicit approval of the supervisory authority and/or external auditor. In detail, the Basel Committee has subjected approval to a series of qualitative and quantitative standards.

As regards the *qualitative requirements*, the bank (i) should have an independent risk control unit that is responsible for the design and implementation of the risk management system and should conduct a bank–testing program; (ii) board of directors and senior management should be involved in the risk control process; (iii) should be in place a stress test program on a daily basis.

As regards the *quantitative requirements*, the Committee has stressed the VaR concept (Value at Risk) establishing that the bank must calculate it on a 10–days basis, one tailed confidence interval at 99th percentile. Computed it, each bank must meet, on a daily basis, a capital requirement expressed as the higher of (i) its previous day's value-at-risk number (ii) an average of the daily value-at-risk measures on each of the preceding sixty business days, multiplied by a multiplication factor set by supervisory authorities.

2.2.2 – PILLAR II – Supervisory Review Process

In the text of Basel II, the commission does not only define the minimum requirements for bank capital as, although it recognizes a link that exists between risk and the amount of capital held by banks, it does not underestimate the theme of bank's management and internal control process²⁴. Especially, the Committee establishes that there must be supervisors who, through their operate, ensure that the banks develop and use a better risk management risk technique in monitoring and managing their risks²⁵. Moreover, the supervisors are expected to evaluate how well banks are assessing their capital requirements and in case of deficiencies, they can prompt intervene in order to reduce risk or restore capital.

The Committee established four key principles in order to guide the supervisory review²⁶:

- **Control of Capital adequacy:** *Banks should have a process for assessing their overall capital adequacy in relation to their risk profile and a strategy for maintaining their capital levels* (in other words the bank should be able to demonstrate that chosen internal capital targets are well founded and that these targets are consistent with their overall risk profile and current operating environment;
- **Supervision:** *Supervisors should review and evaluate banks' internal capital adequacy assessments and strategies, as well as their ability to monitor and ensure their compliance with regulatory capital*

²⁴ Framework for Internal Control System in Banking Organizations, Basel Committee on Banking supervision, Basel 1998

²⁵ Basel Committee on Banking Supervision, Internal audit in banks and the supervisor's relationship with auditors, August 2001

²⁶ Core principles for Effective Banking Supervision, Basel Committee on banking supervision, September 1997; Core principles Methodology, Basel Committee on banking supervision, October 1999 (www.bis.org)

ratios. Supervisors should take appropriate supervisory action if they are not satisfied with the result of this process;

- **Conservative Estimation:** *Supervisors should expect banks to operate above the minimum regulatory capital ratios and should have the ability to require banks to hold capital in excess of the minimum;*
- **Preventive Supervision:** *Supervisors should seek to intervene at an early stage to prevent capital from falling below the minimum levels required to support the risk characteristics of a bank and should require rapid remedial action if capital is not maintained or restored;*

The application of these principles requires a continuous interaction between the bank and the Supervisory Authority called by the Basel II Supervisory Review Process (SRP) and which is structured into two steps:

- *Internal Capital Adequacy Assessment Process – ICAAP:* in which bank equips itself of an internal structure, with clearly identified responsibilities, which manages the procedures for determining the minimum requirements in relation to the overall risk of the bank's activities;
- *Supervisory Review and Evaluation Process – SREP:* Supervisory Authorities express a judgment on the first point and, if necessary, require the adoption of additional measures.

2.2.3 – Pillar III – Market Discipline

Aware of the evidence that a market discipline can contribute to a safe and sound banking environment, the third pillar²⁷ introduces the obligation to inform the public²⁸ with appropriate information about the minimum risk-based capital requirements and other quantitative requirements (Pillar I) and the supervisory review process (Pillar II). Moreover, it and aims to

²⁷ Pillar III was issued in 2004 and subsequently revised in 2006 –Basel II: International Convergence of Capital Measurement and Capital Standards: A Revised Framework – Comprehensive Version– and in July 2009 – Enhancements to the Basel II framework and Revisions to the Basel II market risk framework

²⁸ The disclosure set out in pillar III should be made on a semi-annual basis

promote market discipline by providing meaningful regulatory information to investors and other interested parties on a consistent and comparable basis.

About this pillar, the Committee has agreed upon five guiding principles:

- Principle 1: Disclosures should be clear;
- Principle 2: Disclosures should be comprehensive;
- Principle 3: Disclosures should be meaningful to users;
- Principle 4: Disclosures should be consistent over time;
- Principle 5: Disclosures should be comparable across banks.

2.3 – Impact on the Market

As regards the impact that Basel II had on the market, the impact will be analyzed both on the banking world (directly) and on the corporate one (indirectly).

For the banking world, the first responses on the quantitative impact of the regulation came from the Quantitative Impact Study (QIS).

In particular, the data of a study that involved about 300 banking institutions revealed that in the Euro Area there was an increase in the level of capital for the institutions that used the Standard calculation method, while a decrease was recorded for the institutes that used the IRB foundation and IRB advanced methods. In particular, as can be seen from the graph below, there was a marked decrease for the institutes of Sample 2²⁹ in case of use of the IRB foundation method which shows how the use of internal calculation methods of the rating are expensive at the beginning for the level of resources they require, but very advantageous in terms of the capital to be held.

²⁹ In group 1 are encompassed the large banks with a broadly diversified activity while in sample 2 there are medium and small institutions

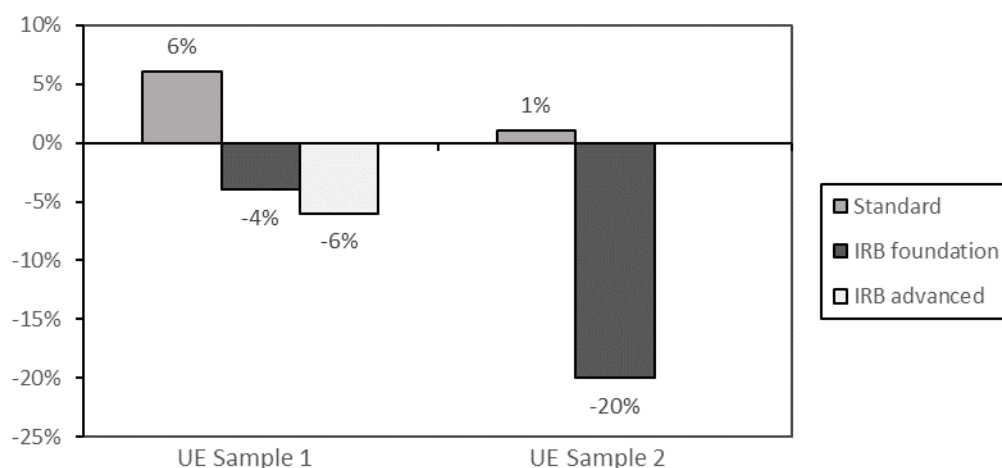


Illustration 5 –Percentage change in Banks' Capital following Basel II application. Source: QIS

As regards the qualitative impact of Basel II on the banking world, the implementation of capital and supervisory requirements has forced credit institutions to rebalance *customer management* in order to maximize the risk/return ratio.

It was observed:

- A review of the credit lending process finalized in a revision of the scheme of “*choice*” of clients since more accurate is this process, and lower is the risk that the bank must support and therefore the lower the regulatory capital to be set aside (Pillar I);
- Facilitation of large institutions: deriving from the empirical evidence that, given the expensive investment to equip itself with advanced risk management divisions, only the largest institutions can support these costs and therefore can benefit from lower minimum capital requirements than those required with the standard method for smaller institutions;
- A revision and revolution of the banking business models: it is a common opinion that the “leading force” of the transaction process from the “*originate and hold*” to the “*originate to distribute*” model was the strict Basel II framework which has imposed on institutions to stress ROE measure by focusing on increasing the interest margin;

As regards the relationship between banks and corporates, Basel II changes the pricing methodologies emphasizing the strong correlation between the costs of the loan and the rating³⁰.

³⁰ See Table 1

In practice, the implementation of the new regulatory provisions, accentuates the link between rating and pricing, making it more solid, structured and transparent. This may induce a restrictive effect on companies, particularly SMEs, as borrowers of lower credit quality would see their conditions worsen with an effect of reducing their borrowing capacity.

By referring again to the QIS³¹, however, it is noticeable how only around 20% of the companies are non-investment grade: therefore, there seems to be a minority of companies who, characterized by a low rating, could pay the cost of risk in terms of extra-spread.

Probability of Default	% of exposure
< 0,2%	58%
From 0,2% to 0,8%	21%
> 0,8%	21%
Totale	100%

Table 9 – QIS report: PD of different classes of corporate

§ 3 *Basel III*

3.1 – The 2007 crisis

Although it is widely endorsed the great merit attributed to the Basel II Concordat, when it entered into force in 2008, it had to immediately interface with one of the most drastic financial events in contemporary history and which still today characterizes the world economy: the 2007 crisis.

This crisis, also known as the Subprime mortgage crisis, had its roots in the massive granting of mortgage by the banks that, confident of the FED's expansionary policies and the solidity that the real estate market presented in the years 2000–2006 in America, granted loans to a large number of families that under normal conditions would not have had the requisites necessary to obtain a financing. It was precisely the bursting of the bubble in the real estate market that led to the downturn and collapse of the entire system which, through the strong interconnection between

³¹ We refer to the Quantitative Impact Study 3 (May 2003)

the various credit institutions, expanded worldwide aggravated by falling of the exports, reflecting the collapse in world trade and declining investment on the back of inflation and receding final demand and tighter financing conditions.

Proceeding by stages, we will discuss about the (i) circumstances behind the crisis, (ii) the outbreak of the real estate and (iii) the transmission in the banking sector and in the real economy.

(i) *Circumstances behind the crisis*: Its can be traced essentially in:

- *Real estate market trend*: in particular, in the period 2000–2006, in America there was a continuous and constant growth in the prices of the buildings that generated a bubble in the property and building market. This encouraged the financial institutions to grant mortgages with a certain ease and simplicity, given that the high market value of the houses seemed a sufficient guarantee (even against borrowers with an high risk profile);
- *Expansive monetary policy*: in response to the "internet bubble" of 2001, the FED decided to adopt an accommodating policy aimed at keeping interest rates low so as to lower the cost of money. This was one of the determining reasons for the crisis since the level of interests made mortgages convenient for both families and banks;
- *Securitization*³²: Securitization is the process of taking an illiquid asset – as the mortgages, and through financial engineering, transforming it (or them) into a security. with this process, the institutions could immediately return part of the investment. In a low interest rate environment, these *asset-back securities* have been subscribed by many investors both in the US and in Europe. This circumstance created the conditions for the transmission of the crisis from the US economy to European economies;
- *Evolution in the banks' business model*: the crisis has its roots in the change of the credit institutions' business model³³ which moved from a "originate and hold" model – for which the assets as loans or mortgage are collected in the banking portfolio, to a model

³² It is defined as the transfer of a company's assets (i.e. originator) to an SPV (special purpose vehicle) in order to issuing securities on asset's basis and placing them on the market. in this way, the credit passes from the SPV to third-party investors who will be remunerated on the basis of the coupons of capital and interest indicated in the payment. If the credit becomes uncollectable, the purchaser of asset-back securities loses both the interest and the paid-up capital. Securitization is a non-recourse assignment, i.e. there is no guarantee of the debtor's solvency and the risks weigh on the holders of the securities.

³³ This topic will be discussed in the Chapter 3

“originate to distribute” in which the assets are sold through the securitization process described above³⁴.

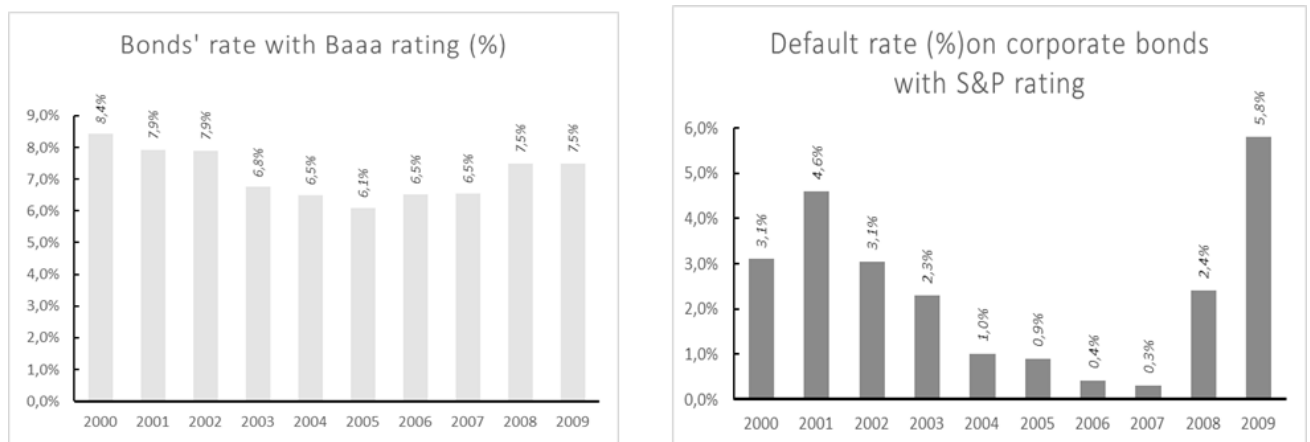


Illustration 6: Bonds' rate with Baa rating and Default rate on Corporate bonds. Is worth to notice the decaying tendencies of both graph in the period 2001–2007 due to the wave of liquidity and low interest rates

(ii) *Spilling of the Real Estate Market crisis:*

These conditions were linked to each other: low interest rates encouraged investments and economic growth, which in turn boosted the growth of companies reducing the difficult situations that lead to insolvency. A low default rate, in turn, reduced the risk premium required by banks, funds and insurance, and this ensured companies and individuals to finance themselves at attractive and affordable rates. This “favorable” financial context in turn brought on an high level of liquidity in the international financial markets, given that the offer of funds by investors exceeded the demand, generating a situation resumed by the dictum “*too much money chasing too few investments*”.

It was this economic upturn that incite and induce the FED in 2005 to raise interest rates by starting to destabilize the balance of the whole system.

In particular, the previous described macroeconomic conditions fostered the emergence of four important fragility: a high level of financial leverage for businesses and individuals, an

³⁴ The substantial difference is that while in the originated and hold model the banks remain responsible for the risks of the instruments issued (e.g. the solvency of the debtor), in the case of the model originated to distribute the banks, through the securitization process, do not hold these instruments in the assets, but they transfer them to a special purpose vehicle which transform them into financial instruments (i.e. securitization) without setting aside any capital reserve to cover the related risk.

inadequate assessment of the risk of loans (sold subsequently on the market), a deficit of attention on the credit risk for securities resulting from securitization transactions, a high degree of leveraging of securitization processes.

In other words, the rise in interest rates made mortgages more and more onerous and oppressive, thus increasing the number of insolvency cases for those families who, from the get-go, did not have the basic requirements for a mortgage (whose access to credit it was guaranteed only by the negligent assessment of creditworthiness connected with the desire to increase the level of leverage). The direct consequence was the decrease in demand for real estate and the increase in foreclosures (which also led to the growing supply of buildings): the real estate market bubble had burst.

(iii) Contagion in the banking spectrum and in the real economy

The crisis had a strong impact on the banking environment which recorded significant losses. Starting in mid-2007, the rating agencies began to downgrade the ABS which, soon becoming illiquid, forced the SPVs to draw on credit lines that the banks guaranteed: as a consequence, the banks started to obtain funding from the interbank market. Meantime, however, the interbank market began to show the first signs of collapse given that the banks, alarmed to incur into extra-loss in that non-transparent scenario, initiated to use CDS³⁵ as the driver of choice for the loans, which in the intervening time had experienced strong growth. This, combined with a sharp rise in interest rates, led the banks to not trust each other until they reached a complete paralysis and freezing of the interbank market.

The crisis demonstrated more and more systemic, with unprecedented turbulence that extended from the market for structured products to stock markets (as for example to companies' securities in the financial sector) and progressively to the entire financial system, revealing a high degree of interconnection. Due to the direct or indirect exposure of

³⁵ A credit default swap is designed to transfer the credit exposure of fixed income products between two or more parties. In a CDS, the buyer of the swap makes payments to the swap's seller until the maturity date of a contract. In return, the seller agrees that – in the event that the debt issuer (borrower) defaults or experiences another credit event – the seller will pay the buyer the security's value as well as all interest payments that would have been paid between that time and the security's maturity date.

the banks of some European countries to the phenomenon of subprime mortgages, the contagion spread to Europe.

In a short time, the *subprime crisis* shifted to the real US and European economy, causing a fall in income and employment. This fall was due in particular to the *restriction of bank credit to households and businesses*, the *collapse of stock markets* and house prices and the *progressive deterioration of the expectations* of families and businesses, with consequent repercussions on consumption and investments.

This obviously had effects on the GDP of the various countries that, in the years following the 2007 crisis, experienced a significant reduction³⁶. This, combined with the “costs” necessary to bail-out the bank, aggravated the financial situation of several countries.

As a result of the financial crisis outlined in this section, the BCBS has activated a process of revision of the Basel II regulatory framework. In fact, albeit Basel II defines and work with the RWAs instead of the mere balance sheet value in order to compute the capital requirement, it was no sufficient in avoid the crisis and its consequences. In fact, as will be explained more accurately in the next Chapter, the crisis has highlighted two other aspects of the management of banks that Basel II did not adequately consider: that is, leverage and liquidity management.

As effectively summarized by the Basel Committee in a single sentence “*One of the main reasons the economic and financial crisis became so severe was that the banking sectors of many countries had built up excessive on- and off-balance sheet leverage. This was accompanied by a gradual erosion of the level and quality of the capital base. At the same time, many banks were holding insufficient liquidity buffers. The banking system therefore was not able to absorb the resulting systemic trading and credit losses nor could it cope with the reintermediation of large off-balance sheet exposures that had built up in the shadow banking system. The crisis was further amplified by a procyclical deleveraging process and by the interconnectedness of systemic institutions through an array of complex transactions*”³⁷.

Hence the introduction in Basel III of minimum requirements concerning leverage and liquidity indices.

³⁶ In some cases, the reduction reaches negative results in GDP

³⁷ Basel Committee, 2009

3.2 – News and the new Capital Regulatory Requirements

As a consequence of the crisis in the financial and real economy, the Basel Committee on banking supervision (BCBS) has initiated a process of revising of Basel II creating a new regulatory system called **Basel III**. The main objective of the new framework is to set up a system able to correct the deficiencies of Basel II, thus preventing any crises spilling into the real economy, generating repercussions on GDP and unemployment. In particular, the soft spots of Basel II highlighted by the Committee are:

- **Quality and level of capital:** in particular it was highlighted how, although the Tier 1 of the large groups was on average equal to 8% (about twice the minimum regulatory capital), it was mostly composed by hybrid or innovative capital instruments. If the pros are that these instruments did not dilute the control given the absence of a vote, on the other, the banks, in order not to compromise the future collection, had imposed the obligation not to renounce to pay interest and/or to repay the capital associated with these instruments, thus deteriorating to the consistency of the *Tier 1*;
- **Procyclicality:** it was acknowledged the tendency of Basel II to accentuate the fluctuations of the economic cycle since, it is an empirical evidence the decrease trend of ratings in case of economic growth and the increase in case of recession³⁸;
- **Increase in financial leverage:** this evidence, more than in Basel II, the author of this paper is of the option that should fit into a broader context determined mainly by the change in the Banking Business model, passing from the *originate and hold model* to the *originate to distribute model*. It is an evidence that, in the years preceding the crisis, it was a very aggressive leverage level that led to a massive and immediate deleveraging in the post-crisis period, causing strong market instability;

³⁸ It is necessary to highlight how, although there is nothing wrong with a regulation that requires banks to have more capital at recessive economic phases, i.e. when they deal with higher risks, this same logic appears counterproductive when the perspective is not for a single bank ("micro-prudential" regulation), but of the financial system as a whole ("macro-prudential" regulation). As noted by the Financial Stability Board (2009): "The present crisis has demonstrated the disruptive effects of procyclicality – mutually reinforcing interactions between the financial and real sectors of the economy that tend to amplify business cycle fluctuations and cause or exacerbate financial instability".

- **Liquidity:** accustomed to rely on the high liquidity of the interbank market, the blocking of this market has caused a great contribution to the spread of the crisis. In fact, in the 2006–2008 period, many large institutions are able to overcome the crisis only because of the *wave* of liquidity provided by the central banks. In actual fact Basel II did not completely forget the liquidity risk but included it within the "second pillar": so not through an explicit and uniform requirement for all banks, but encouraging individual banks to equip themselves with tools and processes to measure it and keep it under control;
- **Capital Requirements for Market Risk:** The capital requirements on market risks calculated according to the rules of Basel II were found to be severely inadequate to absorb these losses with particular regard to those banks that used internal models (10-day VaR with 99% of confidence). This was due first of all to the "*bad memory*" of the **VaR** considering that, the continuous updating to reflect the current market conditions, render it very fast to lose sight on the losses happened in the past; and secondly to the classification of financial instruments in the trading book rather than in the banking book in order to do an arbitrage and benefit from a discount on capital requirements³⁹.

Like any review process, the Basel Committee, in redefining the new regulatory framework (which will be called Basel III), started with the aforementioned criticalities. In particular, the declared objective of the new framework is to improve banks' capacity to absorb shocks of any kind, so as to prevent the potential crisis from being transmitted to the economy, generating effects on GDP and unemployment.

³⁹ While the requirement on the market risk of the trading book is based on a 99% VaR at 10 days, the credit risk requirement in the banking book pivot on a 99.9% VaR at one year

3.2.1 – *Quality and level of the capital*

The new scheme, with regard to the rules on regulatory capital, provides that should be attributed a greater weight to the assets component of higher quality, so the one consisting of shares and profit reserves. More precisely, the regulatory capital is given by the algebraic sum of the **Tier 1** or **Tier 2** capital, destined to absorb losses in conditions of business continuity (*going concern capital*) and Tier 2, which should serve to cover losses in the event of a crisis (*gone concern capital*)⁴⁰.

The new limits imposed by Basel III regulation are:

- Common Equity Tier 1 must be equal to at least to 4,5% of the risk weighted assets in any time;
- Tier 2 capital must be equal, at any time, to at least 6.0% of risk-weighted assets;
- Total regulatory capital (core capital plus supplementary capital) must be equal to at least 8.0% of RWA at any time.

Moreover, the Committee, in order to stress deeply the strength of the Common equity Tier 1, has provided that there should be the deduction of some components in the computation (e.g. deferred taxes, unconsolidated investments) as well as the gradual exclusion of innovative instruments of capital deemed not sufficiently "*solid*" (e.g. hybrid instruments) starting in 2013.

The Committee, aware of the tendency of intermediaries to behave procyclicality, has envisaged the introduction of two additional capital requirements, called "*capital conservation buffer*" and "*counter-cyclical buffer*" aimed at ensuring that banks maintain a cushion of capital to absorb the losses associated with periods of high economic and financial turbulence⁴¹. It is expected that the

⁴⁰ For which concern Tier 1, it includes all the instruments identified by perpetual duration and absence of dividend distribution obligation (e.g. ordinary shares, share premium, reserves of profits and revaluation reserves from supplementary assets).

Tier 2 includes instruments issued by the bank and which meet certain computability requirements such as being callable and having a maturity of at least five years (e.g. the premium and some provisions for credit losses, deferred tax assets).

The Tier 3, provided by Basel II for the coverage of market risks, has been abolished.

⁴¹ In particular, it should be noted that, while the capital conservation buffer is a *micro-prudential measure*, the counter-cyclical buffer is a measure of a *macro-prudential* nature whose objective is to protect the total banking system from an excessive aggregate credit offer, thus balancing the procyclicality of capital.

capital conservation buffer – equal to 2.5% of risk-weighted assets, should be introduced gradually starting in 2016; while the counter-cyclical buffer (also equal to 2.5% of risk-weighted assets) depends on the discretion of the individual national supervisory bodies.

As could be seen, Basel III raised considerably the capital requirement. Briefly resuming with a table:

index	Tier 1	Tier 2	Total Capital
Minimum	4,5%	6,0%	8,0%
Conservation Buffer	2,5%	2,5%	2,5%
Total	7,0%	8,5%	10,5%
Counter - Ciclical buffer	0,0%-2,5%		

Table 10 – Basel Committee on Banking Supervision; Basel III: A global regulatory framework for more resilient banks and banking systems. December 2010

3.2.2 – Increase in financial leverage

As mentioned earlier in the discussion of the subprime crisis, in the period 2007–2009, financial institutions had strong financial leverage with the consequence that, with the bursting of the real estate crisis they were forced to sharply reduce their debt recurring to a massive liquidation. This led to an increase in losses which in turn resulted into an erosion of the capital from which the contraction in the volume of credit.

On the base of these dynamics, the BCBS, with the support of the Financial Stability Board, imposed a maximum level of leverage. This requirement aims on the one hand to contain the accumulation of financial leverage (and the negative effects associated with deleveraging processes), and on the other to limit the possible measurement errors connected to the current system used to calculate assets weights.

Analytically, the leverage ratio is calculated as:

$$\text{Plain Leverage} = \frac{\text{Tier 1}}{(\text{on - balance sheet exposures}) + (\text{off - balance sheet items} * 100\%)} > 3\%$$

In calculating the leverage ratio, the Committee wanted to introduce to the denominator, not only the on-balance sheet exposures at their *plain value*, but also the amount of the off-balance sheet positions by applying a conversion factor of 100%.

3.2.3 – Liquidity

One of the causes in the propagation of the crisis was the block experiences by the interbank market from which derive the lack of liquidity and the consequent rapid deleveraging and the losses. This led to empirical evidence that an adequate capitalization of banks, is a necessary but not sufficient condition for its stability. This is why the Basel Committee has proposed the introduction of two new prudential supervisory requirement that impose banks to maintain a minimum level of liquidity called Liquidity Coverage Ratio and Net Stable Funding Ratio.

As regards the first of the two – the **LCR**, it was introduced with the specific purpose of ensuring that a bank maintains high quality liquid assets (HQLA) sufficiently to generate cash in order to deal with a situation of tension. In other words, its introduction aims to safeguard the banks' short-term liquidity by establishing the relationship between HQLA and total net cash outflows⁴² expected in the specified stress scenario for the subsequent 30 calendar days, equal at minimum at 100%.

$$LCR = \frac{\text{High Quality Liquid Assets}}{\text{Total Net cash expected in a stress scenario for the subsequent 30 days}} \geq 100\%$$

⁴² The total net cash outflows are defined as the total expected cash outflows minus total expected cash inflows. Total expected cash outflows are calculated by multiplying the outstanding balances of various categories or types of liabilities and off-balance sheet commitments by the rates at which they are expected to run off or be drawn down. Total expected cash inflows are calculated by multiplying the outstanding balances of various categories of contractual receivables by the rates at which they are expected to flow in under the scenario up to an aggregate cap of 75% of total expected cash outflows.

Although the Committee admits the great difficulty in maintaining a 100% ratio, the goal of the requirement is to encourage banks to maintain a very high level of readily and easily liquidable assets to deal with the event of market turbulence.

In detail, for which concern the numerator, the Committee requires the inclusion of the assets that can be easily and immediately converted into cash at a little or no loss of value, have an ease and certainty of valuation, low correlation with risky assets, low volatility and flight to quality.

More precisely, there are two different categories of High-Quality Liquid Assets weighted with certain factors depending on their degree of liquidity⁴³. The first category consists of activities for which the weighting is 100% and encompass *coins and bank notes, qualifying central bank reserves and qualifying marketable securities from sovereigns and central banks*.

The second category, which allows a maximum of 40% of the total HQLA, includes lower quality activities such as *qualifying corporate debt securities or qualifying covered bonds rated AA– or higher for which the factor is 85% or moreover the qualifying corporate debt securities rated between A+ and BBB– or qualifying common equity shares* for which the factor is 50% and for which the maximum is 15% of the total amount of HQLA.

⁴³ The weighting factors introduced by the Committee assume values between 100% and 50%: for those assets that can be promptly liquidated without incurring losses in value, the weight is 100% while will be weighted with factors of 85%, 75% and 50% , the assets that though are liquid, do not guarantee the full realization of the capital in the event of a massive and immediate liquidation. The weighting factors have been introduced to ensure that the numerator is considered in the same scenario as the denominator variable, i.e. that of the turbulence situation.

Item	Factor
Stock of HQLA	
A. Level 1 assets:	
<ul style="list-style-type: none"> • Coins and bank notes • Qualifying marketable securities from sovereigns, central banks, PSEs, and multilateral development banks • Qualifying central bank reserves • Domestic sovereign or central bank debt for non-0% risk-weighted sovereigns 	100%
B. Level 2 assets (maximum of 40% of HQLA):	
Level 2A assets	
<ul style="list-style-type: none"> • Sovereign, central bank, multilateral development banks, and PSE assets qualifying for 20% risk weighting • Qualifying corporate debt securities rated AA- or higher • Qualifying covered bonds rated AA- or higher 	85%
Level 2B assets (maximum of 15% of HQLA)	
<ul style="list-style-type: none"> • Qualifying RMBS • Qualifying corporate debt securities rated between A+ and BBB- • Qualifying common equity shares 	75% 50% 50%
Total value of stock of HQLA	

Table 11 – BCBS. The Liquidity Coverage Ratio and liquidity risk monitoring tools. January 2013.

Cash outflows at the denominator, instead, are calculated as total expected cash outflows minus total expected cash inflows in a stressful situation over a period of 30 calendar-days. For stress scenarios, as indicated by the Basel Committee, it must be a period in which the bank's rating is worse, there is a run-off of retail deposits, a loss of the bank's funding capacity and a massive draw credit lines from customers.

With regard to the second of the two ratios, the **NSFR**, it is a requirement aimed at promoting an attitude of the banks to not rely only on short-term financial resources (especially in case of large amount of assets with longer maturities). It is achieved through the determination of a balanced relationship between the sources of medium-long term financing and the need for medium-long term funds; or in other terms in a balance between *available stable funding* (ASF) and *required stable funding* (RSF) which must exceed 100%. Mathematical:

$$NSFR = \frac{\text{Available Stable Funding}}{\text{Required Stable Funding}} > 100\%$$

As for the previous ratio, is worth to analyze both the numerator and the denominator.

About the **numerator**, the amount is composed by the sum of three different items: total regulatory capital (Tier 1 and Tier 2), deposit and term deposit with a residual maturity less than one year, funding with residual maturity less than one year and the other liability. After calculating the value of the various items described, each of these is then multiplied by an ASF factor (or *stability coefficient*) ranging from 100% for the most stable sources to 0% for non-stable sources and therefore not included in the calculation. As prescribed by the Committee, the sources considered most stable, and therefore with a 100% weighting factor as the total amount of regulatory capital and the Other capital instruments and liabilities with effective residual maturity of one year or more (e.g. preferred stock); getting down to 90% weighted factor we have Stable non-maturity (demand) deposits and term deposits with residual maturity of less than one year provided by retail and small business customers⁴⁴; less stable, and therefore with a 50% factor, we reach the Funding with residual maturity of less than one year from sovereigns, PSEs, and multilateral and national development banks until get up to the All other liabilities and equity not included in the above categories which have a weighting factor of 0% and so are excluded.

Switching to the **denominator**, it follows the same logic of the numerator with the difference that in this case the various components are assets category weighted in relation with the degree of liquidity according to an RSF factor. Being in the denominator, following a mathematical logic, the items considered to be more liquid will be weighted with a smaller factor as *coins and banknotes* (0%), *central bank reserves* (0%) and *unencumbered loans to financial institutions with residual maturities of less than six months* (10%). Instead, the items that require more stable financing will have an higher weighting factor such as *unencumbered residential mortgages with a residual maturity of one year or more* (65%) and *Cash, securities or other assets posted as initial margin for derivative contracts* (85%).

With regard to the two indicators described above, the Committee, aware of the impact that the discipline could have on the banking system in terms of return, has planned both the gradual

⁴⁴ The assignment of a high weighting coefficient for this category should be sought in the empirical evidence that even in a stress situation, there is a renewal for these sources of funding, thus leading them to consider them almost as stable as the regulatory capital which has a weight of 100%.

introduction of requirements in the 2015–2018 period and the strengthening of monitoring systems focus on liquidity of banks by national supervisors⁴⁵.

3.2.4 – Capital Requirements for Market Risk

As already mentioned in paragraph II, with regard to market risks, the Basel II framework relate to the legislation introduced in 1996. This (and not only) caused heavy losses to large international banks on the trading portfolio such that, the Basel Committee in 2009 proposed a review of the discipline with particular regard to the internal models used to calculate the capital requirement.

As regards the **standard approach**, the Committee decided to "abolish" the capital requirements differentiation in the case of well-differentiated portfolios, by requiring that in any case, the weighting for the specific risk requirement for equity positions will always be equal to 8%.

As regard **internal models**, that we remember to be instruments through which financial institutions calculate capital requirements based on internal processes that must be approved by the supervisory authority, the Committee has introduced two significant changes:

- **Stressed VaR:** This is an additional capital requirement for the risk of losses associated with periods of high stress, calculated as a maximum loss with a 99% confidence interval over a period of one year. This additional requirement serves to fill the gaps deriving from the "*bad memory*" of the VaR which, in order to be always "updated", loses sight of the periods of difficulty experienced in the past.

In other words, the introduction of stressed VaR has forced financial institutions to calculate the capital requirement for market risk not only with reference to the current situation of the market (VaR) but also in relation to previous situations (Stressed VaR).

In formulas:

⁴⁵ The Committee has also proposed the introduction of the contractual maturity mismatch defined as the balance between contractual cash and security inflows and outflows from all on- and off-balance sheet items based on their respective maturities.

$$k_{MKT} = \text{Max} \left[\text{VaR}_{99\%,10,t-1}; m_c \frac{\sum_{i=1}^{60} \text{VaR}_{99\%,10,t-1}}{60} \right] + \text{Max} \left[\text{SVaR}_{99\%,10,t-1}; m_s \frac{\sum_{i=1}^{60} \text{SVaR}_{99\%,10,t-1}}{60} \right]$$

Where:

k_{MKT} is the capital requirement for market risk;

$\text{Max} \left[\text{VaR}_{99\%,10,t-1}; m_c \frac{\sum_{i=1}^{60} \text{VaR}_{99\%,10,t-1}}{60} \right]$ indicates the highest value between the 10-day VaR with a 99% confidence interval of the previous day and the average of the VaR relative to the last 60 days multiplied by a coefficient m_c ;

$\text{Max} \left[\text{SVaR}_{99\%,10,t-1}; m_s \frac{\sum_{i=1}^{60} \text{SVaR}_{99\%,10,t-1}}{60} \right]$ indicates the highest value between the 10-day VaR with a confidence interval of 99% with observation period of 1 year and the average of the VaR relative to the last 60 days multiplied by a coefficient m_s .

- **Incremental risk charge:** it is defined as an additional capital requirement aimed at capturing the default risk, Credit migration risk and Credit spread risk for those instruments that, given the low liquidity, are not captured in their riskiness – and therefore not even at the level of capital requirement, from the Var and SVar. The calculation is made based on the liquidity of the individual positions over a one-year time horizon with a 99.9% confidence level.

Aware of the strong impact of the application of the new over-described capital requirements and above all the need to comply with the principle of the *level playing field*⁴⁶, the Committee decided to introduce many of the requirements described above in a gradual manner: for example the requirement relating to common equity will become fully operational in 2015 (2 years after the introduction of the new system) while the capital conservation buffer will be reached only in 2019 starting gradually in 2016.

For a more in-depth analysis of the deadlines for the application:

⁴⁶ The principle of the *level playing field* was introduced by the Basel Committee in order to not advantage the banks of one country compared to those of another, especially in relation to state subsidies received by certain institutions during the crisis.

	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	

Illustration 7 – The Basel II roadmap

3.3 – Impact of credit institutions

Given the declared willingness of Basel III to introduce more stringent capital requirements respect the two previous concordats, it has been necessary a focus on the impact studies of the new requirements on the banking system.

The first feedbacks, as in the case of Basel II, come from the quantitative impact study (QIS) which reveals that, if for the common equity the increase is already partly absorbed by the financial institutions⁴⁷, as regards market risk, it is expected to have significant effects. In detail, as highlighted by the study dated December 2009, the main increase will be mainly determined by the two new requirements relating to stressed VaR (+ 110.8%) and Incremental Risk Charge (+ 102.7%). In detail, as shown in the table below, the total capital requirements relating to market

⁴⁷ As evidences by the 2009 QIS, a large number of banks already had an higher level of common equity than the one required by the discipline. In fact, as illustrated, the average level of common equity for internationally active banks with assets of over € 3bn (group 1) stands at 5.7%, while for smaller ones (Group 2) it stands at 7,8%: both above the minimum capital requirement of 4.5% imposed by the regulation (without considering the capital conservation buffer).

risks amount to 7.3% of the total capital requirements: so, it cause a strong impact on a percentage level but not on an absolute level⁴⁸.

	% of impact of Market Risk	Stressed VaR	ICR	Total
Average	7,3%	110,8%	102,7%	223,7%
Median	3,9%	63,2%	60,4%	102,0%
Standard Deviation	9,9%	125,1%	130,8%	287,7%
Min	0,3%	7,2%	-38,3%	-19,5%
Max	57,1%	694,5%	534,5%	1112,8%

Table 12 – Percentage change the total requirement due to the Basel III introduction. Basel Committee. December 2009

However, the impact described, deriving from the tightening of capital requirements has also had as effect to slow down the economic growth of various countries, especially through the eroding the banks' lending power.

A research of the Financial Stability Board, carried out in parallel with the Basel Committee, showed a decrease in GDP of approximately 4 bps per year for each percentage point of increase in capital requirements. this negate effect should last for a period of 4 years after which, the Committee forecasts the manifestation of numerous benefits connected to the banks' lower risk profile, greater market confidence and the lower probability of crisis events, thus compensating the negative impact on economic growth generated in the years following the regulation implementation (Basel Committee, 2010).

Another investigation conducted by the International Institute of Finance (*IIF*) contradicts the conclusions of the FSB's study, estimating an annual decline of about 30 bps for each percentage point of increase in capital requirements in the USA, Japan and Euro Area.

At this point we want to mention the Cosimano and Hakura study conducted in 2011. This analysis, based on a sample of 2500 banks of 12 economics, showed how the increase in capital requirements of Basel III translates into an increase in the cost of financing for banks, from which

⁴⁸ At an absolute level, it is the credit risk that has the greatest impact, imposing a consistent increase in capital requirements with respect to the previous regulations (especially in view of the new requirements introduced).

derive an increase in interest rates applied to customers and the reduction of credit demand by households and businesses. In particular, this study shows that an increase of 1% in capital requirement, reflects in an average increase of 0.12% in the rate on loans, thus leading to a contraction of the volume of loans and an economic decrease (precisely due to the expected increase of 1.3% between private capital and assets, this study foresees an increase of 16 bps in loans interest rates).

Countries	Impact on loan rate	Net cost of Raising Equity	Elasticity of Loan Demand	% Change in loans
Germany	0,15%	0,12%	-1,83%	-7,16%
Sweden	0,03%	0,02%	-5,90%	-3,72%
U.K.	8,00%	0,06%	-2,57%	-4,35%
U.S.	0,17%	0,13%	-0,92%	-2,97%
Canada	0,00%	0,00%	-1,67%	-0,16%
Denmark	0,25%	0,19%	-6,61%	-32,61%
Ireland	0,28%	0,22%	-1,00%	-6,46%
Japan	0,34%	0,26%	-1,11%	-19,81%
Wighted Average	0,16%	0,12%	-0,33%	-1,28%

Table 13 – Cosimano and Hakura study results

Chapter 2 – The role of regulatory capital and the impact on the banking system

§ 1 Role of Capital and regulatory capital

1.1 – Capital (generality)

“During the financial crisis, many market participants and supervisors attempted to undertake detailed assessments of the capital positions of banks and comparisons of their capital positions on a cross jurisdictional basis. The level of detail of the disclosure and the lack of consistency in the way that it was reported typically made this task difficult and often made it impossible to do with any accuracy. It is often suggested that lack of clarity on the quality of capital contributed to uncertainty during the financial crisis”

⁴⁹. On account of the Basel Committee’s quotation, the author of this work retains that there is a need first to clarify the topic about capital and then move on to the discussion of regulatory capital.

As regards capital, it must be premised that there are several definitions:

- **Accounting definition:** which will be discussed in the next pages and delineated as the difference between the assets and liabilities of a bank;
- **Regulatory definition:** which will be discussed within the §1.2 and defined as the minimum amount of capital that each bank must hold to satisfy the supervisory requirements;
- **Market definition:** a topic which, for the convenience of the reader, will not be discussed in this paper⁵⁰.

⁴⁹ Basel Committee on Banking Supervision; Consultative document. Definition of capital disclosure requirements. February 2012.

⁵⁰ It can be defined as the difference between the fair market value of assets minus liabilities or, alternatively, as the present value of expected future cash flows discounted at the cost of capital.

With reference to the *accounting definition* of capital, it represents the value of the bank's assets which exceeds the debt securities' value, i.e. that is non-legally bound to debt repayment. In other words, it represents the value of the company's assets net of all amount owed to stakeholders other than ordinary shareholders.

Key characteristic of capital instruments is the capacity/possibility of covering losses. In order to be able to "*ensure*" this *loss coverage function*, and therefore be included within the capital perimeter, the instruments must present specific characteristics:

- **Permanence:** this is because, in the event of reimbursement, the ability to absorb losses would be erode;
- **Lack of dividends and/or coupons:** for the same logic, the contractual obligation to pay dividends or coupons, would result in a deterioration on the ability of the instrument to absorb losses;
- **Absence of repayment at par restriction:** the absence of the repayment at par, means that the losses can be covered by reducing the nominal value of the equity securities, without this leading to bank insolvency.

Since these definitions are not binding and restrictive, there are various instruments that can be included in the scope of "*capital*". Despite this, there is an order of solvency and priority in case of loss.

The main tool in absorbing losses is *common equity*: it does not have any repayment obligations (permanence), is not subject to the obligation of dividends and/or coupons and does not have contractual repayment obligations at par⁵¹.

Proceeding again from an *Accounting Perspective*, the juridical regulation governing the capital in the Italian banking panorama, is contained in the Circular No. 262 of 22 December 2005 "*Banks'*

⁵¹ There is an even more restrictive definition of capital, the so-called tangible common equity, which is ordinary capital net of "intangible assets". This indicator is particularly valid for the banking world where there is the presence in the financial statements of intangible assets deriving mainly from the difference between the value paid at time 0 of the acquisition of the investments in banks and financial companies belonging to the group and the book value of the assets of the subsidiaries. From a prudential point of view, although intangible assets have a real economic value, they are deduced because the event of a crisis is considered difficult to convert into cash.

financial statements: layout and preparation", published by Bank of Italy, which states that the banks' capital consist of:

- **Valuation reserves:** *liability item 130* – it includes reserves relating to: valuation of financial assets available for sale, tangible and intangible assets in the event of use of the revaluation method, foreign investments, financial flows coverage;
- **Equity instruments:** *liability item 150* – this item includes the total amount of equity instruments, other than capital and reserves;
- **Reserves:** *liability item 160* – This item includes *surplus reserves* (i.e. "legal", "statutory", "for purchase of treasury shares", "profits/losses carried forward", etc.);
- **Share premium account:** *liability item 170* – it encompasses the premium paid with respect to the nominal value of the shares at the time of purchase/subscription of the company's shares;
- **Equity:** *liability item 180* – it includes the amount of the shares issued by the bank, net of the amount of the subscribed capital and still unpaid;
- **Treasury shares:** *liability item 190* – this item must indicate, with a negative sign, the shares first issued and then bought back by the bank;
- **Profit or loss for the year:** *liability item 200* – which include the profit for the year net of dividends and retained earnings.

The total amount of capital described, varies between the various institutions. In detail, the level of capitalization is strictly connected with various components: (i) amount of the capital requirements imposed by the supervisory authorities; (ii) business plans and relative risks; (iii) "target rating" of the institutions.

From this point of view, being *expensive* the detention of capital⁵², the credit institutions have invested resources in order to improve the risk management function – interpreted as the function aimed to identify, measure and control risk – and the capital allocation process defined as a strategic–decision–making process in relation to investment choices.

⁵² This especially in relation to the tightening of capital requirements after the recent financial crisis.

1.2 – Regulatory Capital

As previous mention, the Regulatory capital is defined as *the minimum amount of capital that each bank must hold to satisfy the supervisory requirements*. In other words, it corresponds to the capital that the banks must hold in order to contain – within their levels considered tolerable, their probability of insolvency and the costs that derive from it⁵³. In detail, the regulation⁵⁴ defines (i) the minimum level of regulatory capital in relation to the risks assumed by banks (ii) its composition, i.e. the types of financial instruments allowed to comply with the minimum capital requirements. The regulatory capital should therefore be determined not only in the amount sufficient to minimize the probability of bank insolvency, but also considering the composition (quality) in order to be adequate to reduce the *costs* of crises.

With regard specifically to composition, from a supervisory perspective, regulatory capital is composed not only by *net capital*, but also of *financial instruments* other than capital, which however have the ability to reduce the risk of insolvency and/or contain costs of it⁵⁵.

Not revisiting the historical information from Basel I to Basel III, the present work will be extend only to Basel III agreement by focus on the instruments that this framework encompasses within the perimeter of the regulatory capital.

Following this scheme, there are some key characteristics that the financial instrument should meet in order to be included within the regulatory capital perimeter and are:

- **Permanence:** longer will be the time period that elapses before repayment, the higher and complete will be the value that will be computed and encompass within the perimeter;
- **Capacity to absorb losses:** Financial instruments other than ordinary shares are included in the regulatory capital if, in accordance of specific contractual clauses or by regulatory

⁵³ In particular, as disciplined by the Basel regulation, it must be able to cover both "expected" losses and "unexpected" losses.

⁵⁴ We refer to the Circular No. 155/1991 "new prudential supervisory provisions for banks" and the No. 263/2006 "instructions for compiling reports on regulatory capital and prudential ratios" published by Bank of Italy.

⁵⁵ These financial instruments are defined as hybrids since, although they are not capital in the strict sense, they possess, at least in part, some of the features of capital, i.e. the capacity to absorb losses (loss absorbency).

provisions, they have a loss-absorbency capacity by reducing the nominal value and/or conversion into shares and/or suspension of payment of remuneration⁵⁶;

- **Priority in absorbing losses:** In the hypothesis of bank crisis or liquidation, the losses are covered by the lenders according to an order of priority. The higher the positioning in this hierarchy of losses absorption, the higher will be the amount encompass within the regulatory capital⁵⁷.

As already investigated in Chapter 1, the regulatory capital is given by the algebraic sum of the **Tier 1** and **Tier 2** Capital.

For **Tier 1**, it is the sum of two different components: *Common Equity Tier 1* and *Additional Tier 1*.

- As regard the *Common Equity Tier 1 (CET1)*, it is defined as the *going concern capital* since it is the capital which allows a bank to continue its activities and keeps it solvent in case of loss event.

In order to be encompass in this definition, Basel III prescribes a list of characteristics that should be met by the different financial instruments in order to be included in and are:

- *Represents the most subordinated claim in liquidation of the bank;*
- *Entitled to a claim on the residual assets that is proportional with its share of issued capital, after all senior claims have been repaid in liquidation;*
- *Principal is perpetual and never repaid outside of liquidation;*
- *The bank does nothing to create an expectation at issuance that the instrument will be bought back;*

⁵⁶ In detail, the ability to absorb the losses of a specific instrument can be defined in relation to three particular events:

- **Loss-absorbency on a going concern:** The financial instruments possess this requisite when, the mechanisms to hedge the loss, are activated before that the bank is subjected to interventions by the authorities for the management of a state of crisis;
- **Loss-absorbency on a gone concern:** The financial instruments have this requirement when, in the event of liquidation, their repayment is subordinated to other senior credits;
- **At the point of non-viability:** Financial instruments meet this requirement when the mechanisms for covering losses are activated in the presence of a declared crisis situation.

⁵⁷ The order of priority in absorbing losses is: (1) Ordinary shareholders; (2) Preferred shareholders; (3) Subordinated creditors; (4) Unsecured senior creditors; (5) Guaranteed senior creditors; (6) Depositors exceeding the insured quota; (7) Employees; (8) Secured private depositors.

- *Distributions are paid out of distributable items (retained earnings included). The level of distributions is not in any way tied or linked to the amount paid in at issuance and is not subject to a contractual cap;*
- *There are no circumstances under which the distributions are obligatory;*
- *Distributions are paid only after all legal and contractual obligations have been met and payments on more senior capital instruments have been made;*
- *It is the issued capital that takes the first and proportionately greatest share of any losses as they occur. Within the highest quality capital, each instrument absorbs losses on a going concern basis proportionately and pari passu with all the others;*
- *The paid in⁵⁸ amount is classified as equity under the relevant accounting standard;*
- *It is directly issued and paid-in and the bank cannot directly or indirectly have funded the purchase of the instrument;*
- *The paid in amount is neither secured nor covered by a guarantee of the issuer or related entity or subject to any other arrangement that legally or economically enhances the seniority of the claim;*
- *It is clearly and separately disclosed on the bank's balance sheet.*

CET 1 is the *purest* capital instrument that best represents the solidity of the bank. It is in relation of the great importance and relevance of the common equity that is used in order to compute the c.d. *CET1 ratio*, defined as a balance sheet ratio which concisely and immediately expresses the solidity of a banking institution⁵⁹. Mathematically it is defined as the proportion between the Common Equity Tier 1 Capital and the Risk Weighted Assets⁶⁰.

⁵⁸ "Paid-in capital generally refers to capital that has been received with finality by the bank, is reliably valued, fully under the bank's control and does not directly or indirectly expose the bank to the credit risk of the investor. The criteria for inclusion in capital do not specify how an instrument must be paid-in". BCBS: Basel III definition of capital – Frequently asked questions. September 2017.

⁵⁹ This indicator is used both by banks in order to communicate it to the market on the occasion of the quarterly or annual report and either by supervisors – the ECB or the European banking authority – to determine the soundness of the activities of a banking institution. In particular, this indicator is based on the ratio between Capital Tier 1 – given by the sum of paid-up capital, reserves and undistributed profits – and risk-weighted assets.

⁶⁰ The Risk weighted assets at the denominator are motivated by the evidence that not all assets have the same risk and so the assets acquired by a bank are weighted based on the credit risk and market risk that each asset presents.

$$CET1\ ratio = \frac{Common\ Equity\ Tier\ 1}{Risk\ Weighted\ Assets}$$

Since the great importance of this ratio, the supervisory authority has prescribed that it must be equal to at least to 4,5% in any time in order to assure the bank's solidity (Basel III).

- For which concern the *Additional Capital Tier 1*, it is defined as the sum of all those financial instruments that present the characteristic both of bonds and equities. In detail, these are “perpetual” obligations, which ensure the issuing banks the capital stability necessary to deal with any financial stress scenarios.

As disciplined by the Committee, the main characteristics in order to be encompass in are:

- *Issued and paid-in;*
- *Subordinated to depositors, general creditors and subordinated debt of the bank;*
- *Is neither secured nor covered by a guarantee of the issuer or related entity or other arrangement that legally or economically enhances the seniority of the claim vis-à-vis bank creditors;*
- *Is perpetual, i.e. there is no maturity date and there are no step-ups or other incentives to redeem;*
- *Any repayment of principal (e.g. through repurchase or redemption) must be with prior supervisory approval and banks should not assume or create market expectations that supervisory approval will be given;*
- *Dividend/coupon discretion:*
 - *The bank must have full discretion at all times to cancel distributions/payments;*
 - *Cancellation of discretionary payments must not be an event of default;*
 - *Banks must have full access to cancelled payments to meet obligations as they fall due;*
 - *Cancellation of distributions/payments must not impose restrictions on the bank except in relation to distributions to common stockholders.*
- *Dividends/coupons must be paid out of distributable items;*
- *Instruments classified as liabilities for accounting purposes must have principal loss absorption through either (i) conversion to common shares at an objective pre-specified trigger point or (ii)*

a write-down mechanism which allocates losses to the instrument at a pre-specified trigger point. The write-down will have the following effects:

- Reduce the claim of the instrument in liquidation;*
- Reduce the amount re-paid when a call is exercised; and*
- Partially or fully reduce coupon/dividend payments on the instrument.*
- Neither the bank nor a related party over which the bank exercises control or significant influence can have purchased the instrument, nor can the bank directly or indirectly have funded the purchase of the instrument;*
- The instrument cannot have any features that hinder recapitalization, such as provisions that require the issuer to compensate investors if a new instrument is issued at a lower price during a specified time frame.*

With regard the **Tier 2**, it is defined as the capital which should serve to cover losses in the event of a crisis. In detail, the objective of Tier 2 is to provide loss absorption on a gone-concern basis. In line with the previous ratio, the proportion between the Tier 2 and the Risk Weighted Assets, must be equal for regulatory purpose, at any time, to at least 6.0% of risk-weighted assets. Basel III sets out the minimum set of criteria for an instrument to meet or exceed in order to be included in Tier 2 capital and are:

- Issued and paid-in;*
- Subordinated to depositors and general creditors of the bank;*
- Is neither secured nor covered by a guarantee of the issuer or related entity or other arrangement that legally or economically enhances the seniority of the claim vis-à-vis depositors and general bank creditors;*
- Minimum original maturity of at least five years;*
- The investor must have no rights to accelerate the repayment of future scheduled payments (coupon or principal), except in bankruptcy and liquidation;*
- The instrument cannot have a credit sensitive dividend feature, that is a dividend/coupon that is reset periodically based in whole or in part on the banking organization's credit standing;*

- Neither the bank nor a related party over which the bank exercises control or significant influence can have purchased the instrument, nor can the bank directly or indirectly have funded the purchase of the instrument;
- if the instrument is not issued out of an operating entity or the holding company in the consolidated group (eg a special purpose vehicle – “SPV”), proceeds must be immediately available without limitation to an operating entity or the holding company in the consolidated group in a form which meets or exceeds all of the other criteria for inclusion in Tier 2 Capital.

1.3 – Notes to the financial statement: Part F

As which concern the capital and regulatory capital, in the Italian banking panorama, the juridical regulation governing them, is contained in the Circular No. 262 of 22 December 2005 “*Banks’ financial statements: layout and preparation*”, published by Bank of Italy⁶¹.

It provides quantitative information through the indication of the schemes to be adopted for the communication. In particular, it provides in section 1 the schemes for the disclosure of the level of capital and in section 2 the schemes for supervisory capital.

As regards the first section, i.e. **capital**, the outline indicating the various components is as follows:

⁶¹ The circular has experienced different update over time: 1° update of November 18, 2009; 2° update of January 21, 2014; 3° update of December 22, 2014; 4° update of December 15, 2015; 5° update of December 22, 2017; 6° update of November 30, 2018.

Items	Total Amount (T)	Total Amount (T-1)
1. Capital		
2. Share premium accounts		
3. Reserves		
a) Legal		
b) Statutory		
c) Treasury Shares		
d) Other		
4. Capital instrument		
5. Treasury Shares		
6. Revaluation Reserves		
• Equity securities designated at fair value with impact on comprehensive income		
• Tangible assets		
• Intangible assets		
• Coverage of foreign investments		
• Coverage of financial flows		
• Hedging instruments (non-designated items)		
• Exchange differences		
• Non-current assets and assets held for sale		
• Financial liabilities at fair value with impact on the income statement		
• Special revaluation laws		
7. Net profit (loss)		

Table 14 – Capital components. Bank of Italy, Circular No. 262/2005 “Banks’ financial statements: layout and preparation”

As far as concerns *supervisory capital*, section 2 of the part F of the notes to the financial statement of the Circular published by Bank of Italy, indicates the various elements that compose it.

Items	Total Amount (T)	Total Amount (T-1)
A. Tier 1 Capital before the application of prudential filters		
B. Prudential filters of basic assets:		
B.1. Positive IAS/IFRS prudential filters (+)		
B.2 Negative IAS/IFRS prudential filters (-)		
C. Tier 1 Capital before items to be deducted (A + B)		
D. Elementes to be deducted from core Capital		
E. Total Tier 1 Capital (TIER 1) (C - D)		
F. Supplementary assets prior application of prudential filters		
G. Prudential Filters for supplementary Capital:		
G.1 Positive IAS/IFRS prudential filters (+)		
G.2 Negative IAS/IFRS prudential filters (-)		
H. Supplementary Capital Gross of item to be deducted (F + G)		
I. Elementes to be deducted from the Supplementary assets		
L. total Supplementary Assets (TIER 2)		

Table 15 – Regulatory Capital components. Bank of Italy, Circular No. 262/2005 “Banks’ financial statements: layout and preparation”

§ 2 Changing in the banking spectrum

2.1 – Bank of Italy and the implementation of the new regulations

The author of this paper retains that, for a more comprehensive view of the Basel agreement effects on the economy – and in particular on the Italian one, we must proceed starting from a *universal* vision and get to the *particular*. For this purpose, we will first analyze the effects of the worldwide economy and then evaluate the effects experienced in the *Italian banking panorama*.

2.2 – Impact of Basel II: Quantitative Impact Studies

In consideration of the complexity and the innovative scope of the new discipline, the Basel Committee has settled, since the initial phases of the agreement, an intense dialogue with the banking and financial industry, publishing various consultation documents starting from 1999 aimed to collect comments and feedbacks on the legislative proposal. In detail, objective of the Committee was simulating the effect of the Basel II regulatory framework on the basis of data

provided by the banks: these studies are known as *Quantitative Impact Studies (QIS)*. Virtue of these studies was the possibility to verify, during the work, the effects on the capital, trying not to alter the objectives set by the Committee.

The present paper aims to investigate and focus on the survey finalized in 2005, better known as Quantitative Impact Study 5.

The first survey (*QIS 2*) was tested in April 2001, a few months after the publication of the second consultation document (CP2, Consultative Paper). This test required to 138 banks encompass in 25 different economies, to perform a computation of the capital requirement using the different calculation methods specified for the credit risk⁶². From this analysis it emerged that, in the case of application of the proposals contained in the Consultative Paper 2, there would be an overall increase on the minimum capital requirement with regard the standardized method (+18%) and the IRB Foundation (+24%).

Given the "*negative*" results of the *QIS 2*, and given the Committee's objective of keeping the minimum amount of capital on average unaltered from the transition from Basel I to the new agreement, the proposal was revised with particular regard to the *definition of Default* and to the *weightings curves of loans in the IRB method* (both foundation and advanced). In relation to these changes, the Committee proceeded to perform a *QIS 2.5* which revealed an 8% reduction on capital requirement with respect to Basel I, limited only to the minimum capital requirement for credit risk calculated with the IRB base method⁶³.

In response to the positive output shown on the credit risk, the Committee has decided to perform a third simulation in 2003 (*QIS 3*) on a sample of 365 banks of 40 different countries based on the entire pool of rules. In particular, in line with the *QIS 2.5*, it was highlighted an increase on minimum capital requirement respect the previous discipline for about 3.5% and 3% respectively for the credit intermediaries that had carried out the simulation with the standardized method and

⁶² Please refer to Chapter 1, §2.2.1.1 for more information on the different methods

⁶³ For further information please refer to BCBS, December 2010.

IRB Foundation; while it was obtained a –2% for those who made use of the advanced IRB method.

Despite the empirical evidence that *QIS 3* had taken into consideration the entire picture of the regulatory framework – so being reliable and semi-definitive, the Committee has implemented other two studies named *QIS 4* and *QIS 5*.

In particular, while the first of the two (*QIS 4*) was conducted on a voluntary basis (involving Germany, Japan, the United States and South Africa), *QIS 5* was performed on a sample of 380 banks and based on rules considered "definitive".

As regarding the *Quantitative Impact Study 5*, it was innovative with respect to the previous methods since the analysis was performed not only with respect to the Standard Method, IRB Foundation and IRB Advanced, but also with respect the “*Most likely approach*”, so on the methodology considered *most likely* at the date of entry into force of the new discipline. In detail, as shown in the table below, is reported the investigation did by Basel Committee, where the results are differentiated by methods used and by size and country in which the various banks are located⁶⁴.

Δ on Capital Requirement with respect Basel 1

	Standardized Approach	IRB fundation method	IRB advanced method	Most likely approach
<i>Group 1</i>				
G10	1,7%	-1,3%	-7,1%	-6,8%
Other	1,8%	-16,2%	-29,0%	-20,7%
<i>Group 2</i>				
G10	-1,3%	-12,3%	-26,7%	-11,3%
Other	38,2%	11,4%	-1,0%	19,5%

Table 16 – QIS 5 overall results

⁶⁴ Stands out for countries belonging to the G10, namely Belgium, Canada, France, Germany, Japan, Italy, the Netherlands, the UK, Sweden and Switzerland and others not included in the list.

As evinced, with regard to the *Standardized Approach*, for the Group 1 banks there is a continuous trend with the minimum level of capital requirements calculated using the Basel I method (1.7% and 1.8%) while for the banks encompass in the Group 2, there is an opposite effect for the G10 and others which experimented a –1.3% and +38.2%.

As regards the *IRB Foundation method*, there is a marked overall decrease for both groups, except for the banks present in Group 2 not included to the G10 (+11.4%).

With regard to the *IRB Advanced* and the *Most Likely Approach*, as already expected by the Committee, there is a significant decline for the banks of Group 1 while it is attenuated for those of Group 2 mainly due to the massive investment – both in term of human capital and monetary – in order to set up a unit to estimate and use internal measures⁶⁵. Despite the strong investment, the Committee encourages the adoption and implementation of more advanced methods since, as demonstrated by different researches, the initial investment is recovered both with the relief on the capital requirement and on the solidity that the advanced system offers given the sensitivity and attention of the various crucial measures.

Dividing the effect with regard the different risk components – i.e. *credit* and *operating* risk, it can be notice how, although the overall results have testified a decrease in the level of the minimum regulatory capital, the percentage changes relating to minimum capital level for credit and operating risk, have experienced a opposite trend.

For which concern the Group 1, there was a drop in the required capital for credit risk component measured with both the standardized method and Most Likely Approach (respectively –3.9% and –10.6%). With regard to the second of the risks mentioned in the Basel II Accord, i.e. the Operational Risk, there is an increase of +5.6% and +6.1% with respect the banks of Group 1 in case of use of standard method and IRB. Overall was observed an increase of 1.7% in case of computation of minimum capital requirement with the standardized method and a –4.5% in case of use of Most Likely Approach method.

⁶⁵ Please refer to Chapter 1, §2.3 for further information.

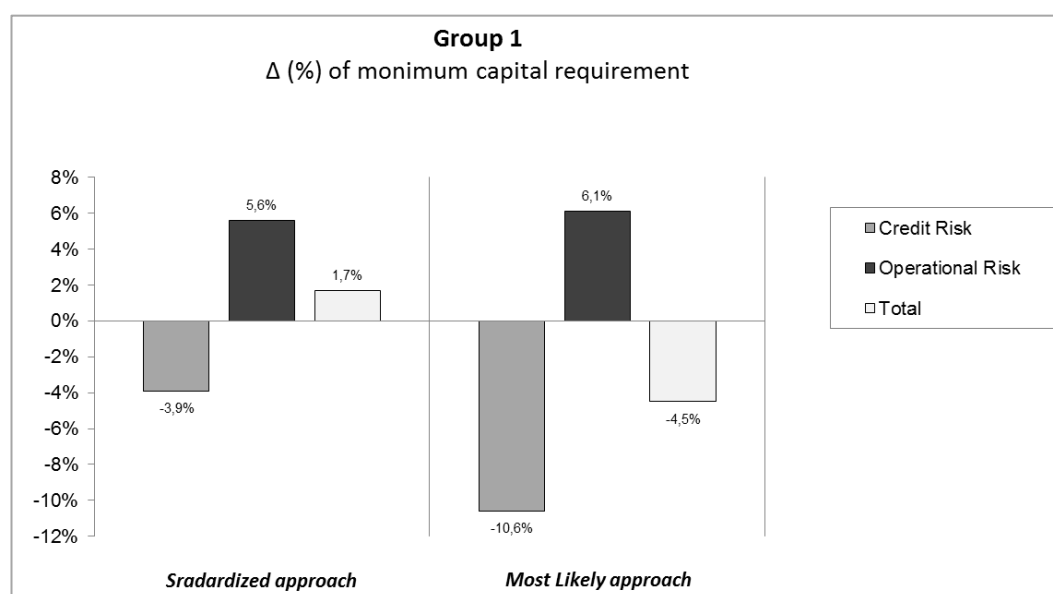


Illustration 8 – QIS 5 for Group 1

As regards the banks of Group 2, was observed a similar trend to that experienced by the banks of Group 1, but more accentuated in absolute term. For the Minimum capital requirement for credit risk computed with the standardized method, it was observed a -9.6% which decrease to -21.6% if used the Most Likely Approach. Opposite, for operational risk, was detected a +8.3% and +7.5% respectively for the Standardized and for the Most likely approach method. Overall was observed a decrease both for standard method and Most Likely Approach (respectively -1.3% and -14.1%).

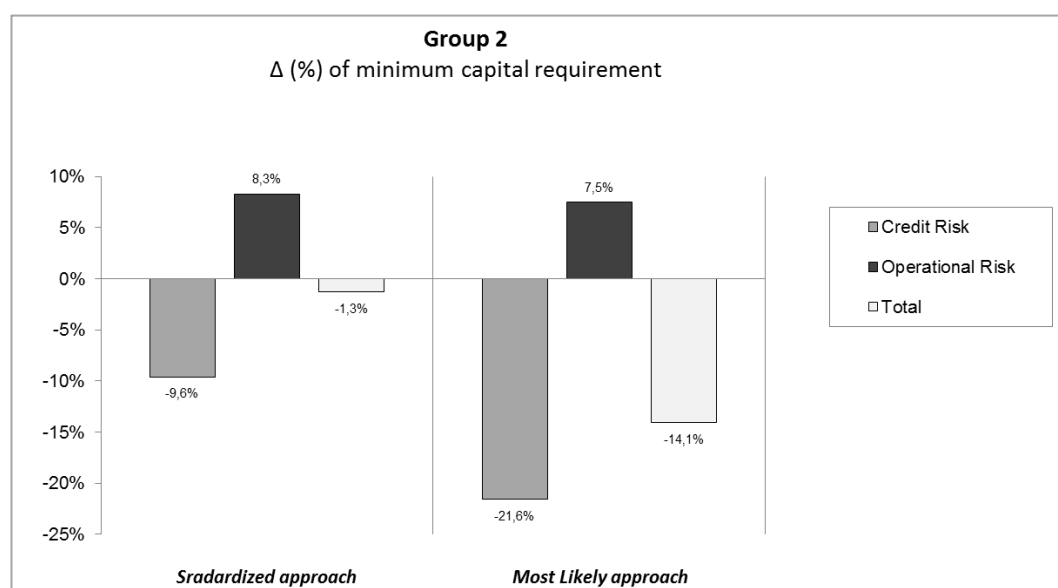


Illustration 9 – QIS 5 for Group 2

Weaving the data, there is an overall decaying trend with respect the minimum capital requirements provided by Basel I. In particular the decrease was due to the relieve of the Minimum capital requirement for credit risk since, as previous mentioned in the Chapter 1, the Operational Risk has experienced with the new discipline a change which has render it complex and "*onerous*" in terms of capital requirement for financial institutions.

2.2.1 – Focus on Italian Banks

Of the 380 worldwide banks included in *QIS 5*, there are 10 Italian banks divided equally between Group 1 and Group 2.

Regarding the analysis of the effects of the new accord on the bank account, in order to maximize the comparison between the different banks of the various economies, was isolated the effect of changes on banks' balance sheets deriving from the effects strictly connected with the Basel II discipline. In the analysis carried out over the Italian's banks, was disregarded the new IAS/IFRS accounting standards introduced in response to the regulations regarding bank balance sheets. As regards the results, this work will report only the most relevant repercussions and effects in the interest of brevity.

As for the other studies, the banks were divided into two groups according to their size: Group 1 where they include banks with over three billion of assets and well diversified, and Group 2 where the others are present.

As already expected, given the results of the overall study, regarding banks with higher sizing, there was almost no change with respect to the *standardized method* while, there was a reduction with regard to the *IRB foundation* (–4.2%) and *IRB advanced* (–7.7%).

As for the others credit institutions, the IRB advanced has showed the higher reduction in the minimum capital requirement, obtaining the record to be the most "*convenient*" method also in the Italian banking spectrum.

In detail, as for the other credit intermediaries that participated in the survey, a percentage decrease was noted for the credit risk component which was partly offset by the increase in the requirement for operational risk.

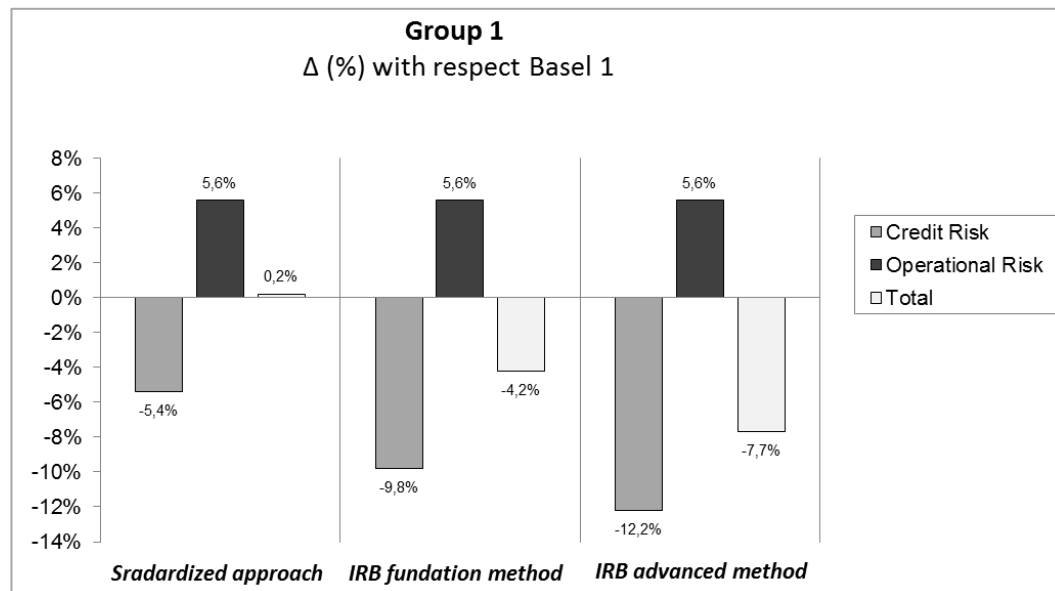


Illustration 10 – QIS 5 for Italian Banks: Focus on Group 1

For the banks of Group 2, contrary to the results described above, an increase in the capital requirements was experienced both for the credit and operational risk for the banks in the case of calculation with the standard method; while there was a sharp drop of -24.5% in the capital requirement component for credit risk for institutions that use the basic IRB method partly recovered with +8.7% of operational risk.

Overall, for the banks of Group 2, it was observed an increase for the level of minimum capital requirement in case of use Standardized approach while it was registered a marked decrease in case of computation with IRB foundation mainly due to the -24.5% decrease for the credit risk component.

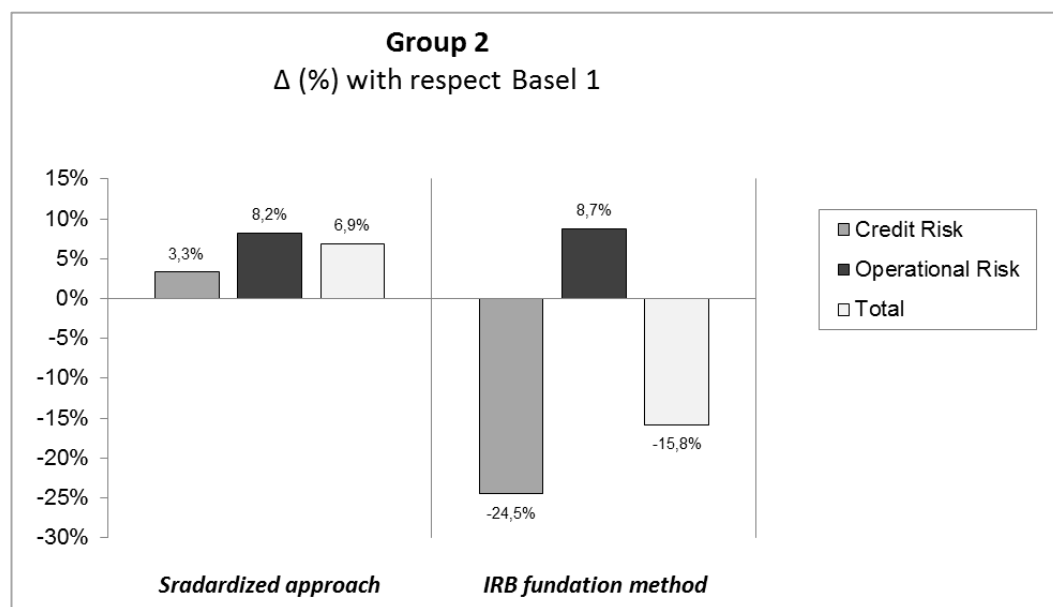


Illustration 11 – QIS 5 for Italian Banks: Focus on Group 2

In the analysis of the results, it is worth to mention the *balance sheet structure* of the banks included in the two groups. The analysis can provide a useful starting point for understanding the differences in the results obtained.

As can be seen from the figure shown below for both groups, we highlight:

- Important Corporate component (21.1% for Group 1 and 18.1% for Group 2);
- Relevant Corporate SME percentage (20% and 22.2% respectively for Group 1 and 2);
- Fair Mortgage portion (8.4% Group1; 8.4% Group 2).

As regards the differences, on the other hand, there is a marked difference in the case of SME retail component which are higher for the banks of Group 2 where they represent 17.3% against 11.5% of the Group 1.

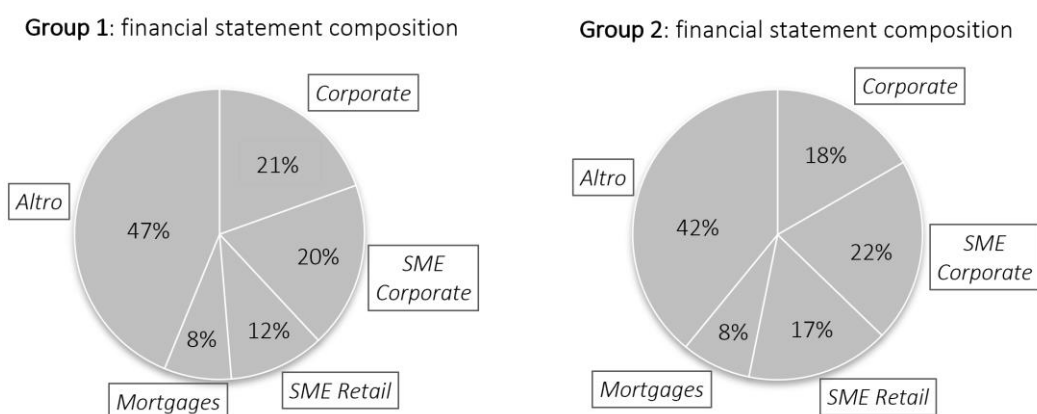


Illustration 12 – Italian Banks: Balance sheet composition

Bearing in mind the approximations connected with the use of risk measurement methodologies based on a not definitive and complete discipline, *QIS 5* provides a useful picture about the quantitative impact of the Basel II framework on the banking industry.

Overall, the new concordat, has displayed a favorable impact on the level of minimum capital requirement for the various banks, with the exception of institutions that use the standard method. Given the size and therefore the absolute amount of the level of exposures, the impact is more pronounced for banks with greater dimensions, also in light of the exposure to corporate SMEs where the *standard method* does not capture risk in the proper way (from which the minimum level of regulatory capital).

Regarding the *IRB foundation*, there has been a decrease for twain banks of Group 1 and Group 2 which experience a decrease of 4.2% and 15.8% respectively. The decline, as has been pointed out by the Committee, it is mainly due to the introduction of internal estimates in the calculation of capital. Indeed, it is precisely on the basis of the evidence that the Committee recommends the adoption of a more advanced method of calculation.

Summarizing the results in a single table for reasons of clarity and to permit a quick comparison:

Δ respect Basel I	Standardized method		IRB foundation method		IRB advanced method	
	<i>Group 1</i>	<i>Group 2</i>	<i>Group 1</i>	<i>Group 2</i>	<i>Group 1</i>	<i>Group 2</i>
Credit risk	-5,4%	-1,3%	-9,8%	-24,5%	-13,3%	N.A.
Operational Risk	5,6%	8,2%	5,6%	8,7%	5,6%	N.A.
Total	0,2%	6,9%	-4,2%	-15,8%	-7,7%	N.A.

Table 17 – QIS 5 overall results for Italian Banks

2.3 – Impact of Basel III

As regards the impact of Basel III within the financial system, we refer first to the analysis of BCBS and OCED with regard to the overall situation and then we will skip to the analysis of the Italian spectrum based on the studies carried out by the Bank of Italy.

2.3.1 – BCBS Analysis

The analysis is based on the work carried out by the Basel Committee on Banking Supervision aimed at assessing the medium/long term impact of the Basel III framework within the market. More in detail, the purpose of the study is to evaluate the costs and benefits of the new regulation worldwide.

The analysis shows that the main benefits connected with the Basel III introduction, consist in the reinforcement of the banking system so as to reduce the probability of a crisis, thus also preventing the negative impacts deriving from it.

In the evaluation of the crisis reduction benefits this paper will start from the study of the effects of crises.

Several studies show that the probability (or frequency) of banking crises over the last few centuries has stood at an average value of 4.5% per year (so about one crisis every 20–25 years on average). As regards the impact of crises, this is more complicated to estimate. The analysis

carried out by the Committee consider, as index for the crisis' magnitude, the GDP level pre and post-crisis, demonstrating how this, on average, suffers a decrease of about 6%. The reasons for the decrease are traced to crisis of confidence, aversion to risk, disruption of the financial system, contraction of credit, increase in recession.

Given the effects of the crisis, result associate to benefits are calculated as the present value of the savings of accumulated possible losses. From this side, it emerges how the reduction of 1 percentage point in the probability of crisis⁶⁶ (therefore from 4.5% to 3.5%) corresponds to a gain of 0.2% per annum of GDP.

With regard to costs, the main items are connected with the increase in interest rates from which derives a possible slowdown and decrease in the economy. The study, it is anticipated, is based on the assumption that all the costs that the banks must support, are directly shifted and charged on interest rate, so on the final borrower. In detail, the study shows that a 100 bps increase in the capital ratio translates into a 13 bp increase in the interest rate for customers⁶⁷. Considering also the cost of the liquidity requirement, the analysis is inevitably extended to the financial statements of the banks. Also, in this case, the study shows that an increase in the NSFR requirement would spill in an increase in the cost for customers.

⁶⁶ The reduction of the crisis probability, in these terms, passes through the increase in capital ratios which, by improving the entire economic system, create fertile humus in crisis prevention. There are several studies aim to draw a definitive relationship between capital requirements and probability of crisis. The models that are considered more reliable are those "*reduced-form*" which define a statistical correlation between crises and data on the financial leverage and liquidity of the banks. These models have demonstrated that the trend of the relationship between crises and capital requirements is not linear but exponential: in other words the probability of a crisis grows exponentially in correspondence of the decrease in capital requirements.

⁶⁷ This study assumes that and that the only variables are Capital ratios, ROE and rate for customers (i.e. every other condition is steady). The *chain of transmission* would be: an increase in the capital ratio cause a decrease in ROE which in turn result onto an increase in the profitability of its assets (i.e. increase interest rate) in order to maintain the ROE at historic levels.

Δ increase in Capital ratio	Δ increase to meet Capital Requirement	Δ increase to meet NSFR	Total (A+B)
0	0	25	25
1	13	25	23
2	26	25	51
3	39	24	63
4	52	24	76
5	65	24	89
6	78	23	101

Table 18 – Basel III impact: BCBS results. Basel Committee on banking Supervision, 2015

2.3.2 – OECD Analysis

A further study was carried out by the Organization for Economic Co-operation and Development (OECD). In this study, as effects of Basel III, is considered the GDP level.

In line with the previous study, it is evident that the entry into force of the new Basel III regulatory agreement has caused a “*negative*” effect on the economy and in particular on the GDP of the different countries. The effects spread in this case starting from the increasing of the capital requirements which cause two different effects: reducing the ROE of the banks and origin the credit contraction effect. These in turn cause an effect of interest rates for the various credit institutions that experience an increase from which the decline the investments and so GDP.

2.3.3 – Impact on Italian Banks

As we already mention, following the recommendations of the Financial Stability Board (FSB) and the Heads of State and Government of the G20 countries, on 2010 the Basel Committee on Banking Supervision published the details of the new regulatory framework on banks’ capital and liquidity, with the goal of promoting a more resilient banking sector. Over this framework, different institutions performed different analysis with the objective to determine the future possible impact of Basel III regulation.

With reference to the Italian situation, the Bank of Italy carried out an analysis concerning the impact on the macroeconomic context of the new Basel framework. The analysis is based on the costs and benefits' quantification associated with the new regulatory framework as well as the impact they have on the banking system in general. In detail, the assessment in order to estimate the credit offer elasticity for capital increases, was carried out using the *Bank of Italy Quarterly Model* (BIQM) which is a model with Keynesian characteristics in the short term and neoclassical in the long term which contains about 700 equations, of which 80 are stochastic.

The model is based on the assumption that the supply sector is composed by producers who are *price-setters* in output market and *price-takers* in factor markets. Companies, being endowed with the same Cobb–Douglas constant–returns–to–scale technology, knows the minimum average cost of his competitors and fixes the level of the mark–up so as to keep potential entrants out of business.

In this contest, the BIQM consider both the short–term period and the long term period, described as steady–state equilibrium.

Following the Bank of Italy analysis, after outline the framework, are defined the processes through which the costs related to the new reform are displayed. The costs, described as the higher cost of financing, are divided into *spread effects* – increase in the interest rates, and *non–spread effects* – defined as the reducing credit volume.

Regarding the first, the impact of the interest rates on loans granted to families and businesses would be immediate. The propagation of the effect would occur through five transmission channels⁶⁸:

- (i) the *cost–of–capital channel*, that works through changes in the optimal capital–output ratio;
- (ii) the *substitution–effect–in–consumption channel*, involving the response to financing costs of the relative price of present as opposed to future consumption;

⁶⁸ For further information please refer to Bank of Italy, the macroeconomic impact of Basel III on the Italian economy, February 2011. Pag 14.

- (iii) the *income and cash-flow channel*, based on how interest rate flows affect disposable income and whose effects depend on the financial structure of the economy and on the relative propensity to spend of borrowers and lenders;
- (iv) the *wealth channel*, that takes into account how fluctuations in borrowing conditions affect the discounted value of future expected payoffs of physical and financial assets; and
- (v) the *exchange rate channel*, that measures how fluctuations in exchange rates – triggered by the uncovered interest-rate parity condition – affect competitiveness, the price of imported goods, aggregate demand and inflation.

Regarding the impact of *non-spread effects* on the economy, these would produce a reduction in the volume of loans which in turn forces all operators, especially non-financial companies (NFCs), to reformulate their spending plans. This is mainly due to the empirical evidence that the credit rationing has more quickly effect on the market than the increase in interest rates since, the temporary lack of liquidity can cause insolvency, boosting the default rate of non-financial firms, especially small ones without direct access to capital markets.

Taking into account only the *spread effects*, these can be divided into impacts in case of active⁶⁹ and passive monetary policy⁷⁰. With regard the latter, the study carried out by Bank of Italy, reveals that, the minimum level of GDP will be obtained at the end of the transition period, with a consequent recovery. On the contrary, in case of active monetary policy, the initial fall would be less severe, but the reaction would become more slow. As can be seen from the following graph, the green curve, which represents the median drop in the case of expansionary monetary policy, is above the median level of fall with passive monetary policy until 2018, the year in which the recovery, in the event of non-intervention of monetary policy, becomes more sustained.

⁶⁹ Under an active monetary policy, the authority (i.e. central bank), uses its discretion to set monetary policy in response to changing economic conditions.

⁷⁰ For passive monetary policy, the present work, indicates the monetary policy subordinated to a set of rules that dictate the actions.

The GDP loss at trough ranges from 0% to 0.33% (0.12% in the median response with passive monetary policy), corresponding to a reduction of the growth rate of output in the transition period of at most 0.04 percentage points per year.

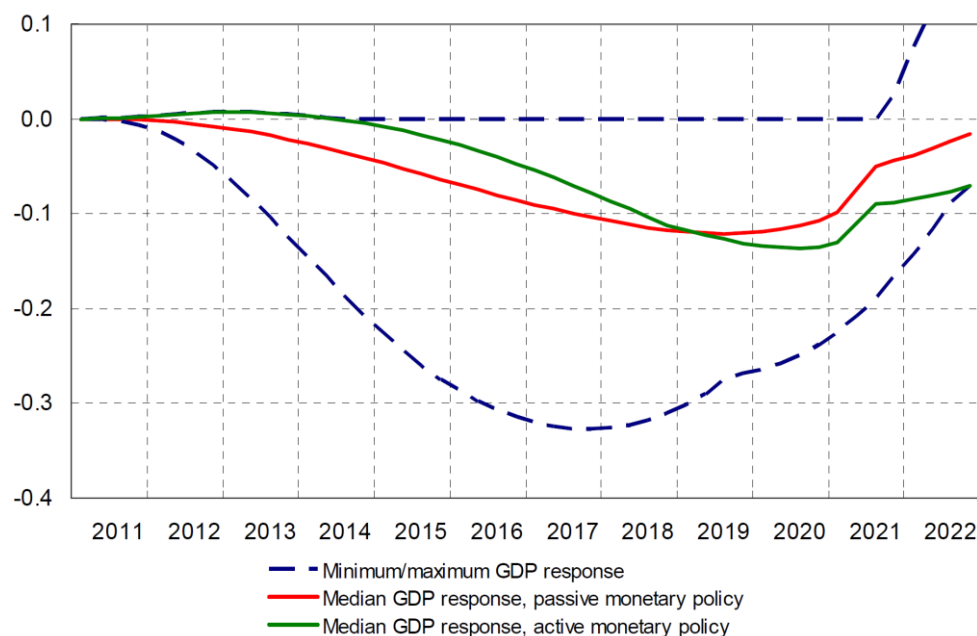


Illustration 13 – Impact on GDP of 1% increase in capital requirements: focus on spread effects. Bank of Italy, the macroeconomic impact of Basel III on the Italian Economy

The GDP loss becomes more substantial if higher capital requirements cause not only higher lending rates, but also restrictions in the supply of credit (i.e. credit rationing). In the figure below is illustrated the annual deviation of GDP from the baseline path splitting the total effect into (i) spread effects, (ii) credit rationing and (iii) monetary policy.

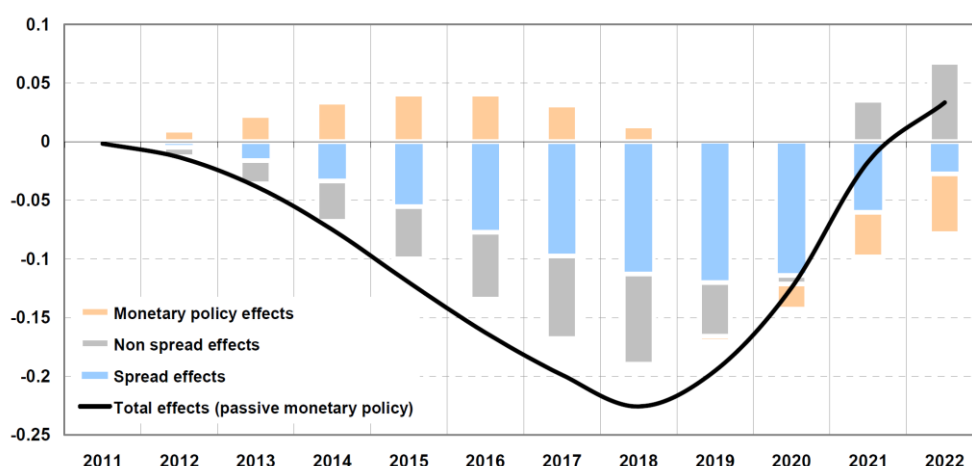


Illustration 14 – 1 percentage point increase in capital requirements: impact on GBP. Bank of Italy, the macroeconomic impact of Basel III on the Italian Economy

If we consider also the restrictions in the supply of credit (i.e. credit rationing), the output loss at trough ranges from 0.03% to 0.39% (0.23% in the median response with passive monetary policy), matching a weakening of economic growth in 2011–2018 of at most 0.05 percentage points.

Investment is the component of aggregate demand which is most heavily affected by the worsening of financing conditions, while fluctuations in consumption are partly mitigated by the positive effect on disposable income and wealth resulting from the decrease in the price level.

Meeting the liquidity requirements would, according to the analysis, lead to an additional drop of 0.02%. The sum of the effects, however, would be a conceptual error in that satisfying the liquidity requirements means reducing the riskiness of the assets and therefore the amount of capital necessary to achieve the same value of the capital ratios.

If we consider the long run, so the steady state, only *spread effects* has relevance: rationing of the loan supply is a temporary phenomenon, occurring only in periods when the credit market is impaired and is unable to reach an equilibrium. As reported in the bank of Italy report, “the GDP loss is driven for the most part by the cost-of-capital channel: the rise in interest rates induces a downward adjustment in firms’ demand for capital, which causes a fall in the stock of productive capital and hence in output supply – increasing the target capital ratio by 1 percentage point causes a decline in steady state GDP of about 0.2%”.

The long-term results, for which regard the Italian economy, are represented in the table listed below.

In the second column, it shows the effects on the GBP deriving from the 1% increase in the capital requirement; in the third column are detailed the effects of the increase on liquidity requirements and in the last column is analyzed the overall effect.

	Baseline	Δ in GBP	Δ on Liquidity	Δ Total
Output loss (%)	0,00	-0,183	-0,372	-0,212
Consumption share	0,641	0,641	0,641	0,641
Investment share	0,203	0,202	0,202	0,202
Export share	0,211	0,211	0,211	0,211
Import share	0,203	0,203	0,203	0,203
Capital-output ratio	3,493	3,475	3,456	3,472
Deficit-to-GDP ratio	0,024	0,024	0,024	0,024
Surplus-to-GDP ratio	-0,004	-0,003	-0,001	-0,002

Table 19 – Impact of 1% increase in capital requirements on long run

The results obtained from the analysis of the Bank of Italy are very similar and, in any case, consistent with those obtained respectively from the MAG for the transition period and from the BCBS and FSB for the long term.

Chapter 3 – Shadow banking and crisis prevention system

§ 1 *The Shadow banking*

1.1 – *Configuration of the phenomenon*

1.1.1 – *Historical Background and FSB definition*

In discussing the subject of shadow banking, it is first necessary to start from its historical location and then try to define it.

For which concerned the temporal location, can be identified two phases: (i) when the phenomenon was originated and (ii) when the phenomenon emerged, leading it to be of public domain.

As far as the origin of the phenomenon is concerned, it is historically dated back to the mid-1980s, when a series of financial activities parallel to those of traditional credit institutions began to develop.

These are years, however, where the shadow banking phenomenon is relegated to an *underground environment*, therefore not "*perceptible*" clearly and distinctly from the market. Only several years later, in 2007/2008, with the subprime mortgage crisis, will the phenomenon emerge. From this point on, it has become a central topic of academic research with numerous studies aimed at understanding and evaluating its magnitude, its dimensions, its functioning and at describing the entities involved⁷¹.

If we talk about the phenomenon, is worth to mention its *definition*. The term was coined in 2007 at the annual meeting of the Fed when *Paul McCulley* defined shadow banking as "*the whole alphabet*

⁷¹ Some of the most relevant studies are: Shadow banking, financing markets and financial stability, a BGC Partners Seminar, London 21 January 2010; Working paper series No 1726/August 2014: Banks, Shadow Banking and Fragility, Stephan Luck and Paul Schempp, European Central Bank; Shadow Banking: Financial Intermediation beyond Banks, SUERF – Société Universitaire Européenne de Recherches Financières.

soup of levered up non-bank investment conduits, vehicles and structures"⁷². The definition roughly describes the world of structured finance and revealed some fundamental aspects of the phenomenon such as:

- Being outside the regulated banking system;
- Have strong financial leverage;
- To be part of a credit intermediation process that is therefore not “monopolized” by banks but extends to other institutions.

This definition, although it has the great merit of having brought the phenomenon to light, is not entirely exhaustive. In the following years, in fact, the definition was the subject of several debates that resulted in its revisiting⁷³.

According to Pozsar’s definition⁷⁴, the *“shadow banking system is a web of specialized financial institutions that channel funding from savers to investors through a range of securitization and secured funding techniques”*.

However, this definition does not really respond to the necessity of identifying the perimeter of shadow banking because, while on the one side it defines the use of securitization as *decisive feature* for the recognition of the various entities of shadow banking, it remains debated.

As can be seen from the table below, many definitions of the shadow banking perimeter have emerged in recent years⁷⁵, but none, except the one reported by the FSB, will be considered official⁷⁶.

⁷² Teton Reflections, Global Central Bank Focus, Federal Reserve of Kansas City, Jackson Hole Economic Symposium, August/September 2007.

⁷³ For a more comprehensive overview of the literature on shadow banking see:

Adrian, T. and Ashcraft, A.B. (2012), “Shadow Banking: A Review of the Literature”, Palgrave Dictionary of Economics; Claessens, S. and Ratnovski, L. (2014), “What Is Shadow Banking?”, IMF Working Paper 14/25, February.

⁷⁴ Federal Reserve Bank of New York. Staff Report No. 559. April 2012 Tobias Adrian Adam B. Ashcraft Shadow Banking Regulation. https://www.newyorkfed.org/medialibrary/media/research/staff_reports/sr559.pdf

⁷⁵ The main sources are: Claessens and Lev Ratnovski: “What Is Shadow Banking?”. IMF Working Paper, International Monetary Fund, Washington 2014; Financial Crisis Inquiry Commission (FCIC). Shadow Banking and the Financial Crisis, Preliminary Staff Report, May. 2011; Deloitte: “The Deloitte Shadow Banking Index: Shedding Light on Banking’s Shadows”. Deloitte Center for Financial Services. 2012; Ricks, Morgan: “Shadow Banking and Financial Regulation.” Columbia Law and Economics Working Paper 370, Columbia University, New York. 2010; Acharya, H. Khandwala and T. Sabri Öncü: “The Growth of a Shadow Banking System in Emerging Markets: Evidence from India”. Journal of International Money and Finance. 2013; Schwarcz, Steven: “Regulating Shadow Banking”. Review of Banking and

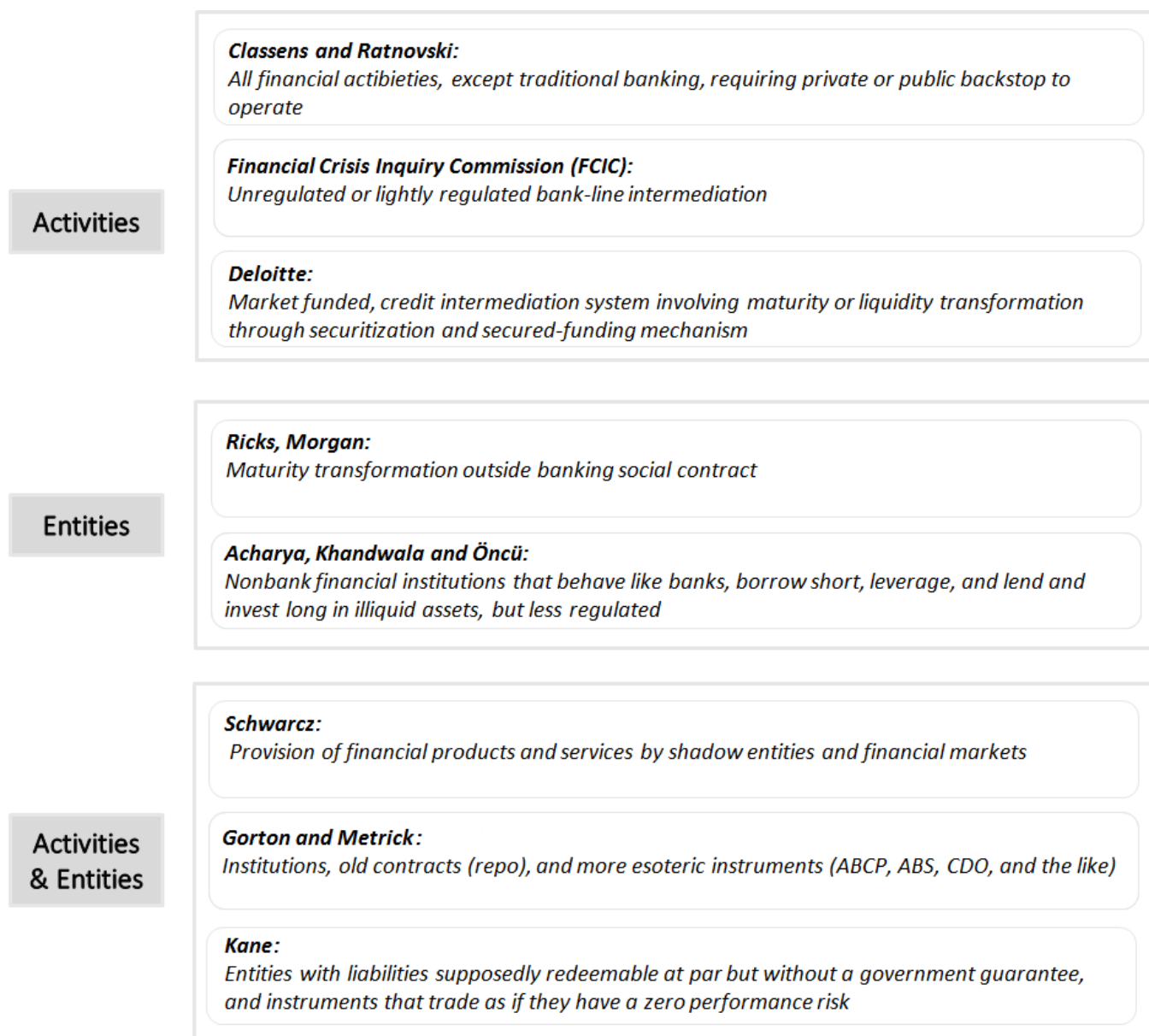


Illustration 15 – Different definitions of shadow banking depending on assets, entities and the combination of the above two elements

Financial Law, 2014; Gary Gorton and Andrew Metrick. 2012. "Securitized Banking and the Run on Repo". Journal of Financial Economics. 2012; Kane, Edward. "Shadowy Banking: Theft by Safety Net". Boston College, 2014.

⁷⁶ There are also further *domestic definitions* which, for reasons of synthesis, cannot be elaborated in this report. Mention should be made of the definition with regard to the *Italian* discipline provided by the *Consob*, which defines the shadow system as that set of markets, institutions and intermediaries that provide banking services without being subject to the relative regulation. Italian version at: <http://www.consob.it/web/investor-education/il-sistema-finanziario-ombra>

The official definition of shadow banking, in fact, was provided in relation to the request of the G20 Seoul Summit in 2010⁷⁷, where, in view of the completion of the new Basel agreement⁷⁸, it was decided to delegate to the FSB to intervene on the topic by providing a definition and trying to outline the traits for regulation.

In response to the delegation received, in 2011 the FSB defined shadow banking as *“a system of credit intermediation that involves entities and activities outside the regular banking system, and raises systemic risk concerns, in particular by maturity/liquidity transformation, leverage and flawed credit risk transfer, and/or regulatory arbitrage concerns”*. This *“takes place in an environment where prudential regulatory standards and supervisory oversight are either not applied or are applied to a materially lesser or different degree than is the case for regular banks engaged in similar activities”*.

In the light of the information available at the time, the definition provided by the FSB is complete and exhaustive. It has both the distinctive features that "distinguish" the shadow banking system and the regulatory environment.

1.1.2 – FSB monitoring

Because of the great importance of the phenomenon, the FSB has established, since 2011, a monitoring process aimed at assessing the possible vulnerabilities and repercussions that the shadow banking could have on the different jurisdictions⁷⁹.

The monitoring exercise adopts a practical two-step approach:

- (i) Authorities *“cast the net wide”*, looking at all non-bank credit intermediation to ensure that data gathering, and surveillance cover all areas where risks to the financial system might potentially arise;

⁷⁷ §41 of G20 Seoul Summit Leaders' Declaration November 2010: *“ Strengthening regulation and supervision of shadow banking: With the completion of the new standards for banks, there is a potential that regulatory gaps may emerge in the shadow banking system. Therefore, we called on the FSB to work in collaboration with other international standard setting bodies to develop recommendations to strengthen the regulation and oversight of the shadow banking system by mid-2011”*.

⁷⁸ i.e. Basel III

⁷⁹ The last report was published in July 2017 and welcomed by the G20 Leaders at their Hamburg Summit (G20 (2017)). The assessment underscored the importance of establishing a system-wide oversight framework and recommended further strengthening of the oversight and monitoring of shadow banking activities, and enhancements to the data collection framework.

- (ii) Authorities then narrow the focus for policy purposes to the subset of non-bank credit intermediation where there are developments that increase the potential for systemic risk, and/or indications of regulatory arbitrage (FSB).

The monitoring process starts from an aggregate measure of all non-bank financial intermediation, referred to as the *Monitoring Universe of Non-bank Financial Intermediation* (MUNFI), which comprises insurance corporations, pension funds, OFIs and financial auxiliaries, by focus then on a *narrow measure* of shadow banking⁸⁰ since considered as the measure which pose financial stability risk.

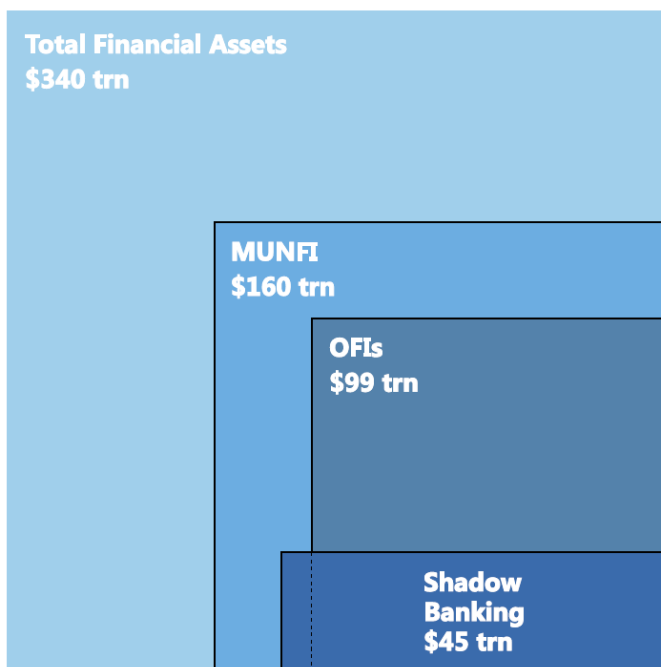


Illustration 16 – Monitoring aggregates of 21 jurisdictions and the euro area. FSB calculation

⁸⁰ in order to clarify the definition of the different groups:

- (i) MUNFI (or Monitoring Universe of Non-bank Financial Intermediation, also referred to as non-bank financial intermediation) is a measure of all non-bank financial intermediation, comprising insurance corporations, pension funds, other financial intermediaries (OFIs) and financial auxiliaries.
- (ii) OFIs comprise all financial institutions that are not central banks, banks, insurance corporations, pension funds, public financial institutions, or financial auxiliaries.
- (iii) Narrow measure of shadow banking (or the “narrow measure”) includes non-bank financial entity types that authorities have assessed as being involved in credit intermediation that may pose financial stability risks, based on the FSB’s methodology and classification guidance.

In relation to the narrow measure, the Financial Stability Board, provides a more detailed and forward-looking framework based on five economic functions aiming at identifying the various entities which compose this group. The evidence for which this structure is based on economic factors derives from the circumstance that the legislator is aware of the possibility that the entities that make up this measure may take different forms from jurisdiction to jurisdiction due to different legal and regulatory framework as well as the constant innovation and dynamic nature of non-bank financial sectors⁸¹.

Economic Functions	Definition	Typical entity types
EF1	Management of collective investment vehicles with features that make them susceptible to runs	MMFs, Fixed income funds, Mixed funds, Credit hedge funds, Real estate funds
EF2	Loan provision that is dependent on ST funding	Finance companies, Leasing/Factories companies, consumer credit companies
EF3	Intermediation of marker activities that is depending on ST funding	Broker-dealers, Securities finance companies
EF4	Facilitation of credit creation	Credit insurance companies, Financial guarantors, Monolines
EF5	Securisation-based credit intermediation and funding of financial entities	Securitisation vehicles, Structured finance vehicles, Asset-backed securities

Table 20 – Economic Functions and definition. FSB (2017), *Global shadow banking monitoring report*

In relation to the different economic functions, that will be analyzed in the following pages, the FSB estimates the trend and the volumes associated to each⁸².

⁸¹ Financial sector entities operate under different legal forms and regulatory regimes, complicating a harmonized treatment. It is very important to note that, the problem of "mobile" borders implies that, a possible tightening of prudential requirements for entities within the regulatory perimeter is accompanied by incentives to move activities outside it or to areas where regulation and supervision are weaker. Goodhart, Charles, *"The Boundary Problem in Financial Regulation"* National Institute Economic Review 206, 2008 (pag 48–55); Goodhart, Charles, and Lastra *"Border Problems"*. Journal of International Economic Law 2010 (pag 705–718).

⁸² As reported in the BIS paper on Shadow Banking Brussels, Belgium, 18–19 May 2017 *"one critic of this approach is that it does not appear to be based on any quantitative assessment of risks across different entities and does not seem to improve the quantitative monitoring of risks associated with the shadow banking sector"*.

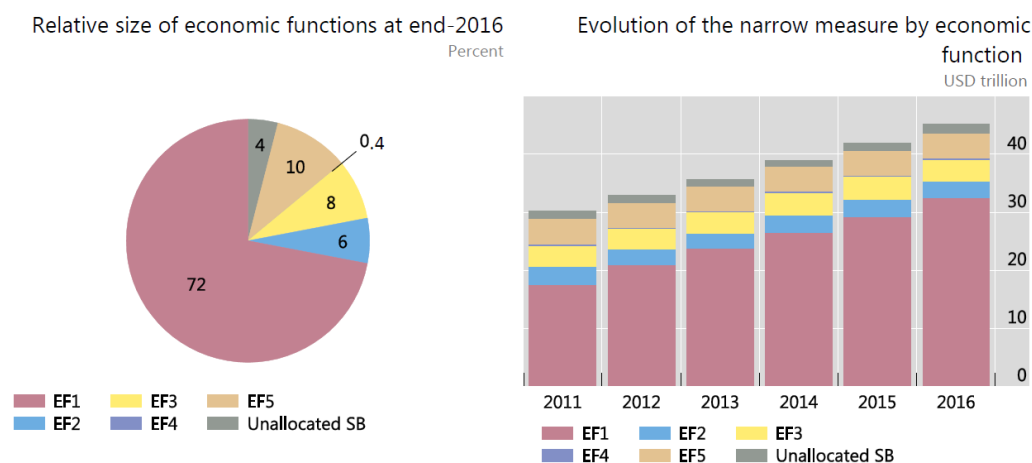


Illustration 17 – Economic Function in relation to their size. FSB (2017), Global shadow banking monitoring report

1.1.2.1 – Economic Function 1

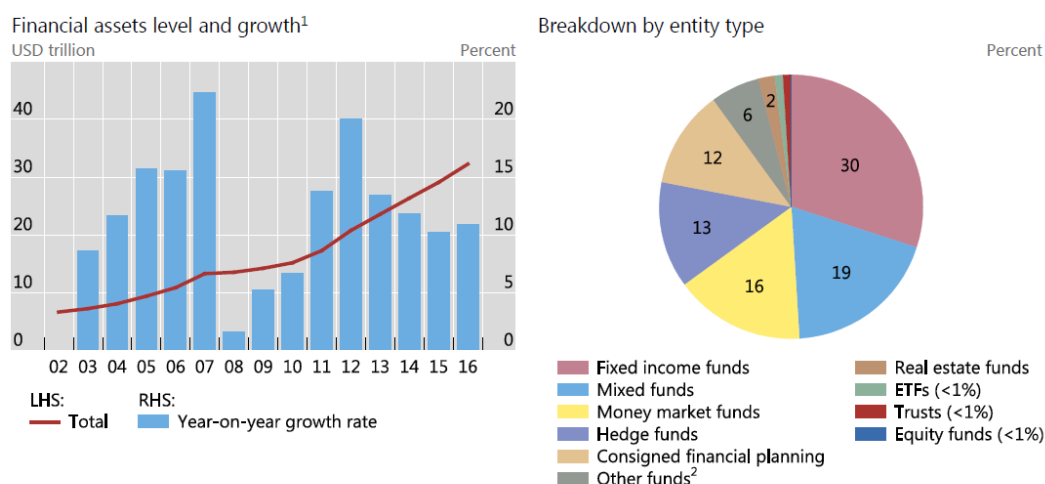
“EF1 relates to Collective Investment Vehicles (CIVs) with features that make them susceptible to runs”⁸³. The different types of CIVs that jurisdiction classified within this category are the hedge funds, real estate funds (including REITs), fund of funds, ETFs, fixed income funds, mixed funds and MMFs.

The assets of CIVs classified into EF1 represent by far the largest share (72%) of the narrow measure. The growth rate of EF1 entities’ assets has slowed in recent years, but it remains higher than the growth rate of total assets included in the narrow measure, driving the overall growth of the narrow measure.

The risk metrics measured over these entities are in particular liquidity transformation⁸⁴, maturity transformation⁸⁵ and sensitivity to changes in interest rates.

⁸³ FSB monitoring report 2018, p 61

⁸⁴ By liquidity transformation it means the transformation of an illiquid and untradeable asset (a ‘loan’) into a liquid and ‘tradable security’. Under financial distress, a liquid asset can become illiquid. Liquidity risk is twofold and involves the possibility that the intermediary, although technically solvent, cannot generate sufficient cash resources to meet its payment obligations at a certain moment in time (‘funding liquidity risk’). Moreover, in some circumstances, a bank can provide liquidity only at materially disadvantageous terms (‘market liquidity risk’). [No. 372 – Shadow banking out of the shadows: non-bank intermediation and the Italian regulatory framework](#), February 2017.



¹ Exchange rate effects have been netted out by using a constant exchange rate (from 2016). Calculated based on historical data included in jurisdictions' 2017 submissions. Increases in EF1 may also reflect improvements in the availability of data over time at the jurisdiction level. Net of prudential consolidation into banking groups. ² Other funds include other investment funds, referenced investment funds, external debt investment funds, currency funds, asset allocation funds, other closed-ended funds, funds of funds, etc.

Illustration 18 – Economic Function 1: trends and composition. FSB (2017), Global shadow banking monitoring report

1.1.2.2 – Economic Function 2

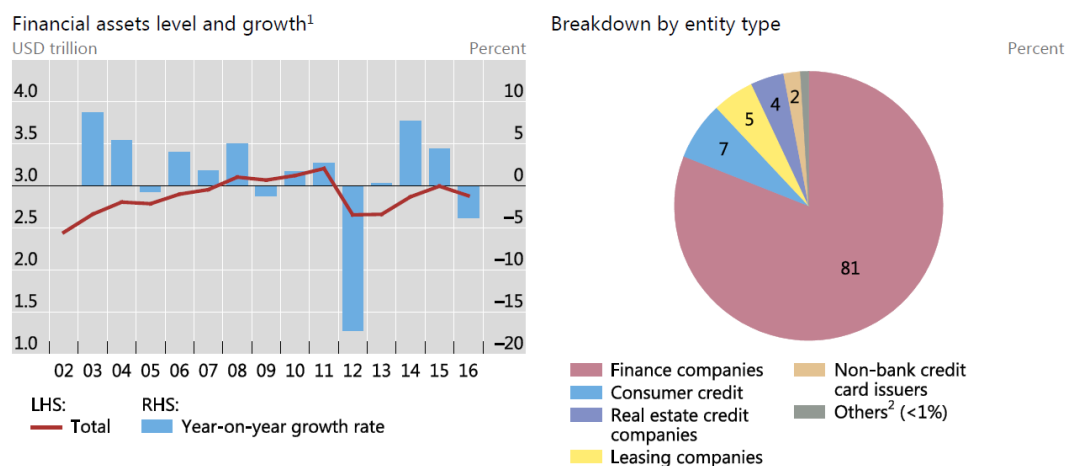
“EF2 entities engage in loan provision that is dependent on short-term funding. This economic function captures a wide range of activities including consumer finance, auto finance, retail mortgage provision, commercial property finance, and equipment finance”⁸⁶. Entities engaged in these activities generally compete with banks as they offer services in the markets where banks are not active players⁸⁷. However, this can create significant risks if the sectors they focus on are cyclical in nature. This risk may be exacerbated if such entities are heavily dependent on short-term funding, or dependent on parent companies for funding, and the parent companies are themselves in the same cyclical sectors.

⁸⁵ By maturity transformation it means acquisition of short-term liabilities matched by long-term assets. Typically, a bank performs both functions, accepting short-term, liquid deposits and making longer-term, illiquid loans. The two aspects are intertwined: for instance, in stressful market condition, a short-term security can be less liquid (measured using bid-ask spreads) than a medium-term instrument.

⁸⁶ FSB monitoring report 2018, p 66

⁸⁷ This evidence stems from the reason that banks, given the role they play within the economic system and the activity they perform, do not have the characteristic of depending on short-term financing, which is the main feature of this economic function. In particular, those involved in this function often concentrate their credit activity in specific sectors by competence.

The activities included in the EF2 are mostly represented by financial companies⁸⁸. In the last few years they have experienced a decrease, reducing the total from 6% to 3.8% compared to the total of narrow measures. EF2 entities, as the FSB reports, have an important credit intermediation activity, use strong leverage but have a limited maturity transformation and a mitigated liquidity transformation.



¹ Exchange rate effects have been netted out by using a constant exchange rate (from 2016). Calculated based on historical data included in jurisdictions' 2017 submissions. Increases in EF2 may also reflect improvements in the availability of data over time at the jurisdiction level. Net of prudential consolidation into banking groups. ² "Others" contains credit unions and venture capital.

Illustration 19 – Economic Function 2: trends and composition. FSB (2017), Global shadow banking monitoring report

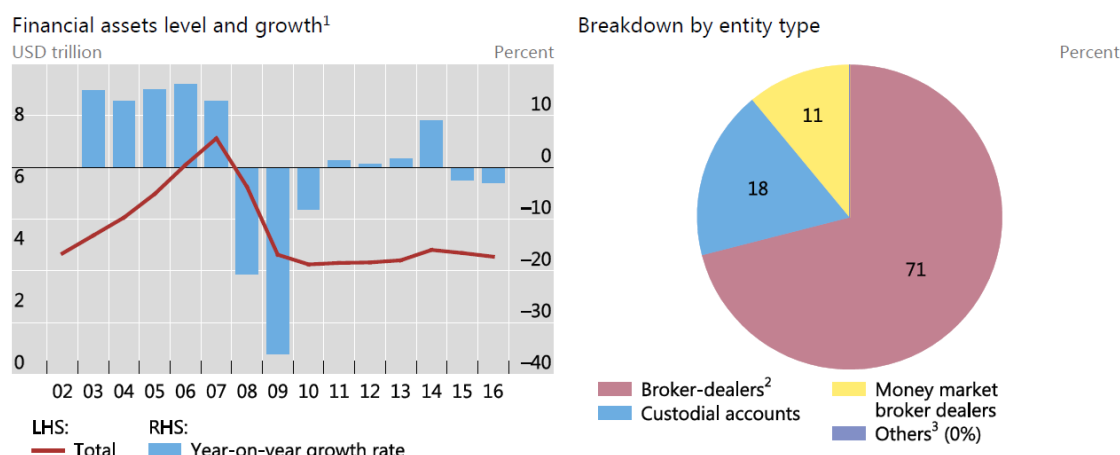
1.1.2.3 – Economic Function 3

The EF3 includes market activities that depend on short-term funding. They account for approximately 8% of the total restricted measures and includes broker-dealers, investment firms and custodial accounts within this perimeter.

The brokerage activity may include securities brokerage services and prime brokerage services for hedge funds. They may involve liquidity, leverage and, in the presence of certain assets, may also take on significant levels of leverage and maturity transformation.

Total EF3 assets continue to be concentrated in a handful of jurisdictions and in the years following the crisis, assets declined sharply.

⁸⁸ Is worth to mention that, looking at the chart, the Finance Companies account for 81% of the total. Is for this evidence that the analysis conducted on the risk associated to this function focuses primarily on the risks related to leverage and maturity transformation than liquidity transformation (despite in certain jurisdiction, due to the different regulatory framework the entities encompass in tend to have an high credit intermediation and maturity transformation).



¹ Exchange rate effects have been netted out by using a constant exchange rate (from 2016). Calculated based on historical data included in jurisdictions' 2017 submissions. Increases in EF3 may also reflect improvements in the availability of data over time at the jurisdiction level. Net of prudential consolidation into banking groups. ² Also includes investment firms, securities dealers and securities finance companies. ³ "Others" contains pension funds.

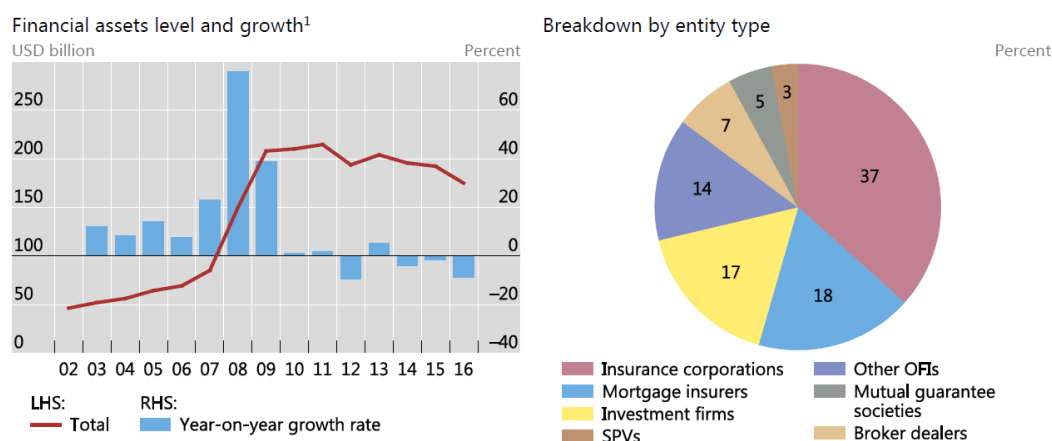
Illustration 20 – Economic Function 3: trends and composition. FSB (2017), *Global shadow banking monitoring report*

1.1.2.4 – Economic Function 4

EF4 entities facilitate credit creation by extending various forms of guarantee to banking and non-banking financial institutions. With these guarantees, investors have a higher level of credit protection, i.e. they are more likely to have their credit repaid in full. For example, they were instrumental in the subprime mortgage crisis in improving mortgage-backed securitization tranches, encouraging the accumulation of excessive leverage in the financial system⁸⁹.

This function, that encompass Insurance corporations, mortgage insurers, SPVs and investment firms, represents only 0.4% of total narrow measure activities. The size of this EF and its importance compared to other EFs can be significantly underestimated.

⁸⁹ The price of *insurance* should be constantly adjusted and reflect the creditworthiness of both the borrower and the guarantor. However, the transfer of credit risk may be imperfect in the presence of asymmetric information or other market failures, as seen in the financial crisis.



¹ Exchange rate effects have been netted out by using a constant exchange rate (from 2016). Calculated based on historical data included in jurisdictions' 2017 submissions. Increases in EF4 may also reflect improvements in the availability of data over time at the jurisdiction level. Net of prudential consolidation into banking groups.

Illustration 21 – Economic Function 4: trends and composition. FSB (2017), Global shadow banking monitoring report

1.1.2.5 – Economic Function 5

EF 5 includes entities that provide funding to banks and/or non-bank financial institutions, with or without the transfer of assets and risks by such financial institutions. They use the securitization method for funding because it reduces funding costs for both banking and non-bank financial entities and facilitates the availability of credit to the real economy. They are identified in structured financial vehicles and trust companies. This creates problems of maturity/liquidity transformation, leverage or regulatory arbitrage in the system, which becomes a greater risk in financial systems.

In the last years it experienced a sharp decrease mainly due to the decrease experiences by the structured finance vehicle both in percentage term than absolute.

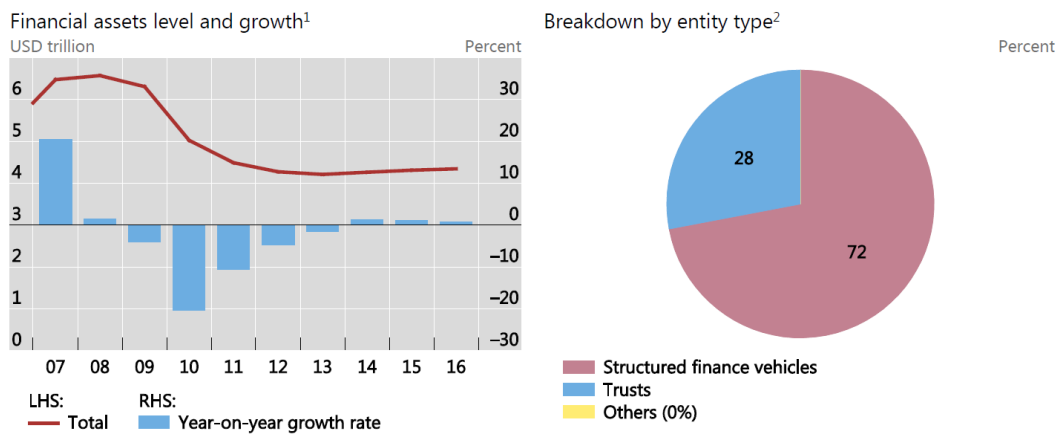


Illustration 22 – Economic Function 5: trends and composition. FSB (2017), Global shadow banking monitoring report

1.1.3 – Main Actors in the Shadow Banking environment

In order to understand and identify the range of *shadow banking operators*, it should be noted that there are several actors that cannot be confined to a single definition. However, they have in common the implementation of a quasi-banking activity "*outside the regular banking system*". Among them, they point out:

- **Insurance corporations:** *"The insurance corporations consist of all financial corporations and quasi-corporations which are principally engaged in financial intermediation as a consequence of the pooling of risks mainly in the form of direct insurance or reinsurance"*⁹⁰. The legal are laid down in Regulation ECB/2014/50, which defines the statistical standards to be met by insurance corporations when reporting information on their assets and liabilities to the national authorities.

The play an important role in many jurisdictions' financial sectors through the performing of credit intermediation activities or through the facilitation in credit creation by providing credit enhancement. In detail, they can perform intermediation through the purchase of credit assets or direct lending (if permitted by the regulations of the various countries).

⁹⁰ European Central Banks:

https://www.ecb.europa.eu/stats/financial_corporations/insurance_corporations/html/index.en.html

- **Pensions funds:** “Pension funds are financial corporations and quasi–corporations that are principally engaged in financial intermediation”⁹¹. Focusing on the worldwide value, as shown in the following graph, they play an important role in financial economy:

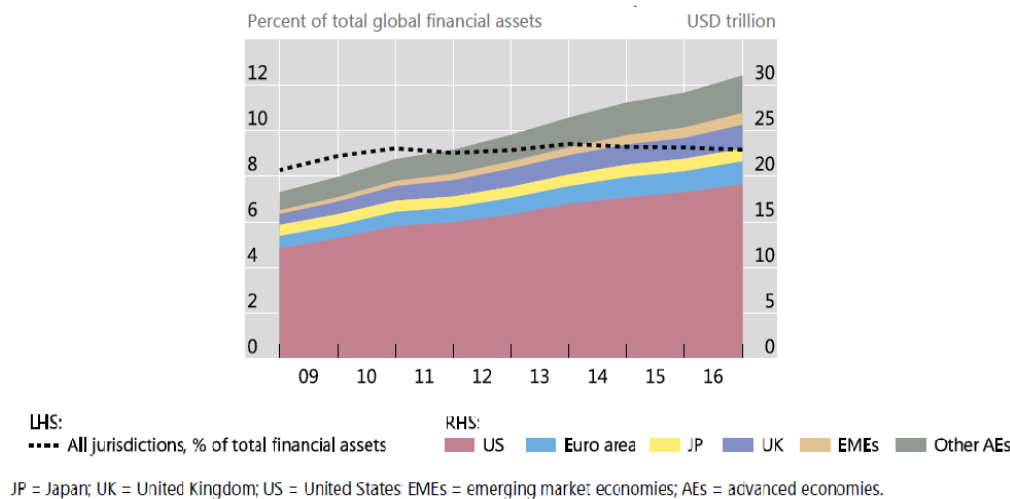


Illustration 23 – Assets of Pension Funds. FSB (2017), Global shadow banking monitoring report

- **Other Financial Intermediaries:** the OFIs are defines as the financial corporations that are not classified as central banks, banks, insurance corporations, pension funds, public financial institutions, or financial auxiliaries. It can be divided into 10–sub sector as illustrated in the following graph:

⁹¹ European Central Banks:

https://www.ecb.europa.eu/stats/financial_corporations/pension_funds/html/index.en.html

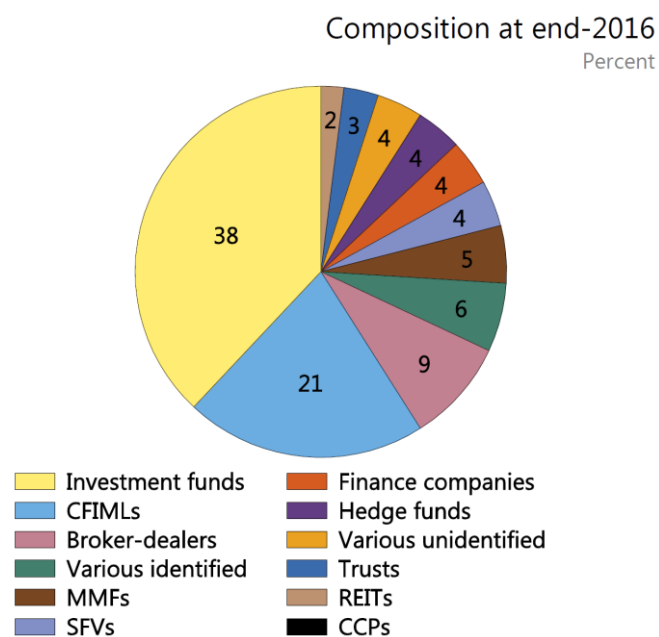


Illustration 24 – Major OFI sub-sector. FSB (2017), Global shadow banking monitoring report

- **Investment funds:** is a type of collective investment undertaking whereby all participants in the fund invest money in pool. It encompasses equity funds, fixed income funds and mixed/other funds. It is the largest OFI sub sector.
- **Captive Financial Institution and money lenders (CFIMs):** CFIMs are institutional entities that provide financial services or loans with own funds provided by a single sponsor i.e. *“they may be holding companies that own assets of subsidiaries and possibly raise funds on open financial markets, or they may be certain types of special purpose entities that qualify as institutional units and raise funds in open markets for use by their parent corporation. In some cases, they are set up for tax planning purposes”⁹².*

The most used form is the *Special Purpose Vehicles (SPV)*: they are used for a *“special purpose”* which consist in general in the transfer of a mass of credits, each with its own guarantee, from the financial institutions that originated them to a wide range of investors, in other words from institutional giants to small savers. It is essential that these conduits have no formal link with the parent company, otherwise they would be recognized as an integral part of the group and their financial statements should be consolidated: this would preclude the transfer of the risk that the institutions want

⁹² FSB monitoring report 2017, p 28

operate with securitization and from which the effects on capital requirements. Within the shadow banking system, the conduits that have more relevance is the ones that been created to make investments in so-called "structured securities"⁹³.

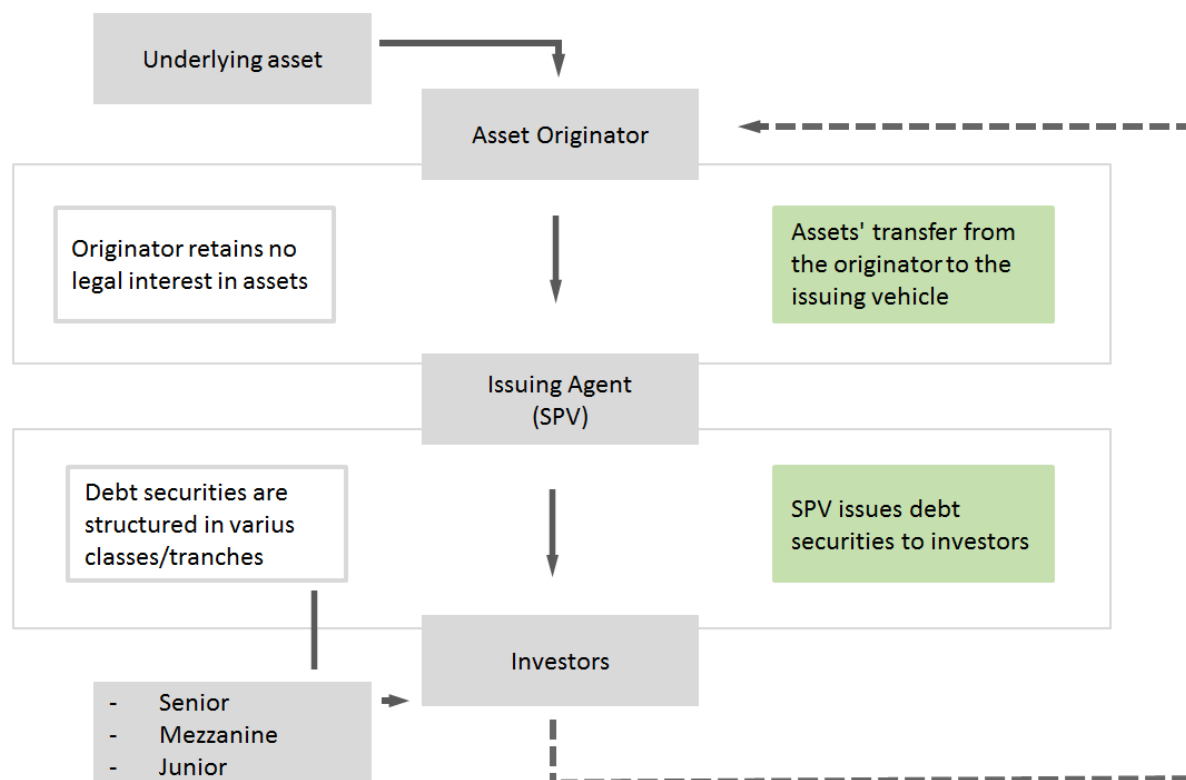


Illustration 25 – Securitization mechanism

- **Broker dealers:** defined as “a person or a financial company that acts both as a broker, making investments for customers, and as a dealer making investments for themselves”. In other words, broker-dealers are intermediate lenders, extending cash with a high valuation haircut, and then re-reinforcing the guarantee with a lower valuation haircut (transformation of the guarantee)⁹⁴. This is the third largest identified sector with \$9.2 trillion of assets corresponding to 9.3% of total OFIs.

⁹³ Structured securities are complex financial instruments: they incorporate into a traditional debt instrument a derivative contract, usually of an optional type. Unlike traditional bonds, the two components of a structured bond, i.e. bond and derivative, are merged into a single financial instrument. Structured securities may have guaranteed capital, if the interest payment flows are indexed to the performance of the parameter underlying the derivative component; or unsecured capital, in which case the redemption value may be lower than the subscription value.

⁹⁴ This process leads to an increase in market liquidity. For further information refer to Muley, A., Journal of Market Infrastructures, September 2016.

- **Money Market Funds:** A money market mutual fund (MMFs) is an open-ended mutual fund that invests in short-term debt securities such as treasury bills and US commercial papers. They are widely considered as safe as bank deposits, but with a higher return. They have experienced very sharp growth in recent years with emphasis on the Chinese market⁹⁵.
- **Structured finance vehicles:** is a non-bank financial entity set up to acquire investments in order to capitalize on the difference in interest rates – the so-called credit spread – between short-term and long-term debt. Long-term bond investments often include structured finance products such as asset-backed securities (ABS), mortgage-backed securities (MBS) and credit card securitizations. The investments are financed by issuing commercial paper and uses the capital thus obtained to purchase long-term debt securities which assure a higher return than the commercial paper issued by the SFV.
- **Finance Companies:** in many jurisdiction (e.g. China and Luxemburg) are encompass within the CFIMs because of their activity defined as the process with which these financing companies raise money in a jurisdiction by issuing securities on behalf of the group to which they belong and then lending the proceeds to other affiliates.
- **Hedge Funds:** This fund is characterized by multiple management styles and methods. The main characteristic of the hedge funds is the evidence that they focus on absolute returns, which are not influenced by market trends. In order to do it, hedge funds can invest in derivatives and utilize leverage, and moreover can adopt certain investment strategies, such as hedging and short selling⁹⁶. The possibility of implementing these sophisticated strategies, combined with the greater operational flexibility of hedge

⁹⁵ For more information see the FSB report, p 23

⁹⁶ In detail the strategies used by the Hedge funds can be described as:

- Hedging: this strategy consists of hedging the portfolio against the risk of volatility caused by market changes, through short selling and the use of derivatives, which are contracts or securities whose price is based on the market value of another financial instrument, defined as underlying (such as, for example, shares, financial indices, currencies, interest rates or even commodities).
- short selling: the strategy behind consist in borrow securities, for which the possibility of a discount is foreseen, then they are sold, and the resulting proceeds are repurchased to be held until maturity. The profit consists in the difference between the sale price and the repurchase price.

managers compared to traditional fund managers, is closely linked to the low transparency that is a necessity in this type of industry.

- **Trust companies**⁹⁷: A trust is a fiduciary relationship in which one party, known as a trustor, gives another party, the trustee, the right to hold title to property or assets for the benefit of a third party, the beneficiary. Given this definition, in turn derive that a trust company is a legal entity that acts as a fiduciary, agent, or trustee on behalf of a person or business for the purpose of administration, management and the eventual transfer of assets to a beneficial party. Assets under management stood at \$3.4 trillion at end-2016, equivalent to 3.4% of total OFIs with about 86% of total sub-sector assets accounted for China.
- **Real estate investment trusts (REITs)**: are defined as intermediaries similar to a real estate investment funds operating on the US market and governed by the Real Estate Instrument Act of 1960. The latter expressly provides for the right for any Real Estate Investment Trusts to own real estate assets and to provide loans in the technical form of a mortgage loan. They amounted to 1,9% of the total assets managed by the OFIs.
- **Central counterparties**: these, which has the smallest part in terms of volumes of assets managed (0,4% corresponding to \$0,4 trillion), is a financial institution that assumes counterparty credit risk between the parties to a transaction and provides clearing and settlement services for foreign exchange transactions, securities, options and derivative contracts.

1.1.4 – Functioning and Control

After clarifying which are the different non-bank financial entities, this work will clarify in this paragraph which are the ways in which this system functions. As stated in the 2017 FSB report, the activities through which the shadow banking system operates can be grouped under "*credit*

⁹⁷ For reasons of synthesis, the present work cannot investigate the various types of trust companies, limiting its analysis to indicating that they are: single money trusts, collective investment trusts, property trusts. For further information, please refer to the FSB report, p 30

intermediation and lending" and "repos (repurchase agreement)" that will be discussed in subsequent pages.

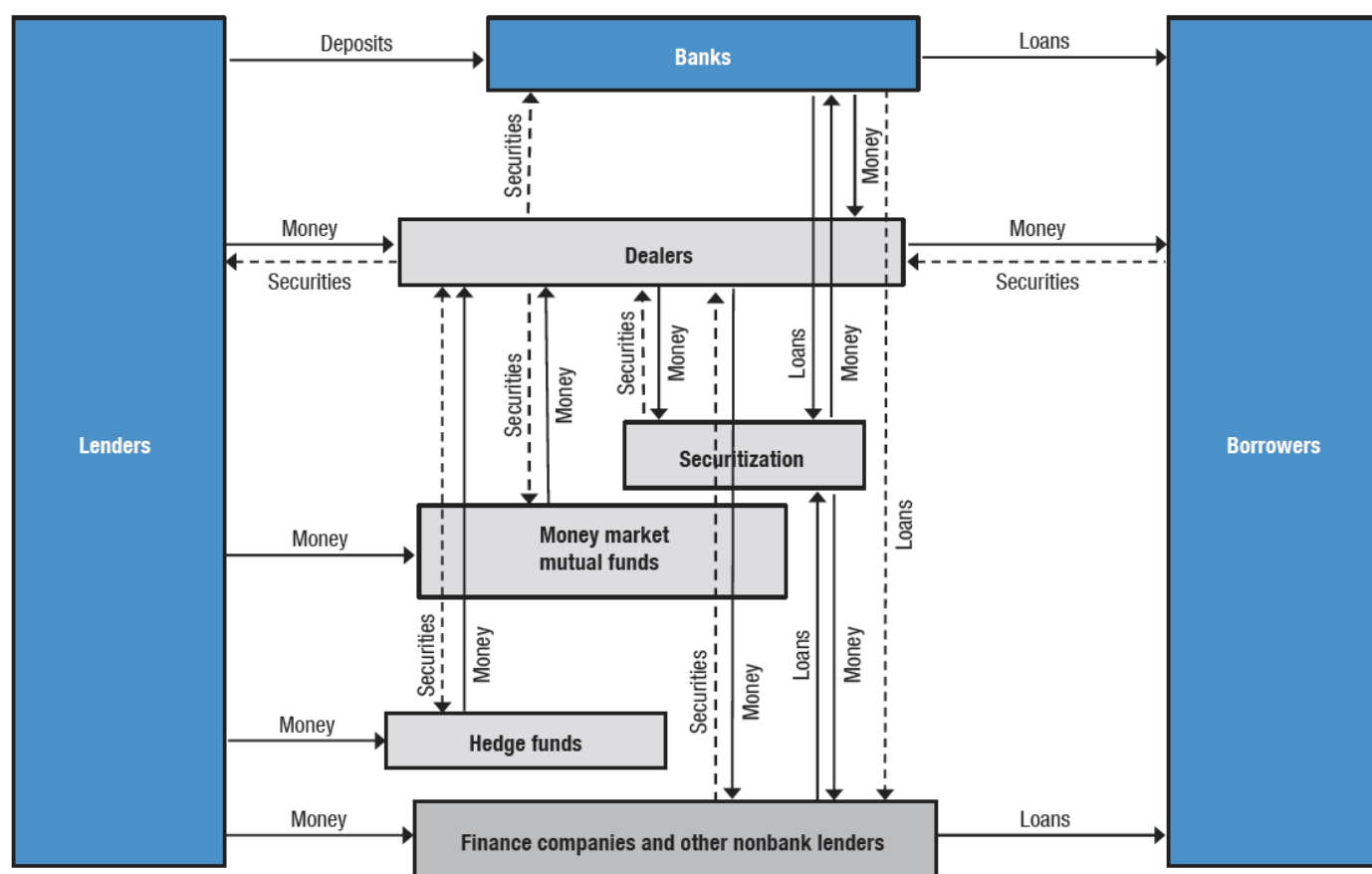


Illustration 26 – Traditional versus Shadow Banking Intermediation. IMF staff illustration

1.1.4.1 – Credit intermediation and lending

As far as *credit intermediation* is concerned, it has grown in the non-bank financial sectors much faster than credit intermediation by banks, although the scale of this credit intermediation is much smaller. This increase is largely due to the prolonged period of low interest rates in the banking sector, which has created opportunities for non-banks to increase their exposure to direct lending or to taking on more high-yield fixed-income exposures⁹⁸.

⁹⁸ This empirical evidence is usually known as "search-for-yield effect" as indicated in the papers: Lysandrou "The Primacy of Hedge Funds in the Subprime Crisis" Journal of Post Keynesian Economics, 2012; Jackson "Shadow Banking and New Lending Channels: Past and Future". The European Money and Finance Forum of Vienna, 2013; Lysandrou and

With regard to ***lending***, banking activity is definitely predominant, accounting for 77% of total loans in 2016. In fact, as we can see from the chart below, the banking activity, with concerns to loans, has experienced a very marked growth driven by the emerging market economies (EMEs) such as China and Brazil. This evidence is to be found in historical reasons that have traditionally recognized the banking sector as being more stable and therefore predominant in this sector, given its geographical location.

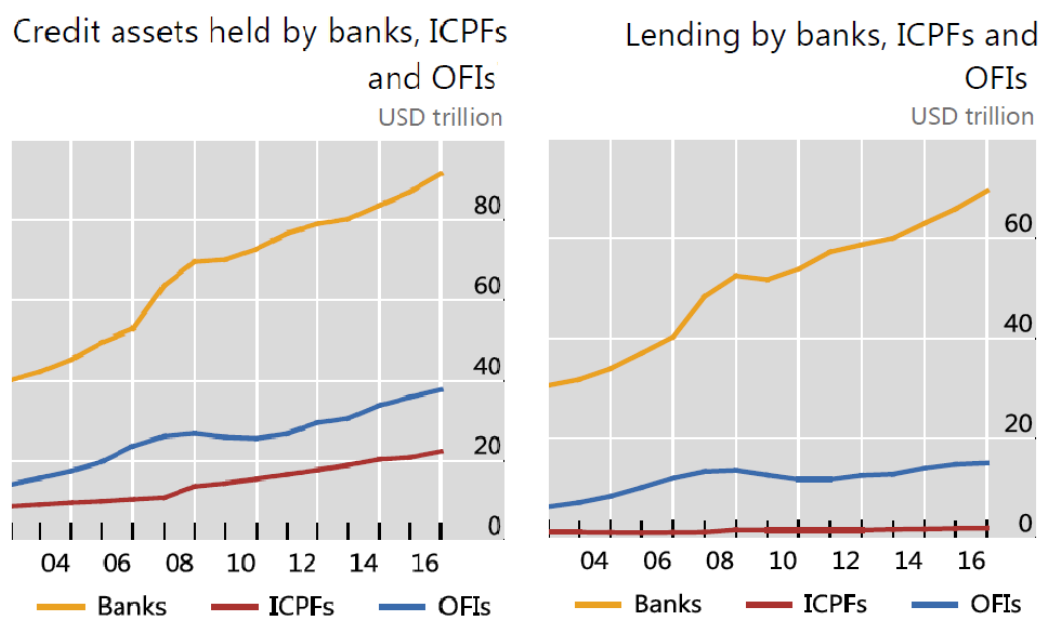


Illustration 27 – Assets held and lent: Banks, ICPF and OFIs. FSB (2017), *Global shadow banking monitoring report*

1.1.4.2 – Repos

This type of contract is very often used by central banks when they operate in the money market through open market operations with the aim of introducing or absorbing money. The repurchase agreement specifies the purchase price (nominal value), the interest rate implicit in the operation, the maturity and the securities to be exchanged. The margin corresponds to the difference between the spot purchase price of the securities and their market value and has the objective of protecting the lender from the risks associated with an increase in interest rates, and therefore from the reduction of the guarantee.

Stewart "The Contribution of U.S. Bond Demand to the U.S. Bond Yield Conundrum of 2004 to 2007: An Empirical Investigation" *Journal of International Financial Markets, Institutions and Money*, 2013.

They represent a very important source of finance for both banks and non-bank financial entities⁹⁹. Their importance derives from the possibility offered by these instruments of being used to create short-term, money-like liabilities, facilitating credit growth and maturity/liquidity transformation (even outside the regular banking system).

However, while this boosts the credit, it also stimulates the leverage build-up, the transformation of maturities and above all the interconnections between financial institutions, thus favoring pro-cyclicality.

The share of repos varies between the various jurisdictions, especially in relation to the types of guarantees used: in the jurisdictions where government securities are used as collateral, there has been experienced a substantial flat-rate trend, given that, even in times of stress, they are less likely to deteriorate.

1.2 – Differences with the traditional banking spectrum

As already mentioned in the previous paragraph, although Shadow banking essentially performs the same functions as traditional banks, they differ widely, especially in terms of regulation¹⁰⁰.

In particular, the differences are as follows:

- **Requirements and controls:** As already discussed in §1, traditional banking institutions, considering their role in the different countries' economies, are legally required to hold deposits in the form of capital in a certain amount to guarantee the stability of the system in which they operate and to protect against expected and unexpected losses. These requirements, getting more stringent, have created a significant increase in costs for the various credit institutions so as to allow the institutions within the shadow banking perimeter to benefit of a regulatory¹⁰¹ arbitrage;

⁹⁹ For further information regarding how the repo market works, please refer to the Global Financial Stability Report, October 2010: Sovereigns, Funding, and Systemic Liquidity.

¹⁰⁰ Adrian, T. (2014), "Financial Stability Policies for Shadow Banking", Federal Reserve Bank of New York, Staff Report n. 664, February

¹⁰¹ For further information on regulatory arbitrage refer to Victor Fleischer, 'Regulatory arbitrage' 89 Texas Law Review 227–275 (2010).

- **Financing methods:** the key difference between the traditional banking system and the shadow banking system is how it is financed. While the former is financed by deposits and potentially by central bank liquidity, the shadow banking system uses alternative financing channels. These channels are characterized by the evidence that they do not create money and wealth. First of all, as already illustrated in §1.1.3.1 is securitization, i.e. the process by which an institution manages to mobilize its illiquid assets through their transformation and subsequent sale to investors (private or institutional);
- **Existence of central counterparties:** during the 2007 crisis, without central counterparties (i.e. central banks) there would have been a situation in the market that was probably more serious than the one experienced. The existence of central counterparties, on the one hand, strengthens the system by setting economic and legal limits, but on the other hand it guarantees a strong solidity of the system, especially in period of recession or crisis. In fact, central banks are also commonly indicated as *lenders of last resort* implying that, in the event of short-term funds' need, the traditional bank can borrow from the central bank of its country¹⁰². The absence of a central counterparty in the shadow banking world is in fact a very controversial issue;
- **Dimension and size:** In terms of absolute size, it should be noted that, while the traditional system has decreased over time in terms of total assets, the shadow banking sector has not stopped even during the crisis showing growth in absolute terms (not marked but still constant). More in detail, as shown in the graph below, comparing the traditional banking and shadow banking system with respect to both the American and the European economies¹⁰³, there are two main differences:
 - For US, the size of non-banks grew well above that of regulated banks in the decade preceding the global financial crisis; for the EU, instead, the dimension of the shadow banking system has always been by far smaller than that of traditional banks;

¹⁰² Assistance to emergency loans should be at the discretion of the central bank, should involve greater regulatory intervention and should have a clear justification in terms of central bank authority. In addition, it should be properly assessed and should not be provided on terms more favorable than those available to banks.

¹⁰³ Grillet-Aubert, L., Haquin, J-B., Jackson, C., Killeen, N. and Weistroffer, C. (2016), "Assessing shadow banking – nonbank financial intermediation in Europe", ESRB Occasional Paper, n. 10, July.

- While in the US the size of the banking sector decreased in the post-crisis period, in the EU both banks and shadow banking institutions grew at high rates in the period prior to the crisis and continued to grow thereafter, albeit at a slower pace.

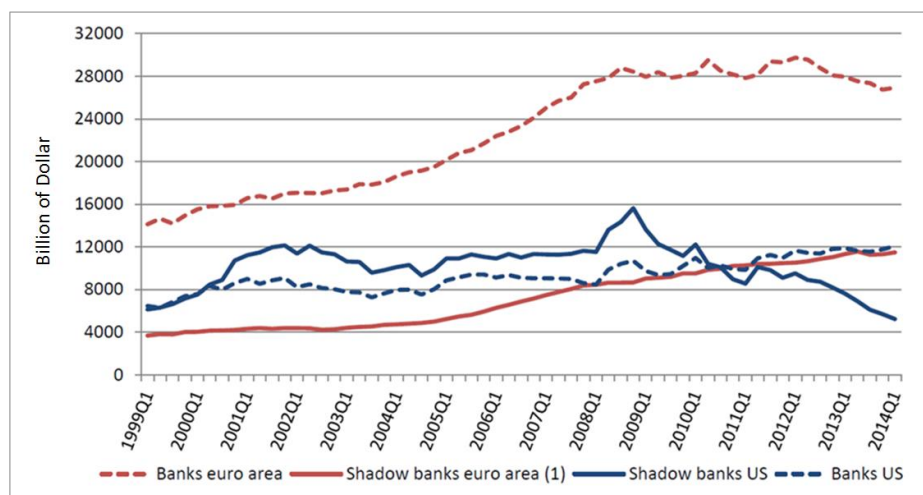


Illustration 28 – Banks and non-banks trend: EU and US. Euro Area Accounts (ECB and Eurostat) and monetary statistics (ECB), Financial Accounts of the United States

- **Financial leverage:** leverage is a mechanism through which an entity has the ability to buy or sell financial assets for an amount greater than the capital held. This, while having the effect of being able to significantly amplify profits, also has the effect of amplifying losses. The various supervisory bodies have imposed limits in terms of leverage, on the institutions present within the regulated credit market. In fact, the greater the leverage, the more likely it is that the various managers will experience suffering and hence the possible impact on the entire financial system. As far as shadow banking is concerned, since there are no legal or economic constraints, the practice of using leverage is very widespread, even if the capital structure of the various institutions does not allow to boost it. The leverage, in fact, is higher for traditional banks¹⁰⁴ than non-banks, as deposits constitute the main source of financing for shadow banking institutions. Anyway, as shown in the following graph, the pattern of the leverage for the shadow banking sector shows a development broadly in line with that of the banking sector. In the early 2000s its leverage significantly increased, and then it

¹⁰⁴ Beccalli, Elena, Andrea Boitani, and Sonia Di Giuliantonio. "Leverage Procyclicality and Securitization in US Banking." *Journal of Financial Intermediation*.

slightly decreased until mid-2007 in agreement with the asset price inflation of those years. Leverage then increased during the first phase of the global financial crisis and peaked in January 2009, a few months after Lehman Brothers' demise. Then a downward trend is clearly visible in the data for both banking and shadow banking sector. The leverage of traditional banks since then has declined 35% (from 23.4 in January 2009 to 15.2 in January 2014). Over the same period, the leverage of non-banks, although being substantially lower, had a slightly less sizeable decline (26%, dropping from 3.92 to 2.89).

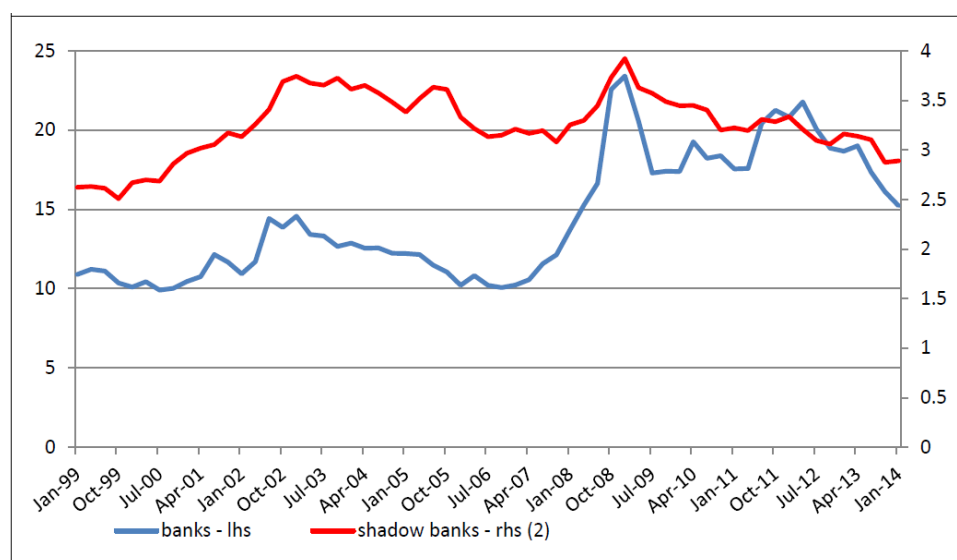


Illustration 29 – Leverage of banks and non-banks. ECB euro area accounts

- **Maturity structure:** another fundamental difference between the traditional system and shadow banking concerns the maturity structure of the balance sheet. This, in addition to being empirical evidence, is also a source of risk because a misalignment between the passive and active balance sheet structures can cause both financial and economic problems. In the following chart are shown the maturity mismatch in the regulated banking system and in the shadow banking system¹⁰⁵. The indicator of maturity mismatch used, is the gap between the ratio $\frac{\text{long-term assets}}{\text{short-term assets}}$ and $\frac{\text{long-term liabilities}}{\text{short-term liabilities}}$.
- **Traditional banks** run a large maturity mismatch, as is to be expected given their function in the credit intermediation chain;

¹⁰⁵ Maturity of assets and liabilities refers to the original maturity.

- **Non-banks**, instead, have a large fraction of the portfolio composed by long-term instruments for both assets and liabilities¹⁰⁶. In fact, they present a very small Gap that has reached its peak in response to the financial crisis of 2007.

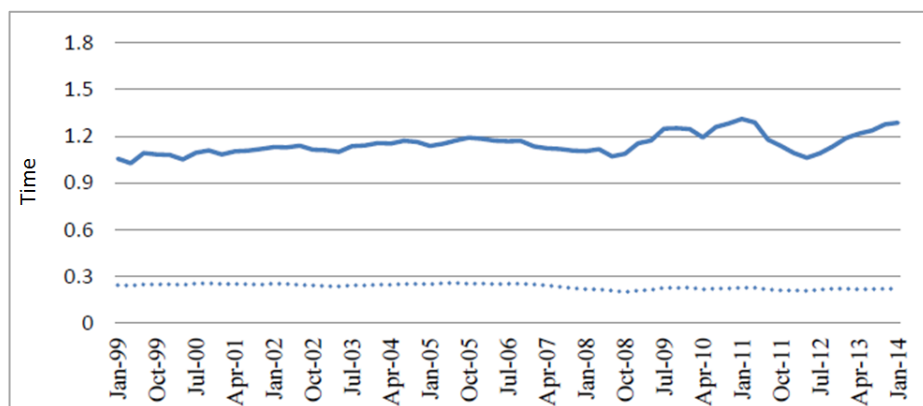


Illustration 30 – Maturity structure of banks' assets and liabilities. ECB euro area accounts

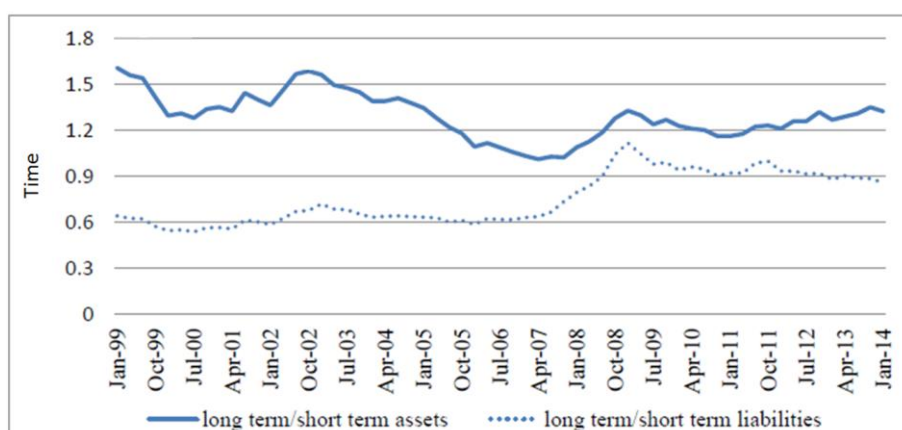


Illustration 31 – Maturity structure of non-banks' assets and liabilities. ECB euro area accounts

¹⁰⁶ Interestingly, the outbreak of the global financial crisis forced non-banks to drastically increase the amount of long-term funding, due to panic in repo transactions and money markets. But after the collapse of Lehman Brothers, the gap between the maturity of assets and liabilities widened slightly. In particular, the share of long-term and short-term assets started to grow again in 2011, albeit moderately. This increase indicates a more illiquid asset side, potentially more exposed to expensive sales in the event of market turbulence.

1.3 – Connection of the Shadow banking system

After clarifying the functioning of the shadow banking system and analyzing the differences with the traditional banking world, it is worth to mention here the theme of the interconnection between the financial sectors as well as with the real world and non-financial corporations (NFCs).

The contribution of non-bank channels within the economy is of considerable value as it substantially increases the overall amount of available financial resources and their diversification.

1.3.1 – Interconnection among financial sectors

The interconnection between the financial sectors is very important and taken into account especially during times of stress, since direct and indirect links between financial sectors can become channels for risk contagion. In the last few years the legislator has intervened in the area of its competence, with the aim of avoiding not only crises but also the possibility of their propagation (i.e. the "domino effects").

Interconnection is estimated and analyzed here, using the composition of the Balance Sheet as a measurement index. As shown in the graph below, the Financial System has a highly interconnected matrix structure.

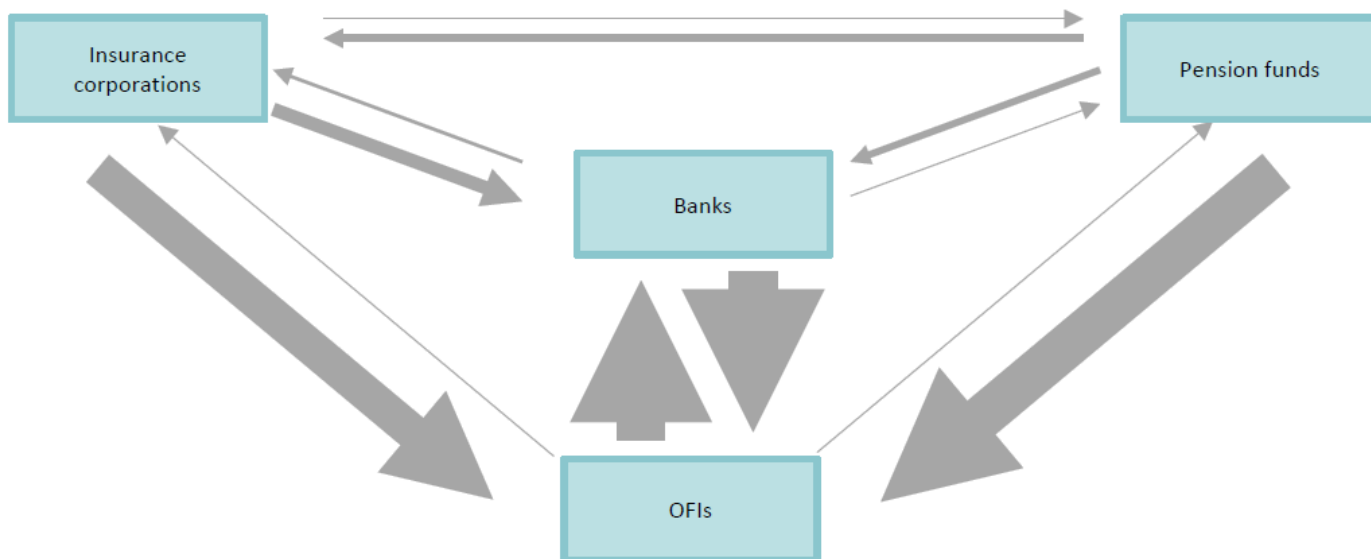


Illustration 32 – Interconnection among financial sectors based on the Balance sheet structure. FSB Calculation

As can be seen from the thickness of the arrows, which reflects the absolute size of exposures from one financial sector to another, the sectors with the highest degree of interconnection are OFIs and banks since they can be linked to each other with regard to both the asset side and the liabilities side of the balance sheet. In fact, banks can be connected to OFIs by providing them with loans or by investing in them. The mirror image is the connection of the banks that have experienced a marginal increase in connection through the credit and funding relationship, remaining around 2003–06 levels.

1.3.2 – Link with Households

In detail, the connections of the shadow system and the real world relate to various positive aspects of non-banks universe as:

- **Low cost of financing:** one of the channels through which shadow banking is connected to the real world is disintermediation. In fact, since banks are for-profit institutions, they follow the 'buy-low, sell-high' principle, lending at an interest rate higher than the one at which they are indebted. The disintermediation of the shadow system allows the various

institutions to "borrow", avoiding to pay the difference between the two rates, for example, using the Special Purpose Entities.

- **Extension of the range of financial products:** given the absence of rigid regulatory demarcation lines, non-banks can structure financing proportionate and appropriate to individual customers, then build portfolios tailored to their preferences.

The above-mentioned peculiarities of the so-called shadow system have favored a considerable expansion. In fact, as shown by the graph below, which shows the average annual amount of loans granted to households by the different categories of counterparts, although traditional banks definitely dominate the picture, the share of loans granted by non-banks has increased significantly, going from 4% in 1999 to 9% in 2013 (after a peak of 11% in 2009). This, however, was also due to the absolute increase in lending to households, which suggests that there has been no significant substitution between the two sectors in the provision of long-term financing to households.

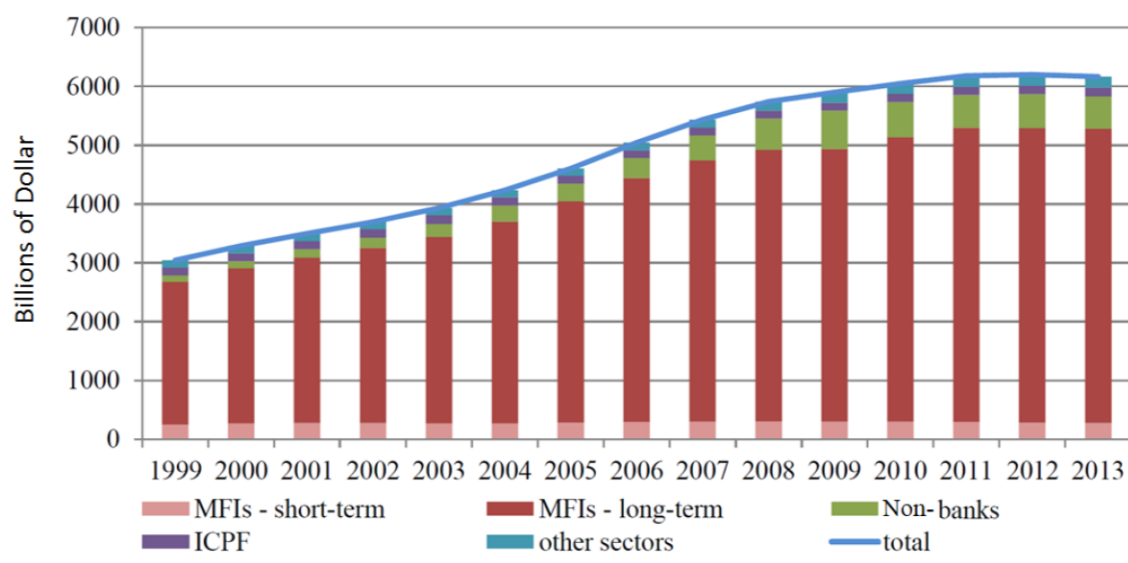


Illustration 33 – Loans to households split by counterparty

1.3.3 – Link with Non-Financial Corporations (NFCs)

The phenomenon of NFCs should be divided into two categories: the category of large companies and the category of Small-Medium enterprises (SMEs).

- About the *large companies*, the impact of shadow banking is more marked in percentage terms than in absolute terms. In fact, given the expansionary monetary policies in addition to the already marked possibilities of large corporations to negotiate favorable conditions with traditional banks¹⁰⁷, they have recorded a highly heterogeneous "texture" consisting of banks, non-banks, non-financial corporations and other;
- As far as *small-medium enterprises* are concerned, as they are not classified, their source of financing to banks may decrease more rapidly than that of large enterprises. This element may suggest that shadow banking institutions have taken advantage of this evidence by expanding their share of the portfolio in this sector. However, this has not happened for a number of reasons, most notably the expansionary policies of the banking system in recent years. In fact, as far as SMEs are concerned, in recent years they have shown an upward trend in debt linked to the ever-increasing demand for bank loans¹⁰⁸. As a consequence, for many euro area countries, the growth in the level of loans has been more important than the rise in nominal GDP.

¹⁰⁷ The bargaining power, main driver of the possibility of obtaining *good contractual conditions*, is directly proportional to the size of the enterprises.

¹⁰⁸ Demand for loans has increased significantly since in the Eurozone: Netherlands (+24%), Belgium (+22%), Germany +11%), France (+5%).

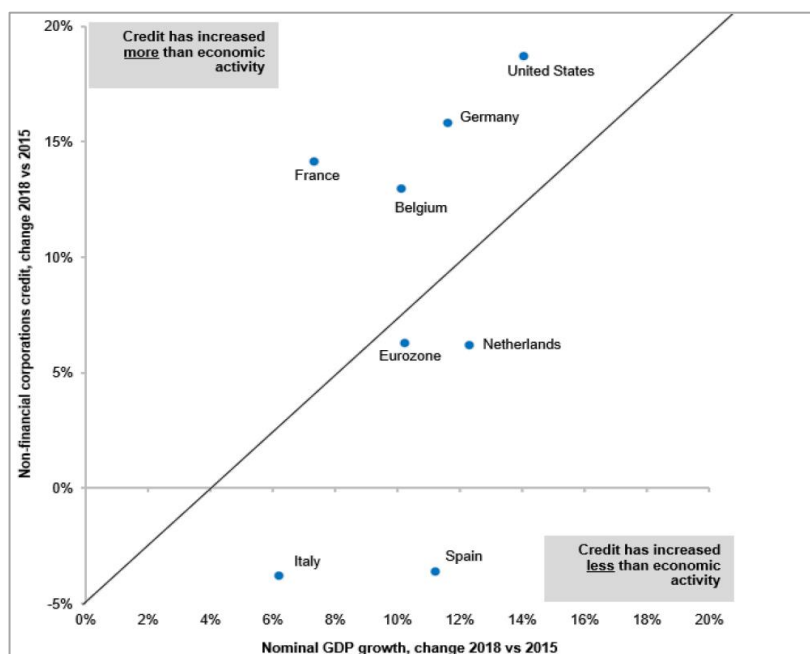


Illustration 34 – Total credit to non-financial corporates vs nominal GDP growth in the period 2015–2018. Trib Rating credit research

Combining the two "worlds" of large and small enterprises, there can be deduced how the main feature is heterogeneity: although the various banks are the main lender, their share has fallen from 59% in 1999 to just under 50% at the end of 2013; the share of funding instead granted by the non-banks has increased significantly since the outbreak of the financial crisis (in 2006 the value was about 10%, while at the end of 2013 the share was 15%). This suggests a possible replacement between the sources of financing of Non-Financial Corporations between traditional banks and non-banks.

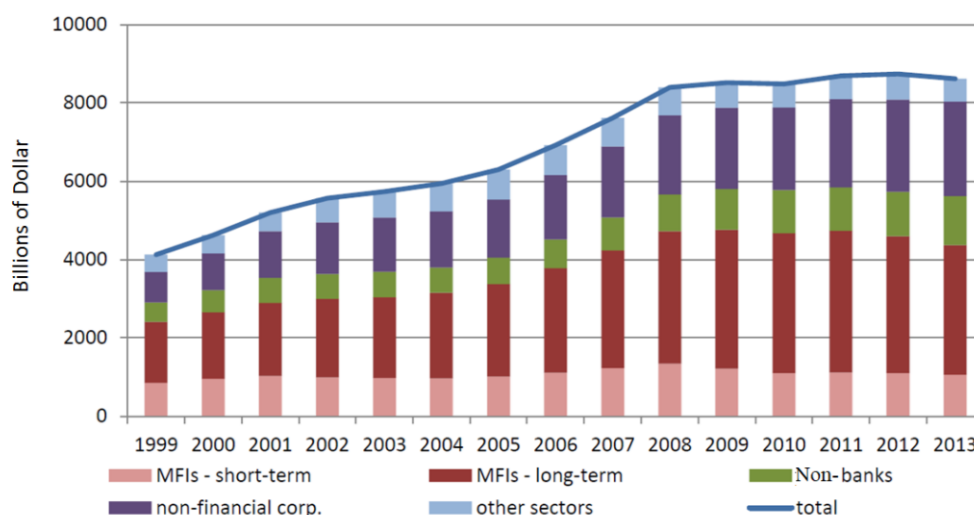


Illustration 35 – Loans to Non-Financial Corporation split by counterparty

§ 2 Banking business models and interconnection with Shadow Banking

Examining in §1 all the functioning of the shadow banking model, it is now legitimate to inquire about: what are the determinants from which everything originates?

As has already mentioned, the years in which the shadow banking system formed and developed are to be found in the 1980s which, not by coincidence, are the same years in which the first agreement on the capital of banks was published (i.e. Basel I in 1988). In fact, on the basis of what has been said, we can see how the shadow banking system is closely related to the banking system, which in turn depends to a considerable measure on concordat regarding regulatory capital (i.e. the Basel agreements). The objective of the present work in this paragraph 2 is first examine in in detail the topic of banking business models and then provide evidence of how it influenced the development of the shadow banking system.

2.1 – Banking business models

Historically, the bank balance sheet consisted of deposits – on the liabilities side, and loans – on the assets side. Given this structure, banks generally adopted a business model whereby deposits were used to fund loans that they then kept on their balance sheets until maturity. Over time,

however, this banking model has experienced a change and banks have started to expand their sources of financing¹⁰⁹.

To understand the rationale for this change, the author of this paper believes that it is valuable to explore in this paragraph the two main business models called Originate-and-Hold and Originate-to-Distribute and providing at the same time evidence of how the latter has emerged in correspondence with the dynamics of the market.

2.1.1 – Originate-and-Hold

The "Originate-and-Hold" model corresponds to the traditional banking system for which loans represent the core business of the banks and consequently the main component of the assets. Within this framework, the financial intermediary offering a loan maintains it on the balance sheet until maturity, i.e. until the principal and interest have been repaid in full. The yields thus derive from interest, which in turn is closely related to the credit risk of the counterparty. The loan will therefore have a long life that will be included on the assets side of the bank's balance sheet, imposing on the various institutions an efficient management of the loan portfolio that depends on the accuracy of the ex-ante (credit risk) and ex-post (monitoring and management of relationships) assessments intended to minimize the problems of adverse selection and moral hazard. In this context, it emerges that accurate screening of borrowers' repayment capacities and guarantees becomes one of the activities on which institutions expend a considerable effort. In this context, the risk arising from the various loans will be completely internal to the bank, thus implying a strong impact of regulatory requirements.

¹⁰⁹ The rise of the Originate-to-Distribute model and the role of Banks in financial intermediation. FRBNY Economic Policy Review, July 2012, Vitaly M. Bord and João A. C. Santos.

Originate-and-Hold	
Exposure	Risk
Business focused on bank's offer	The risk is internal to the bank and the capital requirement have large impact on the structure

Table 21 – Originate-and-Hold model: Exposure and Risk

2.1.2 – Originate-to-Distribute

The so-called "Originate-to-Distribute" model is characterized by the peculiarity that the intermediary does not retain the loan just issued in the balance sheet, but, through financial engineering, transforms it into a financial activity with the aim of selling it on the market. The loan is thus sold to third-party buyers who will have the original borrower's debt as collateral and interest payments as remuneration.

This transfer produces about 2 main consequences:

- *Transfer of credit risk*: since the bank no longer holds the amount of the loan on its balance sheet, it will no longer assume all the risks related to it, i.e. the credit risk. This means that the capital requirements imposed by the discipline on credit risk will have a smaller weight on the structure;
- *Initial remuneration*: the consequence of the transfer is the interruption of the flow of interest that the intermediary receives, thus obtaining a remuneration only at the time of the operation and no longer during the lifecycle of the loan.

This methodology leads to the consequence that banks will have an incentive *not* to spend resources on accurate and careful assessment of the creditworthiness of their borrowers since, as intrinsic feature of the model, it involves the off-balance sheet transfer of the various assets. The intermediary will therefore keep these assets on the balance sheet only for a short period of time, useful only to take advantage of the minimum time to "repackage" them and sell them on the market after quality assessment by a rating agency.

This model establishes a relationship between lending markets and the capital markets. In detail, the relationship is developed through the implementation of two phases:

- *Pricing disciplines*: in this phase the *price* of the financing is determined through the adoption of certain pricing methodologies aimed at analyzing the relationship between risk and return;
- *Portfolio rebalancing*: in this phase, through management strategies and financial engineering, the world of credit is connected to capital markets through the sale of products on the market.

Originate-to-Distribute	
Exposure	Risk
Business focused on customer requirements	The risk is shared across the market and the capital requirements have less impact on the structure

Table 22 – Originate-to-Distribute model: Exposure and Risk

2.1.3 – Reason behind the rise of the Originate-to-Distribute model

After describing the most common banking business models, it is now useful to clarify the reasons for the rise of the model oriented to the *distribution*.

For the convenience of the reader, the reasons will be outlined, first dealing with the "economic" aspects and then with the "regulatory" ones.

- **Economic reasons:** Given that the banks, being institutions with the purpose of profit, have as their objective to gain by exploiting the margin of intermediation – i.e. the difference between the funding rate and the lending one¹¹⁰, the increase of the interest rates by the

¹¹⁰ As far as the funding rate is concerned, it depends to a large degree on the monetary policy choices made by the various central banks, whereas, as far as the lending rate is concerned, it depends on two main factors, namely (i) the rate of competition within the market and (ii) the requirements imposed by the various authorities.

central banks in relation to the economic recovery of post-2001, had increased the cost of traditional banking and thus narrowed margins. This, connected with the ever-increasing competition within the credit market, had pushed various institutions to opt for solutions aimed at increasing revenues with the same number of loans granted. This was possible through the implementation of various methodologies, first of all the so-called securitization. These market conditions, in other words, had induced the banks to no longer hold the loans on the balance sheet until maturity (a characteristic of the model Originate-and-Hold), but to mobilize them prior to maturity in order to monetize them more quickly (a characteristic of the model Originate-to-Distribute).

Mathematically, the above-described impact can be expressed through the so-called Return on Equity (ROE) ¹¹¹ index according to the DuPont scheme¹¹², which explicitly defines the measure of the Asset Turnover:

$$ROE = \frac{Earnings}{Sales} * \frac{Sales}{Assets} * \frac{Assets}{Equity}$$

Where:

- $\frac{Earnings}{Sales}$ Operational Efficiency Index (Profit Margin) which is "fixed" by the market as it depends on the competition;
- $\frac{Assets}{Equity}$ Leverage measure imposed by the regulator through the implementation of the Basel agreements concerning the relationship between regulatory capital and RWA;
- $\frac{Sales}{Assets}$ is a measure of *Assets Turnover* that can be "managed" by the various institutions through decisions about the velocity of reemployment of capital (this measure is highly stressed in the so-called Originate-to-Distribute model).
- **Regulatory reasons:** With regard to this issue, for reasons of synthesis, we will proceed only to consider those impacting on the so-called credit risk.

¹¹¹ The ROE measure is widely used by shareholders as it expresses concisely and easily how much profit is produced in relation to the capital invested.

¹¹² The formula can also be expressed as:

$$ROE = \frac{Earnings}{Assets} * \frac{Assets}{Equity} = ROA * Leverage$$

This explanation shows how, in the absence of debt, shareholder equity and the company's total assets will be equal. Logically, their ROE and ROA would also be the same.

As mentioned in Chapter 1 and discussed in more detail in Chapter 2, the various Basel agreements that have been in place over time have led to increased capital requirements for the various credit institutions. This has led to an increase in costs in relation to the various positions in the portfolio which has led banks to "sell on the market" part of their credit positions, thus leading to their off-balance sheet exit (i.e. the transfer of credit risk) from which the reduction in capital requirements: in other words, it has moved from a logic of Originate-and-Hold to a logic of Originate-to-Distribute.

In the analysis, however, an additional element must be considered, that is, regulatory arbitrage. The increase in capital requirements, in fact, is not by itself sufficient evidence to justify the decrease in the amount of positions in the portfolio. It should be noted that in order for something to be sold, there is a need for a counterparty to buy. In the credit sector, in the last decades, this counterparty of the banks was represented on a large scale by entities encompass in the shadow sector (i.e. non-banks) which, as highlighted in the previous Chapters, for regulatory reasons possess different incentives in adopting policies for the purchase of existing credits.

2.2 – Interconnection with Shadow Banking

In relation to the above, it is clear that, in recent years, banks, due to market dynamics and regulatory capital regulations, have considered more *convenient* to distribute certain credit positions rather than keeping them on the balance sheet until maturity: in other words, they have adopted the Originate-to-Distribute model with regard specific credit exposures. However, the sale of credit positions necessarily presupposes the purchase of the negotiating counterparty, acquiring counterparty, which in recent years has been represented by those entities included in the shadow banking perimeter¹¹³.

¹¹³ In the so-called Originate-and-Hold model the main actors are the banks and the customers who request the loan; while in the Originate-to-Distribute model the main actors are the banks that grant the credit, the customers that request it and all those institutions (other than the banks) that deal with the purchase and sale as well as the "packaging" oriented to the sale.

Such a distribution-oriented business model has therefore allowed the interconnections between the banking and non-banking worlds, leading them to experience parallel growth rates in the period 2000–2012.



Illustration 36 – Growth rate: Shadow Banking vs Traditional Banking

The figure shows how, in the period prior the crisis, growth rates in the shadow sector experienced a marked growth compared to those in traditional banking. This trend is not stochastic, however, but depends to a large extent on the "*convenience*" of using the distribution-oriented model rather than the one aimed at "*holding*" the positions in the portfolio¹¹⁴.

This *convenience*, as will be analyzed in the following pages, is based on a comparison of the prices of the Credit Default Swaps (iTraxx index) and the costs imposed by the agreements on the regulatory capital of the banks (i.e. the Basel agreements).

So, before investigating about the above *convenience*, is worth to mention the differences between:

- *iTraxx index*: it is a derivative financial instrument that offers to investors the possibility of taking positions on the probability of default (bankruptcy) of a basket of securities issued. It functionally represents the average price, in a given interval of time, that an investor must

¹¹⁴ In fact, given that the link between the shadow world and the traditional one is represented by the model originated to distribute, when there will be convenience on the part of banks to use this model there can be a significant growth of non-banks

pay to be hedged by a possible default of a basket of issuers (in this case *Corporate*). The insurance offered is a synthetic insurance¹¹⁵ whose price is not static but varies according to market dynamics: the greater the difficulties faced by the market, the higher the prices of the CDS.

Analyzed the quotation of the iTraxx index with historical depth from 2006 to 2019 (chart below), it can be seen that it has increased considerably in correspondence to 2008 and 2011, creating the possibility of exploiting the so-called Regulatory arbitrage¹¹⁶. In particular, given that the increases in the index in question are explained by situations of rising costs of credit risk insurance¹¹⁷ (i.e. market crisis), they can be related respectively to the subprime mortgage crisis and the sovereign debt crisis¹¹⁸.



¹¹⁵ Synthetic insurance is characterized by the non-transfer of the insured asset. In other words, this item remains available to the insured (and therefore in the balance sheet).

¹¹⁶ The regulatory arbitrage is an evidence that, in this case, is based on a difference in term of *speed* with which the market and the regulator price the credit risk.

¹¹⁷ i.e. Credit Default Swaps.

¹¹⁸ There are two distinct phases of the major financial crisis: the first began with the subprime real estate crisis in the United States and the sudden and abrupt downgrading of ABS and other securitization products (February–June 2007); this led to a liquidity crisis in 2007 in the interbank sector which caused in turn an increase in the demand for liquidity lines and extension of the quality of collateral by various operators in the banking sector (August 2007). The peak of this first phase of the crisis occurred in October 2008, when the Lehman Brothers crisis led to the need for massive intervention by the central institutions of the united states. subsequently, after a brief market recovery, there was a further relapse of the market which led to the sovereign debt crisis in Europe. The ECB has reacted to this recession with expansive monetary operations (especially outright monetary transactions (OMT)).

- *Costs imposed by Basel Agreements:* the legislator, through the Basel Agreements, has indirectly imposed different costs on different credit institutions arising from capital requirements. In particular, these costs have experienced so-called "staggered" variations – due to the implementation or updating of the discipline.

In consideration of the above-mentioned information, this paper will now examine in depth the issue regarding the comparison of the iTraxx index with the costs imposed by the legislator, providing at the same time evidence of how this is a key factor in the business model to be adopted by banks (and therefore also of the interaction with shadow banking).

Comparing iTraxx index with the costs imposed by Basel II emerges as, if while before December 2007 (i.e. before the crisis of the sub-prime mortgages), the model "originated to distribute" turned out to be more convenient, in the years of the crisis, the tendency was reversed. Same trend, but with lower peaks, was experienced in the period between 2011 and 2013 in the presence of the sovereign debt crisis that affected mainly the EU.

In fact, in the periods of crisis indicated, as the graph below shows, the cost of transferring credit positions to the market (i.e. the CDS price) was higher than the cost to banks imposed by the regulator to maintain the same positions on the portfolio (*Red line*).

¹¹⁹ Image representing the quotation of the iTraxx XOVER index for 10-year CDSIs for the Corporate segment. The period before the crisis up to 2018 was deliberately chosen as the time interval to show how market dynamics have a strong impact on the price. Source: Bloomberg



Illustration 38 – iTraxx XOVER CDSI GEN 10Y Corp compared to Basel II cost of Risk on Balance

By carrying out the same analysis but considering the new Basel III framework, it can be seen that the new credit risk requirements have increased the costs for regulated credit institutions (*Boudreaux line*). This has led to a reduction in the convenience of holding loans in the portfolio or, in other words, to an increase in incentives to take advantage of the regulatory arbitrage of the Originate to distribute model.



Illustration 39 – iTraxx XOVER CDSI GEN 10Y Corp compared to Basel III cost of Risk on Balance

Chapter 4 – Shadow banking regulation

§ 1 Non-banks: EU regulation

1.1 – The need for a regulatory framework

Before investigating the reasons at the basis of a community "harmonization" regarding the perimeter of shadow banking, it is useful and valuable first to discuss the methods by which the shadow banking system operates and secondly analyze the functioning and the objectives of the European Central Banks (ECB).

For which concern the first point, shadow banking' can be defined as non-bank credit intermediation, or more precisely as "credit intermediation involving entities and activities (fully or partially) outside the regular banking system". As already discussed in Chapter 3, Such intermediation, conducted in an appropriate manner, is a viable alternative to bank financing that supports real economic activity. However, the crisis demonstrates the inability of this system to operate in a way that does not create systemic risks for the banking system. Such risk creation can take place at entity level, but it can also be part of a complex chain of operations, where the maturity transformation and leverage takes place in stages and in ways that create multiple forms of feedback in the regulated banking system¹²⁰. "These effects were powerfully revealed in 2007–09 in the dislocation of asset-backed commercial paper (ABCP) markets, the failure of an originate-to-distribute model employing structured investment vehicles (SIVs) and conduits, "runs" on money market funds (MMFs) and a sudden reappraisal of the terms on which securities lending and repos were conducted"¹²¹. However, while banks are subject to well-developed prudential

¹²⁰ Like banks, a shadow banking system that transforms leverage and maturity can be vulnerable to "racing" and generate contagion risk, thereby amplifying systemic risk. Such unattended activity can also increase pro-cyclicality by accelerating the supply of credit and the increase in asset prices when confidence increases, while making a precipitate decline in asset and credit prices more likely and creating credit channels vulnerable to sudden losses of confidence.

¹²¹ Financial Stability Board, Consultative Document: *Strengthening Oversight and Regulation of Shadow Banking*. An Integrated Overview of Policy Recommendations

regulation and other safeguards, shadow banking is normally subject to less stringent or even non-existent supervisory requirements.

As regard the functioning of the European Central Bank, it is worth to mention that the declared goals of the ECB are: (i) to guarantee the stability of prices and (ii) to favor growth and employment; the whole (iii) managing the Euro and (iv) defining and implementing the economic and monetary policy of the EU. In order to pursue these goals, the instruments used are as follows:

- Setting of interest rates for lending to commercial banks in the euro area;
- Management of the euro area's foreign exchange reserves and the purchase or sale of currencies to maintain exchange rates in balance;
- Competence to authorize the emission of euro banknotes by euro area countries;
- Monitoring price trends and assessing the resulting risks to price stability.

In view of this, it can then be stated that the ECB has the task not only of '*supervising*' the institutions, but also of monitoring *monetary policy*. Hence the need for shadow banking developments to undermine the effectiveness of monetary policy. In fact, given that monetary policy in the economy is "*the process by which the monetary authority of a country, typically the central bank or currency board, controls either the cost of very short-term borrowing or the money supply*"¹²², there is a possibility that *non-banks*, by acting as *wedges* in this operational chain, may reduce the effectiveness of ECB performance. Hence, and on the basis of the empirical evidence already experienced by the world economy in relation to the ECB's policy choices¹²³, the need has arisen to ensure a minimum harmonized regulatory framework for the countries of Europe.

In view of what has been analyzed, the main reason that justify the need of a regulation on shadow banking system, can be summarized in:

- The possibility that the operation of non-banks could be the basis of a malfunction of the banking system in relation to the systemic risk that they present;

¹²² These are allowed by the targeting inflation rate or interest rate to ensure price stability and general trust in the currency

¹²³ In fact, reference is made to the crisis of 2008, which has its roots in the interruption of the transmission mechanism of the banking monetary policy from the top (banks) to the bottom (real economy) imposed by the FED. This error, which resulted in the failure to "identify in time" the failure of the transmission mechanism, was made clear in 2008 when the complexity, size and interconnection of the shadow world with the banking world led to the crisis that still affects the world economy today.

- The potential for shadow institutions, by acting as wedges in the mechanism of transmission of the ECB's monetary policy, to attenuate or offset its effect;
- The first reason is the possibility that the shadow banking system is used as a way to escape regulation and is used to do things that could be done under the traditional regulated system, increasing the probability of systemic events¹²⁴.

1.2 – *European regulation*

The regulation mentioned in the previous paragraph has in fact a dual purpose: (i) to harmonize the regulation with regard to non-banks in the real European countries, and (ii) to regulate, at least with regard to the entities most in touch with the public savings, the level of regulatory capital to be held.

The importance of this last point derives from the evidence that, as has been discussed extensively in Chapter 1 of this paper, capital is the instrument that, acting as a buffer in case of losses, avoids the repercussions of financial stress events on depositors.

In fact, it is no coincidence that the legislator, through the various Basel agreements¹²⁵, has focused precisely on the level of "regulatory" capital of banks as a tool for crisis prevention.

Precisely in relation to the importance of capital – and after having clarified in Chapter 3 the definition of the perimeter of shadow banking and the various entities that compose it, there is now the need to investigate the levels of capital that the non-banks present in relation to the Community discipline.

¹²⁴ For example, before the crisis many commercial banks created special investment vehicles and conduits to purchase the long-term assets of the bank and finance the purchase by issuing short-term asset-backed commercial paper (ABCP). Nevertheless the sponsors of the conduits (the commercial banks) were required to pay off maturing ABCP, thus offering a guarantee to the outside investors in these conduits. Therefore, there was no real risk transfer but the assets did not appear on the bank's balance sheet, allowing the bank to over leverage and escape capital regulations.

¹²⁵ Reference is made to Basel 1, Basel 2 and Basel 3 agreements.

1.2.1 – Insurance Corporation (2009/138/EC)

Not included in the shadow banking perimeter according to the FSB report indicated and analyzed in Chapter 3, insurance corporations can still be included in the non-bank category, since their activity is partially outside the regular banking system. However, differently from the other entities included in the *narrow measure*, they present a hard-regulatory-core composed of both a prudential part (i.e. related to regulatory capital) and a part of control and supervision.

As far as insurance companies are concerned, the rules on the level of capital are laid down in Directive 2009/138/EC of the European Parliament and of the Council "*on the taking-up and pursuit of the business of Insurance and Reinsurance (Solvency II)*".

In detail, the discipline under examination aims to extend the principles of Basel II to the insurance environment, both in relation to the method of identifying and measuring risks and in relation to the methods of calculating capital requirements. To this end, the system is based on three pillars:

- **Pillar I: Quantitative requirements**

Solvency II requires at the first pillar that insurance companies adopt capital requirements that cover the risk assumed. For the purpose of calculating the value of liabilities (on which the level of capital to be held is then calculated), the legislator requires that they are calculated at market prices using one of the models provided by the regulations. These models, following the footsteps of the Basel agreements, vary from the *base*, defined as "*standard formula as simplified methods*", to the *advanced* one defined as "*internal model*", passing through standard formula, standard formula undertaking specific parameters and standard formula and partial internal model¹²⁶. The increase in complexity is essentially the result of the *risk tree*, defined as the method that allows the various insurance companies to identify corporate risks and subject themselves to the various stress scenarios, as well as the calculation of diversification and risk mitigation.

¹²⁶ Solvency II is declaredly intended to incentivize each insurance company to adopt an internal model and entails higher capital requirements for those who adopt the standard formula. A second "*penalizing*" cause for those who adopt the standard formula is that it allows a considerably less costly calculation process such as time and cost, but provides estimates of expected expenses (of the aggregate cost of claims) less accurate, which ensure a fixed probability of failure of the company, with a lower reliability.

These models are therefore used to calculate the so-called solvency capital requirement (SCR), defined as the "*target capital*" that the various insurance companies must hold in order to ensure a high degree of resilience in the event of a shock.

Given the high volatility of the business in question, the legislator also proceeded to identify the *Minimum Capital Requirement (MCR)*, defined as the level of capital that, calculated every three months, must have a minimum value for the insurance company to operate¹²⁷.

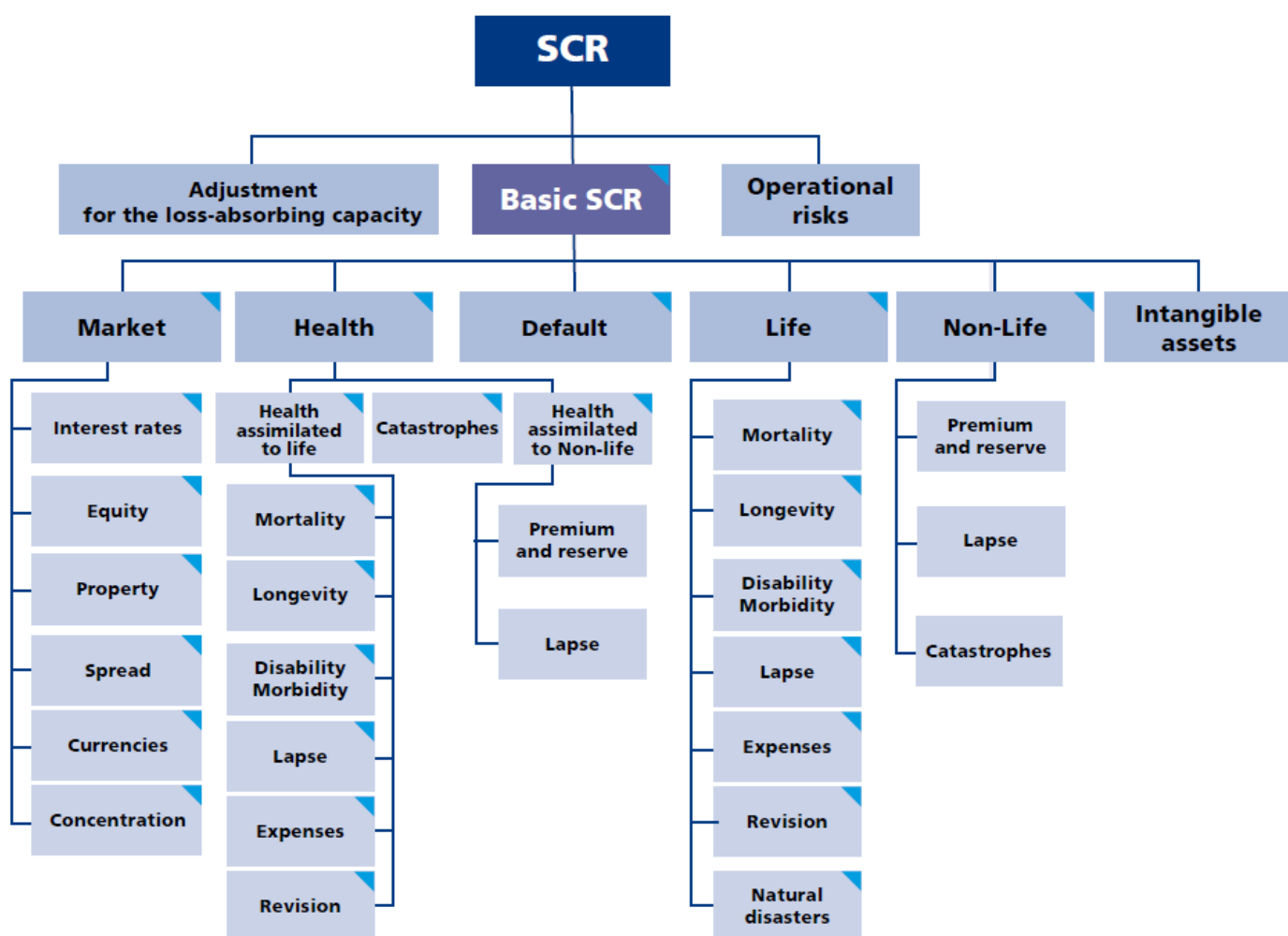


Illustration 40 – The risk tree in the standard formula. The new prudential regulation of the insurance sector: IVASS

¹²⁷ MCR should be calculated as a percentage of the SCR; both therefore as multiples of the same formula, or by a simplified version that considers fewer risk factors (or scenarios or insurance lines) and overlooks correlation terms, assuming independent factors.

- **Pillar II: Qualitative requirements**

This pillar provides that the system set out in Pillar I will be applied. In detail, the second pillar proactively intervenes on the company's structure to ensure that the calculation and monitoring of prudential ratios is considered as a central process. In other words, it requires the company executive to be aware of all processes in order to give consistency and form to the internal and integrated system of risk management.

- **Pillar 3: Reporting**

In relation to this Pillar III, the Solvency II legislation outlines a dense information network that must constantly link an insurance company to the supervisory authority and, no less importantly, to the market. In the practical application of this pillar, there are two separate information channels, private with the authority and public with the market. This takes into account the different information needs of the different stakeholders protected.

- *Market information:* these are contained, as required by the European regulations, in the document that takes the name of "*Solvency and Financial Condition Report*" which is required to contain: (i) type of business and performance; (ii) governance; (iii) risk profile; (iv) valuation criteria; (v) capital management;
- *Supervisor Information:* These will be contained in the Regular Supervisory Report and are the same as those provided to the market but with a higher level of detail and frequency. Among these, it is worth noting that the *Own Risk and Solvency Assessment* report (ORSA) must also be included, i.e. the annual report on how the methodology for calculating and verifying the solvency requirement has been implemented.

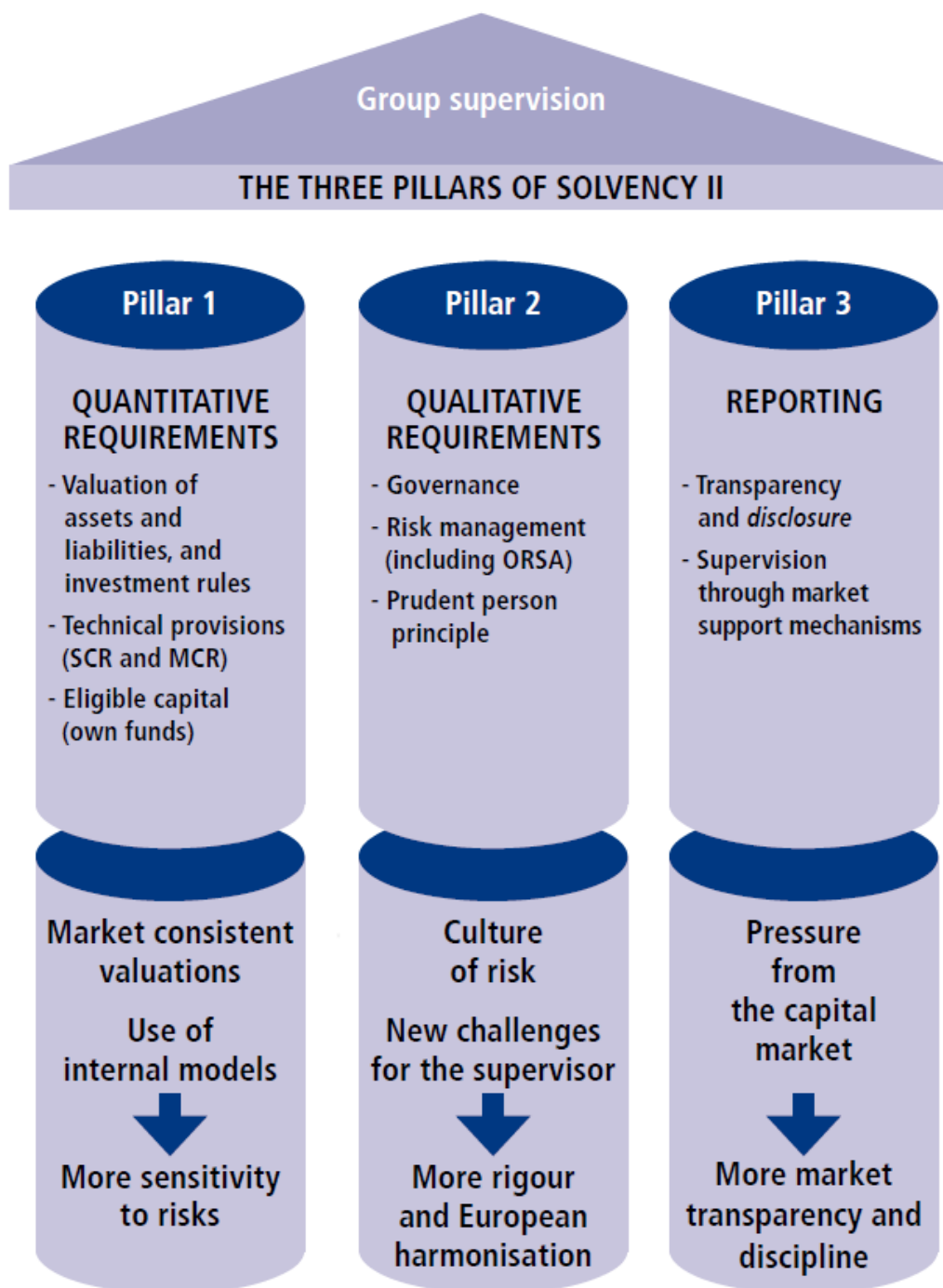


Illustration 41 – The Pillars of Solvency II

1.2.2 – Pensions Funds (2016/2314/EU)

As far as pension funds are concerned, the rules governing their activity and functioning can be traced in the Directive 2016/2341/EU of the European Parliament and of the Council: *"on the activities and supervision of institutions for occupational retirement provision (IORPs)"*.

Directive 2016/2341/EU is structured in five titles: (i) General provisions, (ii) Quantitative requirements, (iii) Conditions of operation, (iv) Information to be provided to prospective members, members and beneficiaries and (v) Prudential supervision. In this analysis, in view of the emphasis that is to be placed on the level of capital, for the convenience of the reader, only the second of the points will be examined¹²⁸.

This Directive opens Title II with Article 13 *"Technical provisions"* which, in continuity with the provisions already analyzed for the perimeter of insurance, defines the level of reserves to be held by the various entities should hold in relation to the value of financial obligations, providing a framework for harmonization for all the countries of the European Union. In detail, it is stated that *"The home Member State shall ensure that IORPs operating occupational pension schemes establish at all times in respect of the total range of their pension schemes an adequate amount of liabilities corresponding to the financial commitments which arise out of their portfolio of existing pension contracts"*¹²⁹. Through this

¹²⁸ Please refer to the Directive for more details on the other points.

¹²⁹ In relation to this, it is worth noting that the legislator has also provided in Title III of the same Directive for the conditions governing activities by providing, in Article 28 (1) that *"Member States shall require IORPs, in a manner that is proportionate to their size and internal organization, as well as to the size, nature, scale and complexity of their activities, to carry out and document their own-risk assessment"*. Continuing, in paragraph 2 of the same article provides that *"Member States shall ensure that the risk assessment referred to in paragraph 1, having regard to the size and internal organization of the IORP, as well as to the size, nature, scale and complexity of the IORP's activities, includes the following: (a) a description of how own-risk assessment is integrated into the management process and into the decision-making processes of the IORP; (b) an assessment of the effectiveness of the risk-management system; (c) a description of how the IORP prevents conflicts of interest with the sponsoring undertaking, where the IORP outsources key functions to the sponsoring undertaking in accordance with Article 24(3); (d) an assessment of the overall funding needs of the IORP, including a description of the recovery plan where applicable; (e) an assessment of the risks to members and beneficiaries relating to the paying out of their retirement benefits and the effectiveness of any remedial action taking into account, where applicable: (i) indexation mechanisms; (ii) benefit reduction mechanisms, including the extent to which accrued pension benefits can be reduced, under which conditions and by whom; (f) a qualitative assessment of the mechanisms protecting retirement benefits, including, as applicable, guarantees, covenants or any other type of financial support by the sponsoring undertaking, insurance or reinsurance by an undertaking covered by Directive 2009/138/EC or coverage by a pension protection scheme, in favour of the IORP or the members and beneficiaries; (g) a qualitative assessment of the operational risks; (h) where environmental, social and governance factors are considered in investment decisions, an assessment of new or emerging risks, including risks related to climate change, use of resources and the environment, social risks and risks related to the depreciation of assets due to regulatory change"*.

provision, therefore, the legislator regulates that pension funds must hold a "adequate" amount of liabilities to cover the total value of existing contracts. Since the term in question is 'vague', the regulator determines that, in relation to the calculation of the amount, this "shall be executed and certified by an actuary or by another specialist in that field, including an auditor, where permitted by national law, on the basis of actuarial methods recognized by the competent authorities of the home Member State, according to the following principles:

- a. *the minimum amount of the technical provisions shall be calculated by a sufficiently prudent actuarial valuation, taking account of all commitments for benefits and for contributions in accordance with the pension arrangements of the IORP. It must be sufficient both for pensions and benefits already in payment to beneficiaries to continue to be paid, and to reflect the commitments which arise out of members' accrued pension rights. The economic and actuarial assumptions chosen for the valuation of the liabilities shall also be chosen prudently taking account, if applicable, of an appropriate margin for adverse deviation;*
- b. *the maximum rates of interest used shall be chosen prudently and determined in accordance with any relevant rules of the home Member State. Those prudent rates of interest shall be determined by taking into account:*
 - i. *the yield on the corresponding assets held by the IORP and the projected future investment returns;*
 - ii. *the market yields of high-quality bonds, government bonds, European Stability Mechanism bonds, European Investment Bank (EIB) bonds or European Financial Stability Facility bonds, or;*
 - iii. *a combination of points (i) and (ii);*
- c. *the biometric tables used for the calculation of technical provisions shall be based on prudent principles, having regard to the main characteristics of the group of members and the pension schemes, in particular the expected changes in the relevant risks;*
- d. *the method and basis of calculation of technical provisions shall in general remain constant from one financial year to another. However, discontinuities may be justified by a change of legal, demographic or economic circumstances underlying the assumptions"*¹³⁰.

¹³⁰ Article 13(4) of the Directive 2016/2341/EU

This validated amount will therefore constitute a reserve that institutions must hold in order to prevent the negative effects of possible market fluctuations.

In addition to this, however, the European legislator, conscious of the possible evolution of the value of positions within the balance sheet of the entities encompass in this perimeter, also examines the issue of the *Available Solvency Margin (ASM)* defined *mathematically* as the difference between the value of assets and insurance liabilities; and at the *level of regulation* as that buffer that institutions must hold in order to be able to comply and conduct business.

With regard to the composition, the Directive states that it is composed of “a) the paid-up share capital, b) reserves (statutory and free) not corresponding to underwriting liabilities; c) the profit or loss brought forward after deduction of dividends to be paid; d) insofar as authorized under national law, profit reserves appearing in the balance sheet where they may be used to cover any losses which may arise and where they have not been made available for distribution to members and beneficiaries¹³¹”.

Once these points have been clarified, the legislator also determines in *Article 17* the minimum level required for the institutions to be able to perform their activities. In particular, as stated in paragraph 2 of the Article 17 of the Directive 2016/2341/EU: “The required solvency margin shall be equal to the sum of the following results:

- a. **The first result:** a 4 % fraction of the mathematical provisions relating to direct business and reinsurance acceptances gross of reinsurance cessions shall be multiplied by the ratio, which shall not be less than 85 %, for the previous financial year, of the mathematical provisions net of reinsurance cessions to the gross total mathematical provisions;
- b. **The second result:** for policies on which the capital at risk is not a negative figure, a 0,3 % fraction of such capital underwritten by the IORP shall be multiplied by the ratio, which shall not be less than 50 %, for the previous financial year, of the total capital at risk retained as the IORP’s liability after reinsurance cessions and retrocessions to the total capital at risk gross of reinsurance.

¹³¹ Article 16(2) of the Directive 2016/2341/EU

For temporary assurances on death of a maximum term of three years, that fraction shall be 0,1 %.
For such assurance of a term of more than three years but not more than five years, that fraction shall be 0,15 %."

A reading of the discipline in question, it is clear that, with regard to the regulatory capital that pension funds must hold, it is limited to setting "prudential" boundaries and restrictions, without going into the subject of methodologies for calculating risk capital.

1.2.3 – Alternative Investment Fund Managers (2011/61/EU)

Before proceeding with this analysis is the author's intent to investigate why the European community decided to regulate this area. As can be read in the *"Directive on Alternative Investment Fund Managers ('AIFMD'): Frequently Asked Questions"*, in particular to the question *"Why do we need the AIFMD? What is the link with the financial crisis?"*, the European Commission stated that *"AIFM have grown to become very significant actors in the European financial system, managing a large quantity of assets on behalf of pension funds and other investors; accounting for a significant proportion of trading activity in financial markets; and constituting an important source of counterparty risk for other market participants. AIFM have also contributed to the build-up of leverage in the financial system, the consequences of which for the stability of financial markets became apparent when leverage in the hedge fund sector was rapidly unwound during the crisis"*¹³².

In proceeding, it is now necessary to identify the subjects to which the discipline is addressed. As stated in point (6), *"The scope of this Directive should be limited to entities managing AIFs as a regular business – regardless of whether the AIF is of an open-ended or a closed-ended type, whatever the legal form of the AIF, and whether or not the AIF is listed – which raise capital from a number of investors with a view to investing that capital for the benefit of those investors in accordance with a defined investment policy"*. In other words, Directive 2011/61/EU on *Alternative Investment Fund Managers* ("AIFMD") will apply

¹³² *Directive on Alternative Investment Fund Managers ('AIFMD'): Frequently Asked Questions*. 11 November 2010. Retrieved 16 September 2015

to hedge funds, private equity, real estate funds and other "*alternative investment fund managers*" (AIFM) in the European Union.

This Directive is composed of (i) General Provisions; (ii) Authorisation of AIFMs; (iii) operating conditions for AIFMs; (iv) transparency requirements; (v) AIFMs managing specific types of AIF; (vi) rights of eu AIFMs to market and manage EU AIFs in the union; (vii) specific rules in relation to third countries; (viii) marketing to retail investors; (ix) competent authorities; (x) transitional and final provisions.

The key point for the analysis of this paper is article 9 of Chapter 2, where the provisions relating to initial capital and own funds are explained. In particular, it is disciplined that:

1. *"Member States shall require that an AIFM which is an internally managed AIF has an initial capital of at least EUR 300.000;*
2. *Where an AIFM is appointed as external manager of AIFs, the AIFM shall have an initial capital of at least EUR 125 000;*
3. *Where the value of the portfolios of AIFs managed by the AIFM exceeds EUR 250 million, the AIFM shall provide an additional amount of own funds. That additional amount of own funds shall be equal to 0,02 % of the amount by which the value of the portfolios of the AIFM exceeds EUR 250 million but the required total of the initial capital and the additional amount shall not, however, exceed EUR 10 million"*¹³³.

As a result, according to the law, alternative funds do not have "significant" capital requirements such as those imposed on credit institutions. One of the possible explanations for this empirical evidence is that, as a justification for the great attention of the legislator in the banking sector, it resides in the circumstance that banks manage public savings and that, in the event of a lacuna in this sector, this could have an impact on savers causing serious damage.

However, the legislator also establishes risk and liquidity management methodologies for these institutions. In particular, Article 15 of Directive 2011/61/EU states that "*AIFMs shall functionally and hierarchically separate the functions of risk management from the operating units, including from the functions of portfolio management*" continuing in the second paragraph that "*AIFMs shall implement*

¹³³ See article 9 of the Directive 2011/61/EU, subsections 1, 2, 3.

adequate risk management systems in order to identify, measure, manage and monitor appropriately all risks relevant to each AIF investment strategy and to which each AIF is or may be exposed”.

From the combination of the provisions analyzed, it can be deduced that the legislator has endeavored to stress the risk management component as much as possible. In fact, given the "minimum" level of regulatory capital imposed, it is expected that this type of entity will be equipped with a very solid risk management system aimed at identifying the risks that may arise from the investments in place. This is even more pertinent with regard to so-called hedge funds, which, in relation to the risk profile of the products in which they invest, should have a highly developed risk management sector. In this respect, the legislator sets a minimum level of requirements to be complied with by requiring that *“AIFMs shall at least:*

- a. implement an appropriate, documented and regularly updated due diligence process when investing on behalf of the AIF, according to the investment strategy, the objectives and risk profile of the AIF;*
- b. ensure that the risks associated with each investment position of the AIF and their overall effect on the AIF’s portfolio can be properly identified, measured, managed and monitored on an ongoing basis, including through the use of appropriate stress testing procedures;*
- c. ensure that the risk profile of the AIF shall correspond to the size, portfolio structure and investment strategies and objectives of the AIF as laid down in the AIF rules or instruments of incorporation, prospectus and offering documents”¹³⁴.*

In addition to this type of risk, in connection with the increasing specific importance of these funds and the liquidity crisis underlying the recent financial crisis¹³⁵, the legislator has dictated in Article 16 of the Directive 2011/61/EU the requirements of *“liquidity management”*.

The innovation of the regulatory framework under consideration is that it presents the mandatory rule for fund managers to establish the investment strategies, the liquidity profile by regularly carrying out stress tests defining that the commission may adopt, in accordance with Article 56¹³⁶ and subject to the conditions of Articles 57¹³⁷ and 58¹³⁸, measures specifying *“(a) the liquidity*

¹³⁴ Article 15(3) Directive 2011/61/EU: *“Risk management”*

¹³⁵ In fact, it should be remembered that the subprime mortgage crisis has assumed an "international" dimension precisely in relation to the consequent liquidity crisis that acted as a "sounding board" for the propagation of the crisis.

¹³⁶ Article 56 Directive 2011/61/EU: *“Exercise of the delegation”*

¹³⁷ Article 57 Directive 2011/61/EU: *“Revocation of the delegation”*

¹³⁸ Article 58 Directive 2011/61/EU: *“Objections to delegated acts”*

management systems and procedures; and (b) the alignment of the investment strategy, liquidity profile and redemption policy [...]”.

Moreover it is worth to mention the *Recommendation* published on 14 February 2018 by the ESRB about the liquidity and leverage risks in investment funds (ESRB/2017/6). The ESRB recommends that a diverse set of liquidity management tools, such as redemption fees and the option to temporarily suspend redemptions, be made available to fund managers. In order to mitigate or prevent excessive liquidity mismatches, AIFs holding a large amount of less liquid assets should be required to demonstrate to supervisors that they could continue to follow their investment strategy under stressed market conditions. Finally, the ESRB also recommends that ESMA develop further guidance which addresses how fund managers should carry out liquidity stress tests.

However, the rules in question remain vague in relation to the type of investment that it undertakes. Although Article 18 contains the organizational requirements and Chapter v contains the special provisions for *AIFMs managing leveraged AIFs*, the risk profile of these entities is so high that deficiencies in this area can be very damaging to the financial sector. In fact, a combined reading of the banking rules shows a strong relationship between risk and capital requirements such that, given the high risk inherent in the instruments in which these funds usually invest, it would be expected that the capital requirements are very high, but are not found in this Directive.

1.2.4 – Money Market Funds (2017/1131/EU)

A money market mutual fund (MMFs) is an open-ended mutual fund that invests in short-term debt securities such as treasury bills and US commercial papers. They are widely considered as safe as bank deposits, but with a higher return. The assets' value under their management is equal to the 5% of the total assets' of the Shadow banking.

Following strong growth over the past year, the Authority has decided to regulate these entities in the interests of creating a more harmonized European framework. In detail the aims to ensure that uniform prudential, governance and transparency requirements are applied to MMFs throughout the EU.

Article 3 of the Directive determines which funds are to be considered the target funds of the discipline. They are identified as “(a) a VNAV¹³⁹ MMF; (b) a public debt CNAV¹⁴⁰ MMF; (c) a LVNAV¹⁴¹ MMF”¹⁴².

In addition, the Regulation, as set out in Article 9, strengthens the requirements for eligible assets by providing in the first subparagraph the categories in which it may invest and in the following subparagraph those in which it may not invest. In particular, Article 9(1) of the Directive 2017/1131/EU specifies that “MMF shall invest only in one or more of the following categories of financial assets and only under the conditions specified in this Regulation:

- a. money market instruments including financial instruments issued or guaranteed separately or jointly by the Union, the national, regional and local administrations of the Member States or their central banks, the European Central Bank, the European Investment Bank, the European Investment Fund, the European Stability Mechanism, the European Financial Stability Facility, a central authority or central bank of a third country, the International Monetary Fund, the International Bank for Reconstruction and Development, the Council of Europe Development Bank, the European Bank for Reconstruction and Development, the Bank for International Settlements or any other relevant international financial institution or organization to which one or more Member States belong;*
- b. eligible securitizations and asset-backed commercial paper (ABCPs);*
- c. deposits with credit institutions;*
- d. financial derivative instruments;*
- e. repurchase agreements that fulfil the conditions set out in Article 14;*
- f. reverse repurchase agreements that fulfil the conditions set out in Article 15;*
- g. units or shares of other MMFs”.*

As regards the instruments in which MMFs cannot invest, paragraph 2 of the same article provides that: “An MMF shall not undertake any of the following activities:

- a. investing in assets other than those referred to in paragraph 1;*

¹³⁹ Variable Net asset value MMF

¹⁴⁰ Public debt constant net asset value MMF

¹⁴¹ Low volatility net asset value MMF

¹⁴² Article 3 of Directive 2017/1131/EU

- b. *short sale of any of the following instruments: money market instruments, securitizations, ABCPs and units or shares of other MMFs;*
- c. *taking direct or indirect exposure to equity or commodities, including via derivatives, certificates representing them, indices based on them, or any other means or instrument that would give an exposure to them;*
- d. *entering into securities lending agreements or securities borrowing agreements, or any other agreement that would encumber the assets of the MMF;*
- e. *borrowing and lending cash”.*

Important news to mention is the introduction of rules on investment policies, concentration and liquidity as well as credit assessment. With regard to this last point, the discipline, in Article 19 lays down the *“Internal credit quality assessment procedure”* then proceeding with the following article which sets out the *“Internal credit quality assessment”* which states that *“the manager of an MMF shall apply the procedure laid down in Article 19 to determine whether the credit quality of a money market instrument, securitisation or ABCP receives a favorable assessment”* following the general principles laid down in paragraph (2) of the same article.

The regulation will also provide fund managers with tools such as liquidity fees, gates and suspension of reimbursement to address liquidity issues and repayments pressures. The support of MMF sponsors is prohibited in order to limit the risk of contagion between the MMF sector and the rest of the financial system.

Furthermore, as stated in Article 28 of this Directive, MMFs will be obliged to conduct regular stress tests (at least twice a year), based on the guidelines laid down in the first paragraph of the same Article. Finally, this directive examines in Chapter VII the *“transparency requirements”* by imposing both a duty of transparency on a weekly basis to investors about *“(a) the maturity breakdown of the portfolio of the MMF; (b) the credit profile of the MMF; (c) the WAM and WAL of the MMF; (d) details of the 10 largest holdings in the MMF, including the name, country, maturity and asset type, and the counterparty in the case of repurchase and reverse repurchase agreements; (e) the total value of*

the assets of the MMF; (f) the net yield of the MMF"¹⁴³; and an obligation with the competent authorities¹⁴⁴.

The regulation under examination, which is the result of recent efforts, appears to be complete and more exhaustive with regard to these institutions. This more detailed approach (although it should be remembered that there are no rules on the regulatory capital that these institutions must hold) is the result of extensive regulatory work deriving from the ever-increasing awareness of the size of the shadow system, of the interconnection of non-banks with banks and, above all, of the great systemic risk that they may generate.

¹⁴³ Article 36 Directive 2017/1131/EU

¹⁴⁴ See Article 38 Directive 2017/1131/EU

Chapter 5 – Banking and Shadow banking crisis

§ 1 Banking crisis resolution

1.1 – Definition of banking crisis

“Pundits, policy makers and macroeconomists often remind us that banking crises are nothing new, an observation sometimes used to argue that crises are inherent to the business cycle¹⁴⁵”. However, a clear and timely definition of the banking crisis is not easy to provide. In trying, the author of this paper believes that a distinction should be drawn between:

- *Crisis of a single Bank:* With regard to the specific case, the banking crisis, and more generally a business crisis, can be defined as a *state of severe deterioration in the economic, financial and equity equilibrium, which overcoming requires prompt and targeted action, closely related to the causes and forms of manifestation¹⁴⁶.*
- *Banking crisis:* In its universal version, the definition of banking crisis can be traced to *"panic crisis or serious waves of banking failures"*, where banking panic is defined as *"moments of temporary confusion about the unobservable incidence across the banking system of observable aggregate shocks that are severe enough to give rise to collective action by bankers¹⁴⁷"*, while for wave of failure are identified *"those resulting in aggregate negative net worth of failed banks in excess of 1 per cent of GDP"¹⁴⁸.*

In order to clarify what is outlined above, it is useful to identify which are the main drivers and the factors that may be at the basis of the generation of the crises of the individual banking institutions¹⁴⁹ and then examine the subject of the banking crisis in its *"universal"* version.

¹⁴⁵ *Banking crises yesterday and today*, Charles W. Calomiris. 2010.

¹⁴⁶ The crisis is therefore a continuous degenerative process that can be explained by several causes, both endogenous and exogenous, which require targeted and timely interventions, otherwise the situation may deteriorate.

¹⁴⁷ C.W. Calomiris and G. Gorton, *'The origins of banking panics: models, facts, and bank regulation'*, 1991.

¹⁴⁸ Caprio and D. Klingebiel, *'Bank insolvencies: cross country experience'*, World Bank Working Paper no. 1620/1996.

¹⁴⁹ In the analysis, reference is made to Frederic S. Mishkin, *"Anatomy of a Financial Crisis"*, NBER, Working Paper No 3934/1991 (also Reprint No r1753)

In the interests of clarity and simplicity, with regard to the *first point*, the risks that could generate the crisis of a specific credit institution will be divided as follows:

- *Endogenous Risks*: As the name suggests, these risks arise from internal conjectural issues within credit institutions. Given the complexity of the various institutions, the vulnerabilities from which crises can emerge may result from both strategic decision-making errors by top management and process failures.
 - *Strategic errors*: they mainly derive from the "*falsa*" decisions of the Top Management of the various entities in terms of strategic definition of the activity. It therefore refers to excessive leverage, a misalignment of maturities between liabilities and assets, an incorrect relationship between market and business and an inappropriate combination of inputs;
 - *Process failures*: this means the configuration of decision-making processes and the administrative, accounting and internal control structures with reference to inappropriate measurement, assumption and management of risk in the lending activity;
- *Exogenous risks*: in economics, an exogenous factor is defined as an economic variable that affects a specific model but is not influenced by it. According to this definition, an exogenous risk is defined as a risk that affects a certain credit institution without being influenced by it (i.e. by the actions of management). For this purpose, a distinction can be operated within this perimeter according to whether the banking crises caused by exogenous risks derive from:
 - *Changes in market conditions*: they refer both to the possibility that the growing competition between intermediaries (both banking and non-banking) may alter market conditions, and that they may be altered by real or monetary changes, thus causing the crisis of a particular institution;
 - *Changes in the sector regulation*: in detail, it refers to the possibility that, due to changes in the legal framework, may result in a rigidity of the business activities and a delay in the adjustment by the management of the credit institution, from which the crisis;

- *Negative externalities*: this category includes all those external phenomena which, not included in the other categories, may facilitate or cause the credit institutions' crisis.

As regards the *banking crises*, considered as *market crises* (i.e. universal), the main drivers can be identified in:

- *Macroeconomic conditions*: an in-depth analysis of the banking crises has shown that in most cases these are not the result of stochastic events, but tend to occur in periods of intense cyclical recession: in other words, they are closely related to the economic cycle in which the economy is. This derives from the empirical evidence that the banks, considered as a system, are the counterpart of the Non-Financial Companies present in the area, which, in the event of a crisis, as their liabilities increase and their assets decrease, transfer part of the risk to the credit institutions from which the generation of the crisis derives;
- *Microeconomic conditions*: It is not unfamiliar that banking crises depend strictly on the microeconomic policies and rules imposed by the various countries. However, it is surprising to observe the outcome of the report on the banking crisis history, which established a relationship between banking crises and microeconomic rules aimed at protecting banks from market discipline¹⁵⁰. In other words, a causal link has been established between banking crises and the microeconomic rules of the banking game, which, although aimed at safeguarding the system, have taken the form of subsidies for taking on risks from which banking distress then originated¹⁵¹.

¹⁵⁰ Understands this as a cure for instability.

¹⁵¹ Particular reference is made to the subprime mortgage crisis. In fact, among the causes of the crisis have been identified those policies specifically designed to encourage risk-taking on the mortgage market i.e. housing policies. They have in fact supported the low-cost use of leverage in the housing sector by favoring the risk-taking of subprime loans by various credit institutions. In fact, accommodative monetary policies in several countries had allowed excessive growth in credit aggregates and the consequent increase in the level of indebtedness of households and certain categories of non-bank intermediaries.

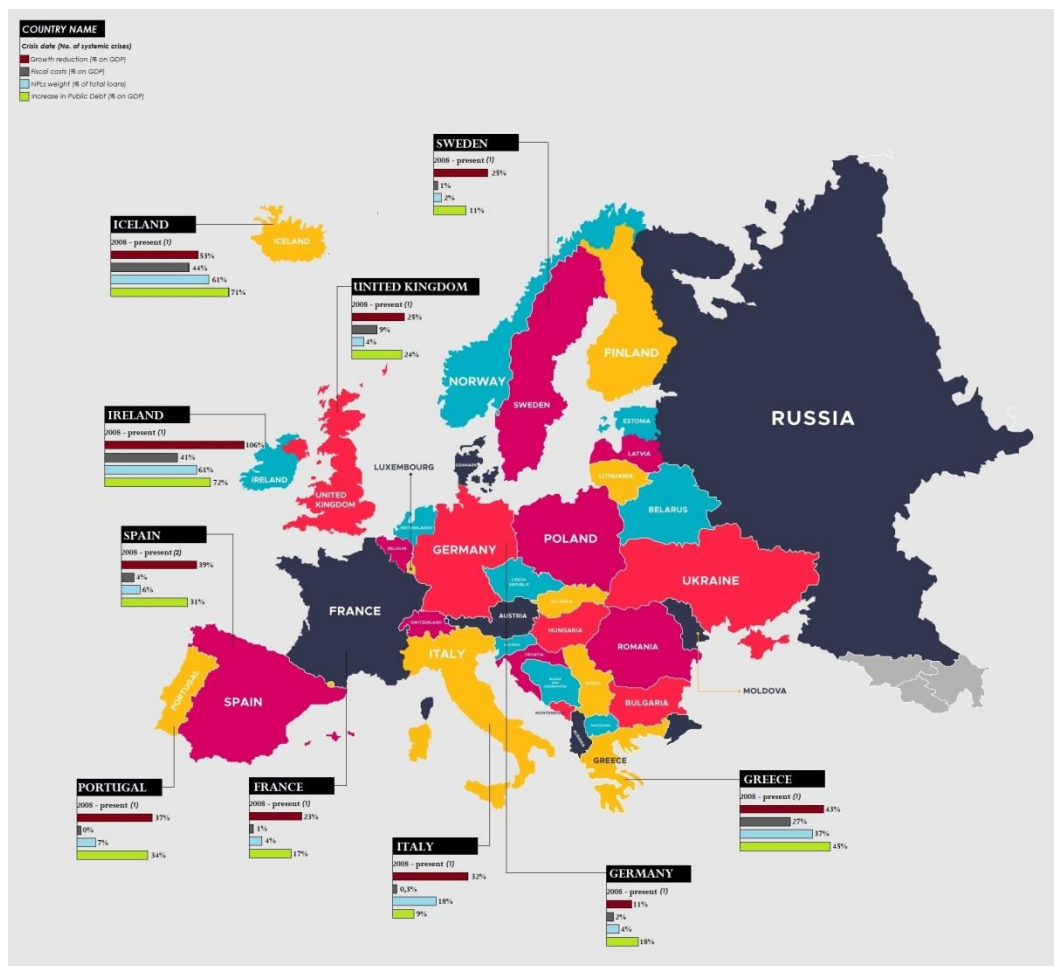


Illustration 42 – Banking crises around Europe

1.2 – Banking crisis effects

The collapse of a credit institution, and more particularly the crisis in the banking system, may have several negative effects. Among them, the ones that are most under consideration are those that could affect depositors whose protection justifies prudential regulation and the preparation of supervisory authorities. The purpose of this paragraph is in fact to analyse the possible effects that banking crises may have on the financial system.

First of all, as already clarified in §1 – *definition of banking crisis*, there is a distinction between the crisis of a single banking institution and the banking crisis defined as universal. Although the two evidences are connected, they have different effects in terms of scale.

For which concerns the bankruptcy of a single banking institution, the effects that can result are related to the violation of the rights of taxpayers and customers of the bank¹⁵². In the case of the first group, the damage would take the form of the allocation of state subsidies, as a result of which the cost of the crisis would be charged to the public finances¹⁵³; in the case of the bank's customers, their right to be injured in the event of bankruptcy would be that they do not receive reimbursement of the sums owed¹⁵⁴.

Once the perimeter within which the effects may occur has been clarified, it is difficult to determine the extent and form of the impact. However, it can be said that the greatest risk remains that a particular crisis of a single institution, if not well managed, can give rise to a contagion crisis. The failure of a single intermediary is not so *far out of touch* with the universal banking crisis. In fact, the specific nature of the banking sector compared to other industries has the consequence that the bankruptcy of an intermediary can have a *spill-over effect* involving banks for which there are, at least originally, no reasons for insolvency. This is what is meant, therefore, when reference is made to the so-called systemic risk, that is, the possibility that real or financial relations between agents may reduce the capacity for sharing risks.

The universal banking crisis is an event whose magnitude is much more negative than that described until now with regard the single banking crisis. As already mentioned, the effects that can derive from such an event, even if multiple and with different degrees of intensity and complexity, depending on the historical period in which they occur, can be explained as follows:

- *Financial Panic*: this term refers to the combined action of bank customers which, for reasons of risk of banks insolvency, "*rush to withdraw their deposits*" in a combined action, forcing banks to liquidate many of their loss-making assets until bankruptcy occurs. This banking

¹⁵² Compare with the Italian case and with the effects that have arisen in relation to the crises of individual institutions such as: Monte dei Paschi di Siena, Banca Etruria, Cassa di Risparmio di Ferrara, Banca delle Marche, Cassa di Risparmio di Genova, Banca Popolare di Vicenza, Veneto Banca.

¹⁵³ It should also be noted that public interventions, commonly known as *bail-outs*, can also destabilize market equilibrium with particular regard to competition.

¹⁵⁴ In the Italian case, in 2015, the combined effect of the crises of Banca Marche, Banca Popolare dell'Etruria e del Lazio, Cassa di Risparmio di Ferrara and CariChieti with the bank bail-out plan led to a loss of 430 million euro by 140 thousand savers, who were kept the sums invested in subordinated bonds <https://www.lastampa.it/2015/12/16/economia/quattro-banche-fallite-ecco-tutti-i-perch-JWSrQo73eOk0lqcSAL2fhK/pagina.html>

panic has the effect of perturbing the monetary system and reducing production. However, it must be clarified that a financial panic can also occur without a significant increase in failed banks¹⁵⁵. This is because there are different phenomena that are the basis of the two types of crisis: slight losses can in fact be the basis of financial panic without this leading to serious waves of bankruptcies; and similarly, large losses, whose incidence within the banking system is simple to detect can cause many failures without panic crisis.

Following the scheme dictated by the Diamond and Dybvig model¹⁵⁶, the so called "banks run" is caused by the deterioration of the value perception of the bank's assets and the consequent inability of the bank to meet claims for repayment; another theory¹⁵⁷ bases its analysis on the asymmetries of financial operators attributing to this evidence the role of representing the source of the imperfect perception of risk by market operators who, not having the ability to correctly assess the differences between insolvent and healthy banks, recur to the bank run;

- *Systemic crisis with multiple bank failures*: the basis of this evidence is the strict correlation between the industrial system and the financial system. In fact, given that the crisis has the nature of an unexpected and unpredictable event, it can be guessed how it affects the organizational behavior of market players in a radical and rapid manner. The crisis can therefore assume different intensities depending on the organizational system of the various operators, assuming a lighter aspect in the case of the presence of robust organizations able to overcome the difficulties through an effective control of risks and information flows. If this does not happen, the crisis can assume a critical nature, pushing the entire system towards a deterioration which, given the systemic component of the banking market, can originate "domino effect". The crisis considered as universal finds its origins in market conditions for which, the organizational deficiencies act as a sounding board, considerably amplifying its effects. A historical analysis of this type of crisis has, in

¹⁵⁵ By contrast, it can be stated that many bankruptcies also occur without any systemic banking panic.

¹⁵⁶ Douglas W. Diamond; Philip H. Dybvig, "Bank Runs, Deposit Insurance, and Liquidity". The Journal of Political Economy, Vol. 91, No. 3, pp. 401–419. June 1983; Douglas W. Diamond, "Banks and Liquidity Creation: A Simple Exposition of the Diamond–Dybvig Model", Bank of Richmond Economic Quarterly Volume 93/2007, pag 189–200.

¹⁵⁷ Reference is made to the theory of Frederic S. Mishkin and Apostolos Serletis set out in "The economics of money, banking and financial markets", Pearson Canada.

Toronto, 2010

fact, revealed that, very often, recourse has been made to the intervention of the supervisory authorities for the recovery of the pre-crisis market conditions¹⁵⁸.

1.3 – European Banking Union

Having considered the causes and possible consequences of a banking crisis, it is quite easy to establish how, over the years, following the rise of the monetary union resulting from the introduction of the euro, from the adoption of a single monetary policy and a European Central Bank (ECB), the European Union has also decided to constitute the banking union¹⁵⁹. Its structure has progressively developed over time: first, in 2013, with the constitution of a *Single Supervisory Mechanism (SSM)*, which is managed by the European Central Bank, with the addition of a *Single Resolution Mechanism (SRM)* in 2015 and the *European Deposit Insurance Scheme (EDIS)*.

The European Union's interest in establishing a banking union is root-and-branch in the empirical evidence that the interconnection between the different financial markets, in combination with the various special "state" regulations¹⁶⁰ on the subject of a bank crisis (and more generally a corporate crisis), could constitute a fertile humus for the rise as well as the propagation of a possible crisis. It is no random that the exigency of the creation of a banking union became more impelling when, in relation to the sub-prime mortgage crisis of 2007–2008 and the sovereign debt crisis of 2010, all the

¹⁵⁸ As an example, the "American" one of June 2007 is reported, when, in relation to the crisis defined as the subprime mortgages. In fact, it is of value to underline how the liquidity crisis has caused a rapid decline in the sources of financing of the banks, from which the reduction of the capital reserves: this has determined the end of the existence of the banks. In March 2008, the failure of the fifth largest U.S. investment bank was avoided only thanks to the intervention and guarantee of 29 billion dollars offered by the Federal Reserve for its purchase, heavily devalued, by JP Morgan Chase (10 dollars per share compared to 170 dollars per share a year earlier). The refusal of the US monetary authorities to prevent the bankruptcy of Lehman Brothers triggered the purchase of Merrill Lynch by Bank of America, while Goldman Sachs and Morgan Stanley were authorized to become financial holding companies, in compliance with the Basel regulations and with wide access to the discount operations of the monetary authorities.

¹⁵⁹ The European Banking Union is one of the four pillars of the euro's financial policy, along with fiscal, economic and political policy.

On the topic of banking union, see C. V. Gortsos, *The Single Supervisory Mechanism (SSM). Legal aspects of the first pillar of the European Banking Union*, EPLO, Athens, 2015; N. Moloney, *European banking union: Assessing its risks and resilience*, in *Common Market Law Review*, 2014, n.51, 1609 ss.; P. G. Teixeira, *The Single Supervisory Mechanism: Legal and institutional foundations*, *Legal Research Journals of the Bank of Italy's Legal Department*, n. 75, March 2014; E. Wymeersch, *The Single Supervisory Mechanism or 'SSM', Part One of the Banking Union*, *European Corporate Governance Institute (ECGI) – Law Working Paper No. 240/2014*.

¹⁶⁰ The crisis of a credit institution is not subject to common company law; special regulations apply to it.

contradictions and inconsistencies that the process of European banking and financial integration had in itself emerged, highlighting the need to overcome the harmonized prudential supervision. More generally, the reasons for establishing a banking union at European level can be summarized as follows: (i) strengthen the capacity of European banks to deal with future shocks; (ii) break the cycle linking banks to the sovereign issuer where they are based; (iii) reduce the fragmentation of national regulations; (iv) strengthen the European internal market.

1.3.1 – Pillar I: Single Supervisory Mechanism

As already explained in the previous paragraphs, the consolidation of the European Union from the monetary point of view, connected with the ever-increasing number of *cross-sector* and *cross-border* intermediaries, has highlighted the need to completely revise the definition, purposes and methods of exercising supervisory powers: a debate on regulation and controls has therefore been ignited, resolved by the increased recognition of how much the turbulence of recent years can be resolved by increasing the level of harmonization between the individual regulations.

The first step in this direction was taken on the occasion of the adoption of Directive 89/646/EEC¹⁶¹, which established the principle of *home country control* with regard to the branches of national banks established in other EU countries, as well as the inverse principle of *host country control* for the subsidiaries of "*non-EU banks*"¹⁶².

However, although this Directive has the merit of partly "harmonizing" the financial regulatory framework, it has failed to achieve a total leveling of supervisory rules at national level.

A significant change occurred in January 2011¹⁶³ when, following the recommendations of the report of the group of experts under Jacques de Larosière¹⁶⁴ on how to strengthen European

¹⁶¹ The Directive was then transposed into national law in the individual Member States. As regards the Italian case, it was adopted by Legislative Decree No 481/1992.

¹⁶² The principle of *home country control* requires that the same rules and the supervision of the national authority in which the parent company has its registered office apply to a specific credit institution "*branched out abroad*". As far as *host country control* is concerned, reference is made exactly to the opposite situation to that described above..

¹⁶³ Before January 2011, there were other interventions on the subject of standardization of supervision, which is of value to report: (i) the first was that deriving from the introduction of Basel II, which sanctioned the prevalent role of the authority of the country where the *consolidating supervisor* was based, as well as (ii) the establishment of the

supervisory mechanisms¹⁶⁵, the *European System of Financial Supervisors* (ESFS) was set up. This system was tasked with promoting a single European financial market and developing a common supervisory culture based on micro– and macro–prudential supervision by national and European supervisory authorities. In detail:

- *Micro–prudential supervision*: i. e. the supervision exercised by the competent authorities on individual institutions, as banks, insurance companies or pension funds. This type of supervision is carried out by:
 - *European Banking Authority* (EBA), whose sphere of intervention, as established by the ESFS, includes the supervision of credit institutions, financial conglomerates, investment firms and payment institutions;
 - *European Securities and Markets Authority* (ESMA), the area of intervention of which is the securities markets and the entities participating in them (in the Union, ESMA is the only entity responsible for the supervision of credit–rating agencies);
 - *European Insurance and Occupational Pensions Authority* (EIOPA) whose competences, as its name suggests, concern insurance companies.
- *Macro–prudential supervision*: as established by the ESFS, this refers to the supervisory function assigned to the *European Systemic Risk Board* (ESRB) in order to prevent or mitigate risks to ensure financial stability.

Despite the interventions of the European legislator described above, the recent financial crisis has highlighted both the rapidity and virulence with which the financial sector's problems can spread, and the direct repercussions for the citizens of the euro area such as to push towards a further homogenization of the supervisory procedures. In fact, the Eurozone summit of 29 June 2012 has

European Financial Authority (EFA) for the supervision of transactional intermediaries, leaving the national authorities with the supervision of the domestic ones.

¹⁶⁴ Jacques de Larosière (Paris, 1929) was the General Director of the International Monetary Fund, Governor of the Bank of France and President of the European Bank for Reconstruction and Development.

¹⁶⁵ One of the recommendations contained in the Group's report, published in 2009, was the creation of a new European supervisory structure for financial intermediaries and markets, with the dual goal of implementing consistent supervisory standards in all EU countries and promoting coordination between national supervisory authorities.

moved in this direction, from which two important results have been derived: EU Regulation 575/2013 and Directive 2013/36/EU. In relation to the above, Regulation 1024/2013/EU was subsequently issued, which regulates the establishment of the so-called *Single Supervisory Mechanism (SSM)*¹⁶⁶, defined as a system for the supervision of credit institutions in the euro area and of Member States of the European Union not belonging to the euro area that choose to join it through the establishment of "close cooperation"¹⁶⁷. Declared objectives of this new system are: (i) Ensure the stability and security of the European banking system; (ii) Enhance financial integration and stability; (iii) implement and develop existing supervisory practices in order to ensure consistent supervision.

In order to achieve these objectives, the SSM operates through a dualistic system whereby competences are assigned between the *European Central Bank (ECB)* and the *National Competent Authorities (NCAs)*, basing this division on a matrix system divided by *competences* as well as the *characteristics* of the bodies under supervision.

- As far as *competences* are concerned, they are spread between:
 - *European Central Bank*: on the basis of Article 127, §6 of the Treaty on the Functioning of the European Union¹⁶⁸ in conjunction with Regulation 1024/2013/EU¹⁶⁹, the ECB

¹⁶⁶ For a more comprehensive analysis of the new single supervisory mechanism provided for in Regulation 1024/13/EU see M. Lamandini, D. R. Muñoz, J. S. Álvarez, *Depicting the Limits to the SSM's Supervisory Power: The Role of Constitutional Mandates and of Fundamental Rights Protection*, *Legal Research Journals of the Bank of Italy's Legal Department*, n. 79, October 2015; M. Lamandini, *Limitations on supervisory powers based upon fundamental rights and SSM distribution of enforcement competences*, in *ECB Legal Conference 2015. New Opportunities for European Integration*, ECB, Frankfurt; R. D'Ambrosio, *Due process and safeguards of the persons subject to SSM supervisory and sanctioning proceedings*, *Legal Research Journals of the Bank of Italy's Legal Department*, n. 74, December 2013; R. D'Ambrosio, *The ECB and NCA liability within the Single Supervisory Mechanism*, *Legal Research Journals of the Bank of Italy's Legal Department*, n. 78, January 2015; C. B. Morra, "European banking union. A challenge for a more united Europe, in *Law and Economics Yearly Review*", Working paper 2/2014.

¹⁶⁷ It is important to note that the legislator's choice has moved towards conferring supervisory powers on a particular network without a specifically constituted legal personality.

¹⁶⁸ "The Council, acting by means of regulations in accordance with a special legislative procedure, may unanimously, and after consulting the European Parliament and the European Central Bank, confer specific tasks upon the European Central Bank concerning policies relating to the prudential supervision of credit institutions and other financial institutions with the exception of insurance undertakings".

¹⁶⁹ Council Regulation (EU) No 1024/2013 of 15 October 2013: "Conferring specific tasks on the European Central Bank concerning policies relating to the prudential supervision of the credit institutions"

carries out policies relating to the prudential supervision of credit institutions and other financial institutions with the exception of insurance undertakings.

- In detail, it is attributed powers in relation to: (i) issue and revocation of authorization for banking activities; (ii) authorization to purchase and dispose of shareholdings in the capital of banks; (iii) verification of compliance with the minimum prudential requirements regarding own funds, concentration of risks, liquidity and leverage; (iv) establishment of prudential requirements more elusive than the minimum requirements and capital buffers; (v) verifying the adequacy of corporate governance, organization and internal controls of banks; (vi) conducting stress testing exercises; (vii) consolidated supervision of parent companies and supplementary supervision of financial conglomerates; (viii) taking timely action in the event of breaches, including potential breaches, of prudential requirements, including the preparation of recovery plans and group financial support arrangements;
- *National Supervisory Authorities*: as they are closely linked to the various credit institutions within their territory, they are entrusted with day-to-day verification tasks, with particular reference to the preparation, investigation and execution of ECB decisions¹⁷⁰.

- With regard to the *characteristics* of the institutions under supervision, we have:

- *Significant Institutions*: for which, the day-to-day supervision is directly delegated to the ECB through the Joint Supervisory Teams (JSTs), which involve experts from the ECB and the national supervisory authorities. In order to be considered as a credit institution, it must meet certain requirements: (i) *Size*: the total value of its assets exceeds €30 billion; (ii) *Economic Importance*: for the specific country or the EU economy as a whole; (iii) *Cross-border activities*: the total value of its assets exceeds €5

¹⁷⁰ From a purely domestic perspective, supervisors perform (i) supervision of entities defined as non-banks under EU law but subject to national banking supervision; (ii) supervision of payment services; (iii) supervision of banks' activities in securities markets; and (iv) supervision of third country banks operating in the EU through branches or under the freedom to provide services.

billion and the ratio of its cross-border assets/liabilities in more than one other participating Member State to its total assets/liabilities is above 20%; (iv) *Direct Public Financial Assistance*: it has requested or received funding from the European Stability Mechanism or the European Financial Stability Facility;

- *Less Significant Institutions*: the supervision of which is exercised indirectly by the ECB and directly by the competent national authorities.

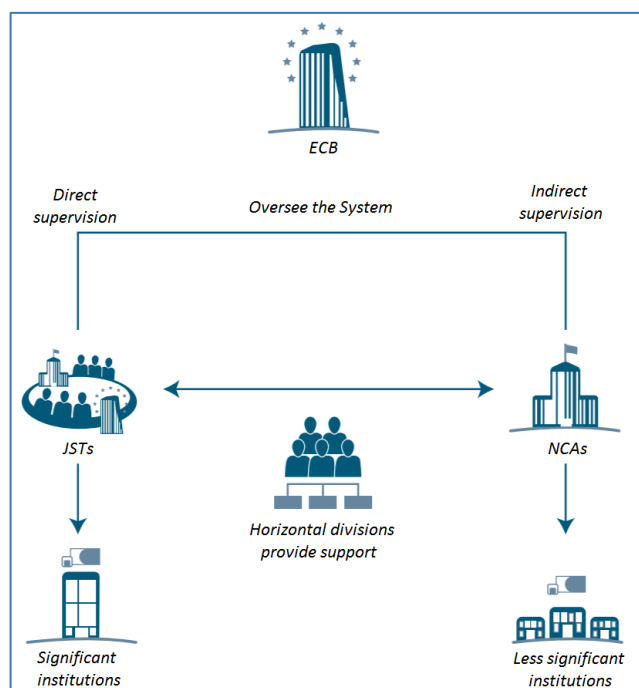


Illustration 43 – Division of functions between ECB and NCAs

The reason for the matrix structure indicated can be explained by the level of experience of the two entities, as the ECB is more specialized in the area of macroeconomic and financial stability, while the competent national authorities have a detailed insight into the jurisdiction of their national territory.

The mechanism described above about the Single Supervisory Mechanism, was finally completed in April 2014 by Regulation (EU) No 468/2014/EU¹⁷¹ in connection with Regulation (EU) No 469/2014¹⁷² of the European Central Bank (ECB) and became operational in November 2014, signaling a significant turnaround in the European spectrum. In other words, this resulted in the establishment of the first pillar of the banking union plan, thus determining the first step towards the effective establishment of a single financial market¹⁷³.

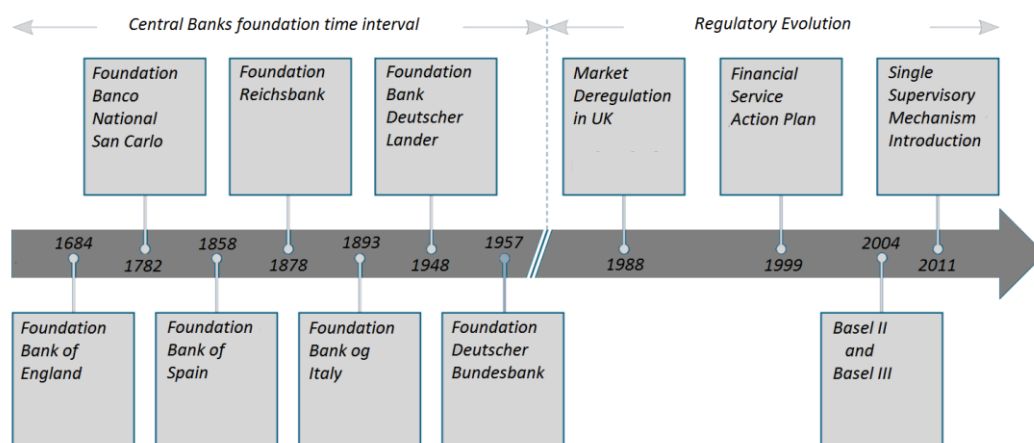


Illustration 44 – Evolution of banking regulation

1.3.2 – Pillar II: Single Resolution Mechanism (SRM)

As has already highlighted in the previous paragraphs, the global financial crisis has shown that, on the European panorama, ordinary insolvency procedures were insufficient to prevent the spread of crisis contagion among intermediaries. In particular, it was pointed out that there were failures in terms of both supervision and solutions in the event of a crisis. The cause of this has been partly attributed to domestic particularism in terms of procedures in the event of a crisis, which has created a great deal of distress with particular regard to cross-border groups. In fact, in relation to the cross-border groups, one of the most important issues concerns the recognition by

¹⁷¹ Regulation 468/2014/EU: “establishing the framework for cooperation within the Single Supervisory Mechanism between the European Central Bank and national competent authorities and with national designated authorities”

¹⁷² Regulation 469/2014/EU: “amending Regulation (EC) No 2157/1999 on the powers of the European Central Bank to impose sanctions (ECB/1999/4)”

¹⁷³ In relation to this regulatory framework, there are also those who have argued that this could be the source of danger and discomfort, given that it presupposes the fragmentation of the supervisory function among several entities.

the host authority of the measures for the treatment of the banking pathology issued by the authority where the parent company is located¹⁷⁴.. For this reason, the legislator has moved towards the establishment of a new harmonized system of bank resolution¹⁷⁵. This was achieved as a result of the meeting of the European Council of 28 June 2013, after which it was decided to set up the *Single Resolution Authority* (SRA) from which it was then introduced the *Single Resolution Mechanism* (SRM), i.e. the set of rules¹⁷⁶ designed to "*ensure an orderly resolution of failing banks, with minimal costs for taxpayers and the real economy*"¹⁷⁷.

This mechanism, as regulated by Article 11 of EU Regulation no. 806/2014, consists of the *Single Resolution Board* (SRB)¹⁷⁸ and the *National Resolution Authorities* of participating countries (NRAs). As far as the first of the two is concerned, in accordance with Art. 42 and 43 of the Regulation, it is invested with the function of legislating in relation to the internal market, assuming, therefore, the function of an entity having the conclusive word regarding the management of the banking pathology once the procedure has been initiated by the ECB (which has the investigative function)¹⁷⁹. In order to be able to perform these functions, the same Directive regulates that the

¹⁷⁴ For reasons of synthesis, we will not proceed to analyze in detail the different school of thoughts, limiting ourselves to indicating that there are two approaches: *universal*, which postulates the application to all the ramifications of a particular bank, the rules applicable to the parent company; *territorial*, which establishes that each intermediary is subject to the rules of the country in which it is located.

¹⁷⁵ The European legislator, at first, in order to ensure harmonization in the field of banking crises without changing too much the regulatory framework, had proposed to assign the functions of management of the banking pathology to the ECB, in perfect symmetry with the Single Supervisory Mechanism and without changing the TFEU, using the margins granted by it. This structure, however, has not been applied in practice.

¹⁷⁶ In order to make this system operational, the European Union has adopted a legislative package to set up the single supervisory mechanism. In particular it is composed by: Council Regulation (EU) No 1024/2013 establishes the SSM as a system to supervise banks in the euro area and other participating EU countries; Regulation (EU) No 1022/2013 aligns the existing legislation on the establishment of the European Banking Authority (EBA) to the modified framework for banking supervision.

¹⁷⁷ See: <https://www.consilium.europa.eu/it/policies/banking-union/single-resolution-mechanism/>

¹⁷⁸ SRB is a fully independent EU agency acting as the central resolution authority within the banking union.

¹⁷⁹ Art 42 "*The Board, the Council where relevant, and the Commission should replace the national resolution authorities designated under Directive 2014/59/EU in respect of all aspects relating to the resolution decision-making process [...] ; Art 43 "The national parliament of a participating Member State, or the competent committee thereof, should be able to invite the Chair to participate in an exchange of views in relation to the resolution of institutions in that Member State together with a representative of the national resolution authority. Such a role for national parliaments is appropriate given the potential impact that resolution actions may have on public finances, institutions, their customers and employees, and the markets in the participating Member States. The Chair and the national resolution authorities should respond positively to such invitations to exchange views with the national parliaments".*

single supervisory board may convene in *executive*¹⁸⁰ or *plenary*¹⁸¹ session to decide on resolution programs for distressed banks. Once the decisions have been taken, they will enter into force only if it is established that the procedure does not cause any damage to the internal market (i.e. it is not illegitimate state support).

In order to be able to carry out the functions outlined above, or in other words to implement the procedure to conduct or liquidate a certain intermediary *in bonis*, there is a need to be able to draw resources on a *fund*. This, in the panorama that has been outlined so far, is constituted by the so-called *Single Resolution Fund (SRF)*, i.e. the fund from which the states will be able to draw resources according to the application of the different interventions provided for by the European legislator (which will be analyzed in the following paragraphs). The constitution of this fund will take place gradually over a time interval of 8 years, at the end of which, the amount of the fund must be equal to 1% of the amount of protected deposits of all credit institutions authorized in all member states adhering.

¹⁸⁰ The term "*executive*" refers to that session when there is a need to decide on the failure of an intermediary.

¹⁸¹ *Plenary* is defined as that meeting when general or budgetary issues are discussed.

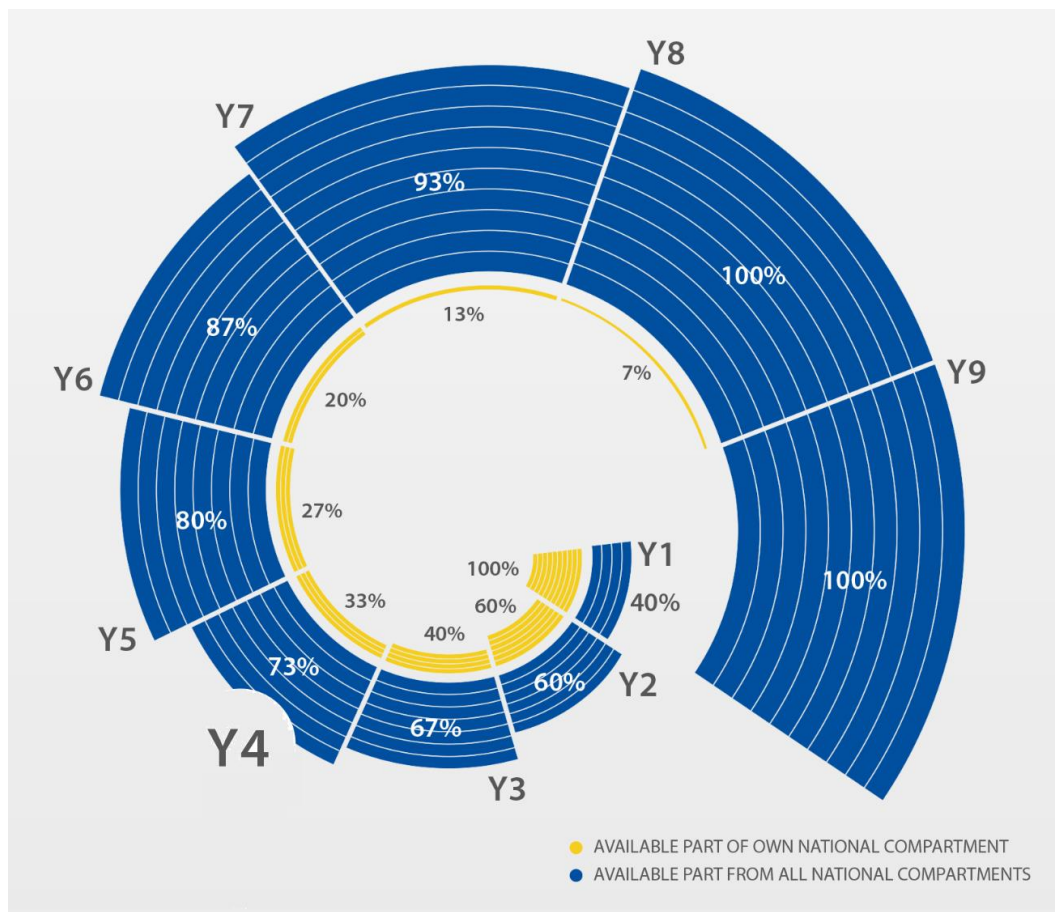


Illustration 45 – Available funds for initial steps in bank resolution. Single resolution board

After clarifying the competent authorities and the funds with which they finance in order to implement and put into practice the tasks entrusted to them, it is now appropriate to clarify what are the possible solutions that they can adopt to deal with the pathological situations of intermediaries. With regard to the European spectrum, in accordance with Directive 2014/59/EU, there are three main *categories* of intervention:

- **Preparation and prevention:** as the Directive requires, preparatory measures must be taken at this stage to resolve crises at an early stage. In particular, the so-called *resolution plans* must be adopted by national resolution authorities and must indicate solutions to potential crisis scenarios also through the indication of the tools that could be used; moreover, so-called *recovery plans* must also be formulated, but this time, directly by the bank and must contain an analytical description of the tools prepared by the bank to overcome the crisis, but also an analysis of the bank's ability to withstand a systemic financial crisis;

- **Early Intervention:** National resolution regulators have the authority to intervene before a bank's situation deteriorates irreparably in order to ensure the continuity of the bank's core services and its rapid recovery (i.e. *early stage*). In particular, as governed by Article 27(1) of the Directive 2014/59/EU, they have the power to:
 - Require the implementation of urgent reforms;
 - Require the bank to formulate a debt restructuring plan with its creditors;
 - Change the management of the bank and appoint extraordinary or temporary administrators (only in cases of significant financial deterioration)¹⁸².
- **Crisis Resolution:** if a bank meets the relevant conditions¹⁸³, the SRB places the bank under resolution. This is achieved by the adoption of a resolution scheme, which determines what resolution tools are to be applied to the bank and, if necessary, whether the *Single Resolution Fund* is to be used to support the resolution action. Before any resolution action is taken, the capital instruments of the bank must be written down or converted. As disciplined in the Art 37, ci. III of the Directive 2014/59/EU and illustrated in the following scheme, the resolution tools are:

¹⁸² Art 28 (1), Directive 2015/59/UE: "Where there is a significant deterioration in the financial situation of an institution or where there are serious infringements of law, of regulations or of the statutes of the institution, or serious administrative irregularities, and other measures taken in accordance with Article 27 are not sufficient to reverse that deterioration, Member States shall ensure that competent authorities may require the removal of the senior management or management body of the institution, in its entirety or with regard to individuals. The appointment of the new senior management or management body shall be done in accordance with national and Union law and be subject to the approval or consent of the competent authority"; Art 29(1) Directive 2015/59/UE: "Where replacement of the senior management or management body as referred to in Article 28 is deemed to be insufficient by the competent authority to remedy the situation, Member States shall ensure that competent authorities may appoint one or more temporary administrators to the institution. Competent authorities may, based on what is proportionate in the circumstances, appoint any temporary administrator either to replace the management body of the institution temporarily or to work temporarily with the management body of the institution and the competent authority shall specify its decision at the time of appointment [...]".

¹⁸³ Relevant conditions are defined as "the bank is in such a critical situation that its recovery within an appropriate period of time is unrealistic".

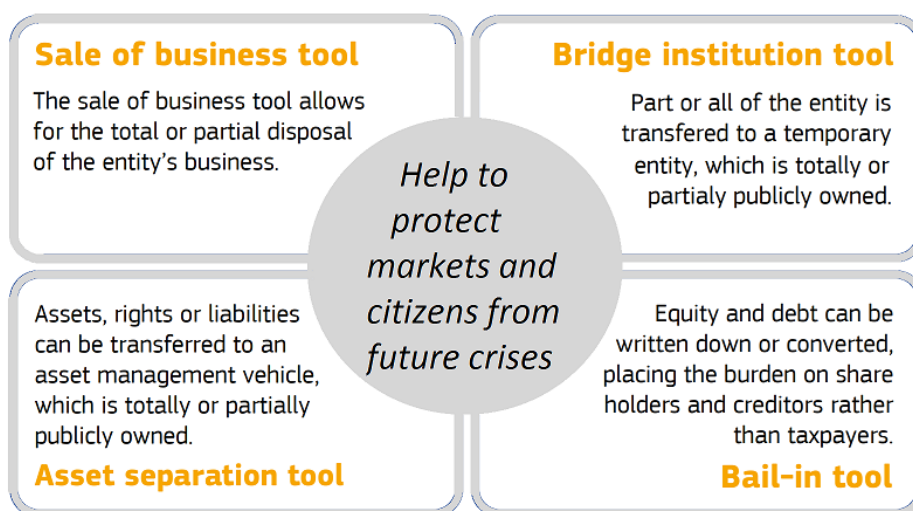


Illustration 46 – Crisis Resolution tools

Analyzing the instruments under consideration, a classification into two macro categories can be implemented:

- *Gone-concern tools*: This category includes the instruments that involve the bank's failure as a legal entity and its restructuring in order to reduce the negative effects on the various stakeholders by saving only the business areas not affected by the crisis. These include the sale of part of the bank's failing business to private buyers; the transfer of the bank's failing shares or assets and liabilities to a bridge bank; and the transfer of the deteriorated assets to a special purpose vehicle that will manage their liquidation within a reasonable time interval;
- *Going-concern tools*: this category, which includes only the Bail-in, encompasses those activities whose purpose is either to maintain the legal entity and restore its original equilibrium.

The present work will now move on to an examination of the various instruments, trying to make a detailed analysis.

1.3.2.1 – Sale of Business tool

Disciplined by Art. 38 of Directive 2014/59/EU, it is the first of the procedures with the purpose of gone concern. Effect of this procedure, as regulated in subsection 1, is that of *“transfer to a purchaser that is not a bridge institution:*

(a) shares or other instruments of ownership issued by an institution under resolution;

(b) all or any assets, rights or liabilities of an institution under resolution.”

The particularity of this procedure is that this process is commenced by the individual member states which, in addition, have the responsibility of *“ensure that resolution authorities have the power”* to implement what has been described.

From sub-paragraph 1 it is clear that this instrument provides for two modes of execution: (i) *sale of shares or other instruments of ownership*, or (ii) *sale of assets, rights or liabilities*. This implies that, while in the latter case we have a liquidation of assets with the aim of monetizing as quickly as possible the assets to attempt to bring the situation *in bonis*, in the first case it involves a real change of “ownership” of the company. Particularity of this process of alienation of the participations is that it all occurs *“without obtaining the consent of the shareholders of the institution under resolution or any third party other than the purchaser, and without complying with any procedural requirements under company or securities law other than those included in Article 39”*¹⁸⁴. This derogation from the decision-making power of the shareholders is justified by the implementation of a superior plan, i.e. that of avoiding ordinary insolvency procedures in order to ensure the continuity and functioning of the credit and financial market. This transfer mentioned in paragraph 1, in some cases, may even have only a temporary effect. In fact, as regulated by paragraph 6 of the same article, *“following an application of the sale of business tool, resolution authorities may, with the consent of the purchaser, exercise the transfer powers in respect of assets, rights or liabilities transferred to the purchaser in order to transfer the assets, rights or liabilities back to the institution under resolution, or the shares or other instruments of ownership back to their original owners,*

¹⁸⁴ Article 39 of 2015/59/EU: *Sale of business tool: procedural requirements*.

and the institution under resolution or original owners shall be obliged to take back any such assets, rights or liabilities, or shares or other instruments of ownership”.

1.3.2.2 – Bridge Institution tool

The second tool available to the supervisory authorities, always with a logic of gone-concern, is the one that takes the name of bridge-entity. Given its shape, which will be discussed below, this instrument is considered to be a revised version of the *sale of business tool*¹⁸⁵. This is because, in the first paragraph of Article 40, there is the same provision as in Article 38, which provides that, the supervisory authorities *“have the power to transfer to a bridge Institution: (a) shares or other instruments of ownership issued by one or more institutions under resolution; (b) all or any assets, rights or liabilities of one or more institutions under resolution [...] without obtaining the consent of the shareholders of the institutions under resolution or any third party other than the bridge institution”.*

In paragraph 2 of the same article, it states then what must be interned for *bridge institution*, i.e. *“a legal person that meets all of the following requirements:*

- (a) it is wholly or partially owned by one or more public authorities which may include the resolution authority or the resolution financing arrangement and is controlled by the resolution authority;*
- (b) it is created for the purpose of receiving and holding some or all of the shares or other instruments of ownership issued by an institution under resolution or some or all of the assets, rights and liabilities of one or more institutions under resolution with a view to maintaining access to critical functions and selling the institution or entity [...].”*

As already mentioned in relation to the sale of business tool, from the interpretation of paragraph 6 of the Article 40¹⁸⁶ and paragraph 3 of Article 41¹⁸⁷, it is clear that this instrument has a temporary

¹⁸⁵ See §1.3.2.1

¹⁸⁶ Directive 2014/59/EU, Art 40(6) :*“Following an application of the bridge institution tool, the resolution authority may: (a) transfer rights, assets or liabilities back from the bridge institution to the institution under resolution, or the shares or other instruments of ownership back to their original owners, and the institution under resolution or original owners shall be obliged to take back any such assets, rights or liabilities, or shares or other instruments of ownership, provided that the conditions laid down in paragraph 7 are met; (b) transfer, shares or other instruments of ownership, or assets, rights or liabilities from the bridge institution to a third party”.*

and utilitarian nature aimed either at the return *in bonis* of the credit institution in question or the liquidation. In particular, the temporary nature of the bridge institution is expressly established by sub-section 5 of Article 41, which states that “*if none of the outcomes referred to in points (a), (b), (c) and (e) of paragraph 3 applies, the resolution authority shall terminate the operation of a bridge institution as soon as possible and in any event two years after the date on which the last transfer from an institution under resolution pursuant to the bridge institution tool was made*”.

1.3.2.3 – Asset Separation tool

The last of the instruments included within the perimeter of gone concern solutions is the one called *Asset Separation tool*. As already the name suggests, also in this case there will be the necessity, from the member states, of the predisposition of the measures so that “*resolution authorities have the power to transfer assets, rights or liabilities of an institution under resolution or a bridge institution to one or more asset management vehicles*”¹⁸⁸. Particularity of this tool is to explicitly refer to the definition of *asset management vehicle* which, as regulated by paragraph 2 of the same article, in order to be considered so, “*shall be a legal person that meets all of the following requirements:* (a) *it is wholly or partially owned by one or more public authorities which may include the resolution authority or the resolution financing arrangement and is controlled by the resolution authority;* (b) *it has been created for the purpose of receiving some or all of the assets, rights and liabilities of one or more institutions under resolution or a bridge institution*”.

In economic practice these institutions are often represented by Special Purpose Vehicles (SPV) and are commonly known as “*bad banks*”. The rationale for this name is to be found in their role of being the counterpart for the “*good banks*”, i.e. those institutions that implement this procedure through which they can *lighten* their balance sheets through the sale of certain negative exposures.

¹⁸⁷ Directive 2014/59/EU, Art 41(3): “*The resolution authority shall take a decision that the bridge institution is no longer a bridge institution within the meaning of Article 40(2) in any of the following cases, whichever occurs first: (a) the bridge institution merges with another entity; (b) the bridge institution ceases to meet the requirements of Article 40(2); (c) the sale of all or substantially all of the bridge institution’s assets, rights or liabilities to a third party; (d) the expiry of the period specified in paragraph 5 or, where applicable, paragraph 6; (e) the bridge institution’s assets are completely wound down and its liabilities are completely discharged.*”

¹⁸⁸ Art 42(1) of Directive 2014/59/EU.

The transfer, which can take place for a fee, as governed by paragraph 5 of Article 42, can only occur if:

“(a) the situation of the particular market for those assets is of such a nature that the liquidation of those assets under normal insolvency proceedings could have an adverse effect on one or more financial markets.

(b) such a transfer is necessary to ensure the proper functioning of the institution under resolution or bridge institution;

(c) such a transfer is necessary to maximize liquidation proceeds”.

As far as the onerous nature of the procedure is concerned, it is governed by paragraph 6, which states that *“When applying the asset separation tool, resolution authorities shall determine the consideration for which assets, rights and liabilities are transferred to the asset management vehicle in accordance with the principles established in Article 36¹⁸⁹ and in accordance with the Union State aid framework. This paragraph does not prevent the consideration having nominal or negative value”*. In addition, in the next paragraph it is specified that, especially in view of the type of balance sheet of the SPV, *“Consideration may be paid in the form of debt issued by the asset management vehicle”*.

In view of the above-mentioned considerations, it can be seen that this mechanism is very efficient in particular in relation to the management and recovery of non-performing loans which, given the absence of a reference market, in the absence of this mechanism would have a very low rate of realization with a consequent negative impact on the whole economy.

1.3.2.4 – Bail-in tool

The last of the tools provided for resolution is the *Bail-in tool*. Contrary to those analyzed up to here, this tool has a *going-concern logic*, i.e. it has the ultimate goal of restoring the balance of the credit institution maintaining in place its the legal entity. In other words, the *Bail-in* can be used to recapitalize a banking company if, through this instrument, the conditions for authorisation to carry out banking activities under Directive 2013/36/EU are re-established. The logic of bail-in is opposed to the previous logic (in chronological terms) of bail-out where, the recovery of

¹⁸⁹ Directive 2014/59/EU, Article 36: *Valuation for the purposes of resolution*

institutions near bankruptcy, was carried out "at the expense" of taxpayers through the use of public money. The change in logic, and therefore the change from bail-out to bail-in, manifested in relation to the crisis of 2007 and the most recent one of 2010, due to which, the various European States were forced to incur considerable expenses with the purpose of "saving" the various institutions in crisis¹⁹⁰.

The bail-in is a complex procedure to which Directive 2014/59/EU dedicates the entire *Section 5*. As for the other instruments, in paragraph 1 of Article 43 the legislator prescribes that, "*in order to give effect to the bail-in tool, Member States shall ensure that resolution authorities have the resolution powers specified in Article 63*", underlining the responsibility of the Member States to ensure the possibility of intervention by the competent authorities.

Differently from what has been observed in relation to the other intervention procedures, the *bail-in* is a very incisive and invasive procedure, such that the Community legislator has placed certain limits which facilitate the definition of the boundaries of applicability.

First of all, has been introduced the principle of the so-called *No Creditor Worse Off (NEWO)*, according to which creditors must not bear losses greater than those they would have suffered in the event of compulsory administrative liquidation¹⁹¹.

Secondly, the legislator has limited the use of this tool only in relation to the achievement of certain objectives disciplined by paragraph 2 of Article 43 of Directive 2014/59/EU. In particular, this states that: "*Member States shall ensure that resolution authorities may apply the bail-in tool to meet the resolution objectives specified in Article 31, in accordance with the resolution principles specified in Article 34 for any of the following purposes:*

- a) to recapitalize an institution or an entity referred to in point (b), (c) or (d) of Article 1(1) of this Directive that meets the conditions for resolution to the extent sufficient to restore its ability to comply with the conditions for authorization (to the extent that those conditions apply to the entity)*

¹⁹⁰ In addition, it was also pointed out that the logic of external rescue has promoted moral hazard and thus assumed the role of an incentive to take risks.

¹⁹¹ Directive 2014/59/EU, Art 74: "*For the purposes of assessing whether shareholders and creditors would have received better treatment if the institution under resolution had entered into normal insolvency proceedings, including but not limited to for the purpose of Article 73, Member States shall ensure that a valuation is carried out by an independent person as soon as possible after the resolution action or actions have been effected. That valuation shall be distinct from the valuation carried out under Article 36*".

and to continue to carry out the activities for which it is authorized under Directive 2013/36/EU or Directive 2014/65/EU, where the entity is authorized under those Directives, and to sustain sufficient market confidence in the institution or entity;

b) to convert to equity or reduce the principal amount of claims or debt instruments that are transferred:

- i. to a bridge institution with a view to providing capital for that bridge institution; or*
- ii. under the sale of business tool or the asset separation tool."*

Furthermore, in using this tool, the EU legislator moved on to define a pre-established order of priority in the coverage of losses. In other words, from the combined provisions of Art. 44 subsection 3 and subsection 9 letter a) with Art. 48, it emerges that the EU legislator has constrained the resolution authorities to execute the write-down of the liabilities according to a strict and predetermined order of priority. This order follows a logic of risk, providing that, in the event of losses, those who invest in more risky financial instruments will have the antecedence. In particular, the first to be required to sustain losses will be the shareholders (or those investors who hold other securities of ownership of the bank) through dilution, cancellation or through the transfer of shares to creditors subject to bail-in. If the entire class is depleted and there are additional losses, then other classes will be called in the following order:

- Holders of other equity securities (subordinated bonds) Other subordinated creditors;
- Unsecured creditors;
- Depositors for amounts in excess of 100,000 euros;

In converting or devaluing securities or liabilities, the Resolution Authority must also take into account the two guiding criteria identified by the European Banking Authority (EBA): (i) adopt an equal treatment for liabilities belonging to the same class; (ii) apply the same treatment to eligible liabilities, in accordance with the provisions of Directive 2013/36/EU and Regulation 575/2013.

As provided for in Article 44(2), this scheme excludes certain categories identified in: *covered deposits*;

- a) *secured liabilities including covered bonds and liabilities in the form of financial instruments used for hedging purposes which form an integral part of the cover pool and which according to national law are secured in a way similar to covered bonds;*
- b) *any liability that arises by virtue of the holding by the institution or entity referred to in point (b), (c) or (d) of Article 1(1) of this Directive of client assets or client money including client assets or client money held on behalf of UCITS as defined in Article 1(2) of Directive 2009/65/EC or of AIFs as defined in point (a) of Article 4(1) of Directive 2011/61/EU of the European Parliament and of the Council (1), provided that such a client is protected under the applicable insolvency law;*
- c) *any liability that arises by virtue of a fiduciary relationship between the institution or entity referred to in point (b), (c) or (d) of Article 1(1) (as fiduciary) and another person (as beneficiary) provided that such a beneficiary is protected under the applicable insolvency or civil law;*
- d) *liabilities to institutions, excluding entities that are part of the same group, with an original maturity of less than seven days;*
- e) *liabilities with a remaining maturity of less than seven days, owed to systems or operators of systems designated according to Directive 98/26/EC or their participants and arising from the participation in such a system;*
- f) *a liability to any one of the following:*
 - i. *an employee, in relation to accrued salary, pension benefits or other fixed remuneration, except for the variable component of remuneration that is not regulated by a collective bargaining agreement;*
 - ii. *a commercial or trade creditor arising from the provision to the institution or entity referred to in point (b), (c) or (d) of Article 1(1) of goods or services that are critical to the daily functioning of its operations, including IT services, utilities and the rental, servicing and upkeep of premises;*

In light of this scheme, the natural question which arises is relative to which can be the solution in case of failure to achieve the resolution with the use of bail-in. This answer is provided by Article

44(4)¹⁹², which, in conjunction with paragraph 5¹⁹³, regulates that, after “a contribution to loss absorption and recapitalization equal to an amount not less than 8 % of the total liabilities [...] has been made by the shareholders and the holders of other instruments of ownership, the holders of relevant capital instruments and other eligible liabilities through write down, or conversion” as a last resort, it will be possible to return to the previous logic of bail out, i.e. the intervention of the State in the recovery plan¹⁹⁴.

The rationale behind this provision must be found in the attempt by the legislator to avoid in any way affecting the financial equilibrium of the markets, resorting, if necessary, to the bail-out. Evidence of this is also the order in which the legislator identifies the purposes of the bail-in that appear to relate to the necessity to ensure, as a matter of priority, the continuity of financial activity, while the protection of depositors and investors seems recessive and instrumental to the achievement of the financial system's stability.

¹⁹² Directive 2014/59/EU, Art. 44(4): “where a resolution authority decides to exclude or partially exclude an eligible liability or class of eligible liabilities pursuant to this Article, and the losses that would have been borne by those liabilities have not been passed on fully to other creditors, the resolution financing arrangement may make a contribution to the institution under resolution to do one or both of the following: (a) cover any losses which have not been absorbed by eligible liabilities and restore the net asset value of the institution under resolution to zero in accordance with point (a) of Article 46(1); (b) purchase shares or other instruments of ownership or capital instruments in the institution under resolution, in order to recapitalize the institution in accordance with point (b) of Article 46”.

¹⁹³ Directive 2014/59/EU, Art. 44(5): “the resolution financing arrangement may make a contribution referred to in paragraph 4 only where: (a) a contribution to loss absorption and recapitalization equal to an amount not less than 8 % of the total liabilities including own funds of the institution under resolution, measured at the time of resolution action in accordance with the valuation provided for in Article 36, has been made by the shareholders and the holders of other instruments of ownership, the holders of relevant capital instruments and other eligible liabilities through write down, conversion or otherwise; (b) the contribution of the resolution financing arrangement does not exceed 5 % of the total liabilities including own funds of the institution under resolution, measured at the time of resolution action in accordance with the valuation provided for in Article 36”.

¹⁹⁴ Directive 2014/59/EU, Art 44(6): The contribution of the resolution financing arrangement referred to in paragraph 4 may be financed by:

- (a) the amount available to the resolution financing arrangement which has been raised through contributions by institutions and Union branches in accordance with Article 100(6) and Article 103;
- (b) the amount that can be raised through ex-post contributions in accordance with Article 104 within three years; and
- (c) where the amounts referred to (a) and (b) of this paragraph are insufficient, amounts raised from alternative financing sources in accordance with Article 105.

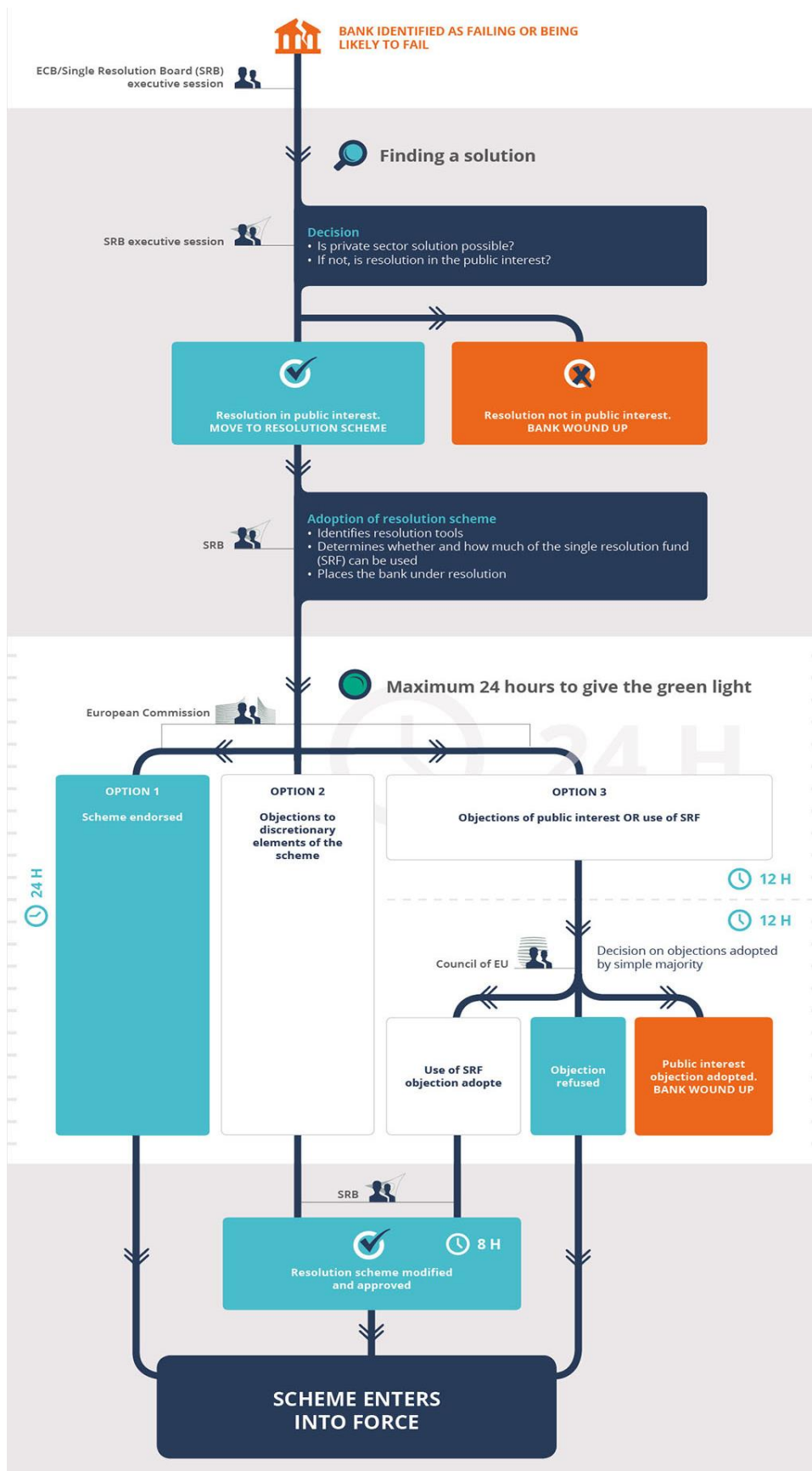


Illustration 47 – How the Single Resolution Mechanism works. Council of the European Union.

1.3.3 – Pillar 3: European Deposit Insurance Scheme

As a result of the discussion on Pillar I and Pillar II¹⁹⁵ of the Banking Union, it is now useful to investigate the third pillar on which the Banking Union is based: the *European Deposit Insurance Scheme* (EDIS).

In this regard, the author of this paper considers it necessary to examine in depth two topics: the volume of deposits relating to individuals and bank balance sheet, then proceeding with the historical reasons that resulted in the need to introduce of a reform of this nature.

As regards the first point, as can be seen from the graph below, it is stated that deposits represent a very large part of both the savers' investments and the banks' financing. They account for more than 30% of the financial assets held by European families and the 2/3 of total bank liabilities in the Banking Union area.

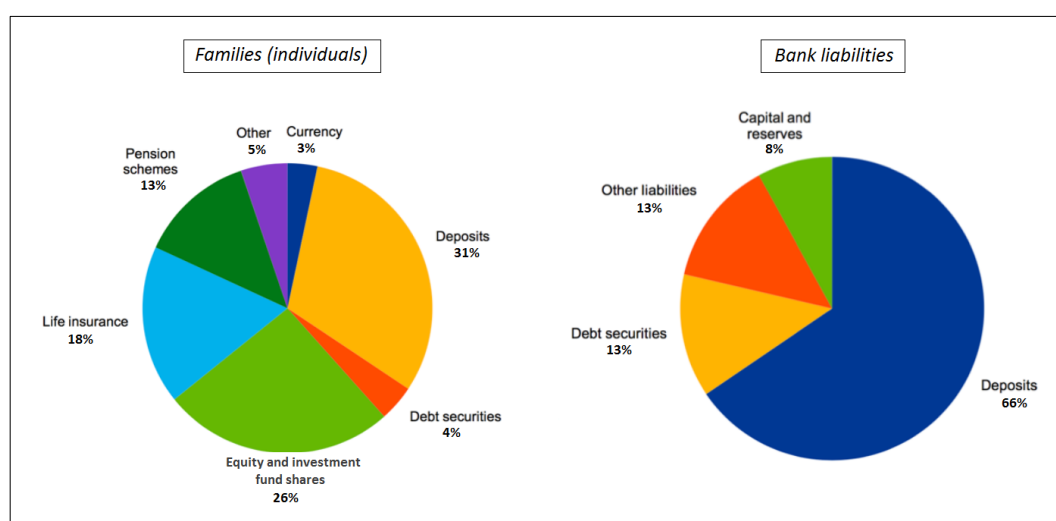


Illustration 48 – Composition of assets held by individuals and liabilities held by banks: Europe

As regards the rationale for introducing a depositor protection reform, this is designed in the final interest of increasing consumer confidence in financial stability. This necessity emerged in relation to the financial crisis of 2007, which showed that, in times of great instability, different levels of

¹⁹⁵ For Pillar I and Pillar II, this paper refers respectively to “*Single Supervisory Mechanism*” and the “*Single Resolution Mechanism*”

protection offered could generate competitive distortions and lead depositors to prefer the maximum protection of deposits rather than the product most appropriate to its needs¹⁹⁶.

In particular, in relation to the sub-prime mortgage crisis, a separate system of depositor insurance was established for each Member State. However, while this has certainly increased the "protection" of depositors, it has also strengthened the damaging link between banks and sovereign issuers and created unequal conditions of competition. In particular, in relation to the 2007 crisis, a separate system of depositor insurance was established for each Member State. However, while this has certainly increased the "protection" of depositors, it has also strengthened the damaging connection between banks and sovereign issuers and created unequal conditions of competition¹⁹⁷.

In view of the importance of deposits and the interconnection and integration of the internal market, the EU legislator regarded as essential the provision of a uniform level of protection to depositors throughout the Union by ensuring the stability of guarantee schemes. In this direction, in fact, was introduced the Directive 49 of 2014 of the European Parliament and of the Council of the European Union on Deposit Guarantee Schemes (DGS), which constituted the 3 pillar on which the banking union is based, that is, the European Deposit Insurance Scheme (EDIS).

The Directive proposes a harmonized network of individual guarantee schemes and, in order to minimize costs and possible disruption, grants a transitional period until 31 December 2023 for its implementation. The Directive proposes a harmonized network of individual guarantee schemes and, in order to minimize costs and possible disruption, grants a transitional period until 31 December 2023 for its implementation. In particular, EDIS is expected to take form through the completion of three phases: *reinsurance*, *co-insurance* and *total reinsurance*. The steps correspond to the evolution of the contribution of individual banks to a fund that allows to reimburse depositors¹⁹⁸ in the event of bank default, i.e. the *Deposit Insurance Fund*¹⁹⁹:

¹⁹⁶ This situation is commonly referred to as "flight to quality".

¹⁹⁷ In fact, before the financial reforms, the Union's legislative system was based on a principle of minimum harmonization, whereby the contribution in the event of financial instability was first covered by the various national deposit-guarantee schemes¹⁹⁷ and only in the event of insufficient resources, was it possible to request ex-post recourse to the common fund.

¹⁹⁸ For deposits, as regulated by Art. 5 of the Directive 2014/59/EU, "shall be excluded from any repayment by a DGS: (a) subject to Article 7(3) of this Directive, deposits made by other credit institutions on their own behalf and for their own account; (b) own funds as defined in point (118) of Article 4(1) of Regulation (EU) No 575/2013; (c) deposits arising out of transactions in connection with which there has been a criminal conviction for money laundering as defined in Article 1(2) of Directive 2005/60/EC; (d) deposits by financial institutions as defined in point (26) of Article 4(1) of Regulation (EU) No 575/2013; (e)

- *Reinsurance*: this mechanism, which can be described as a starting-up system, requires that national deposit systems will continue to function as before, with the variant that will be possible to access to the common fund in case of exhaustion of all reserves. Under this approach, the Deposit Insurance Scheme can be schematically represented as consisting of two pillars: national guarantee schemes and a single European guarantee scheme, with different responsibilities for intervention depending on whether the failure occurs at the level of the individual institution or at the systemic level. The level of coverage offered by EDIS will be partial: if national schemes are required to reimburse depositors, the liquidity needs will be covered up to 20% of unavailable liquidity, while if they contribute to the resolution of a bank, losses will be covered up to 20% of unhedged losses. In order to avoid moral hazard cases, national systems will only be able to access EDIS if there is a real need for and full application of the provisions by the Member State;
- *Co-insurance*: this phase, which is expected to last four years from 2020 to 2024, is based on a mechanism of contribution of increasing shares. In this phase, the share of the contribution will initially be equal to 20%, and then gradually increase until it reaches 80%. What differentiates this phase from the previous one is that national systems are no longer required to exhaust their funds before they can access EDIS, which will have to cover part of the financing and loss coverage costs from the get-go. While in the reinsurance phase the established amount to be collected is shared among the participating banks, the co-insurance approach requires the calculation of risk-weighted contributions for each bank, aiming at a greater degree of risk sharing between the different national systems;

deposits by investment firms as defined in point (1) of Article 4(1) of Directive 2004/39/EC; (f) deposits the holder of which has never been identified pursuant to Article 9(1) of Directive 2005/60/EC, when they have become unavailable; (g) deposits by insurance undertakings and by reinsurance undertakings as referred to in Article 13(1) to (6) of Directive 2009/138/EC of the European Parliament and of the Council (1); (h) deposits by collective investment undertakings; (i) deposits by pension and retirement funds; (j) deposits by public authorities; (k) debt securities issued by a credit institution and liabilities arising out of own acceptances and promissory notes.

¹⁹⁹ The system of contribution to this fund is *risk-based*, as governed by Article 10 of the same Directive “Member States shall ensure that DGSs have in place adequate systems to determine their potential liabilities. The available financial means of DGSs shall be proportionate to those liabilities”. For a more in-depth analysis, it is advisable to interpret the article under examination in conjunction with Art. 13, paragraph 1 and 2.

- *Total Assurance*: expected as the last step that should be implemented from 2024 when the DIF reaches 100%, providing that, in case of intervention, this can guarantee the total subsidy²⁰⁰.

In relation to the phases described here, it should be specified that, as governed by Article 6 of Directive 2014/49/EU, *“Member States shall ensure that the coverage level for the aggregate deposits of each depositor is EUR 100 000 in the event of deposits being unavailable”* adding that *“the limit referred [in the above mentioned article] shall apply to the aggregate deposits placed with the same credit institution irrespective of the number of deposits, the currency and the location within the Union^{201”}*.

An innovative introduction is to regularly stress-test guarantee schemes to ensure that they perform their tasks and are sufficiently well-funded to ensure deposit protection in the event of bank failure.

After explaining the composition, it is now worth investigating which are the possible uses of the Fund Deposit Insurance under the *European Deposit Insurance Scheme*. As expected, the main destination is identified as the reimbursement of depositors in the event of the bankruptcy of a particular bank in an EU country²⁰², in which case the amount would be determined by the resolution authority. In addition to this use, EDIS – national law permitting – could have the mere function of reimbursing or preventing the bankruptcy of a credit institution²⁰³ (thus avoiding

²⁰⁰ During all stages, EDIS will be administered by the Committee in conjunction with the various participating Member States. The Deposit Insurance Fund will be part of EDIS and will be funded by contributions due and paid by banks directly to the Committee (proposal for a regulation of the European parliament and of the Council amending Regulation (EU) 806/2014 in order to establish a European Deposit Insurance Scheme: COM/2015/0586 final).

²⁰¹ See Art 7 of the Directive 2014/49/EU

²⁰² See Art 11(1) of the Directive 2014/49/EU

²⁰³ The rules of Directive 2014/49/EU also determine the conditions that must be met in order for a DGS to be able in order to use the financial means available to prevent the bankruptcy of an institution. In particular, Art. 11 paragraph 3 states that *“Member States may allow a DGS to use the available financial means for alternative measures in order to prevent the failure of a credit institution provided that the following conditions are met: (a) the resolution authority has not taken any resolution action under Article 32 of Directive 2014/59/EU; (b) the DGS has appropriate systems and procedures in place for selecting and implementing alternative measures and monitoring affiliated risks; (c) the costs of the measures do not exceed the costs of fulfilling the statutory or contractual mandate of the DGS; (d) the use of alternative measures by the DGS is linked to conditions imposed on the credit institution that is being supported, involving at least more stringent risk monitoring and greater verification rights for the DGS; (e) the use of alternative measures by the DGS is linked to commitments by the credit institution being supported with a view to securing access to covered deposits; (f) the ability of the affiliated credit institutions to pay the extraordinary contributions in accordance with paragraph 5 of this Article is confirmed in the assessment of the competent*

additional costs associated with the reimbursement of depositors together with systemic side effects due to the liquidation of the failing institution). Precisely because of its multiple functions, this third pillar would act as a support to the other two ensuring a higher level of security in crisis situations, and its role – if properly regulated and managed – would certainly act as a backstop to extreme and borderline situations.

It is worth mentioning how, the adoption of this new deposit–guarantee scheme requires a considerable effort by EU Member States, consisting in: (i) compliance costs, both in terms of capital and restructuring of internal strategies for better risk control; (ii) monitoring costs, to ensure the correct implementation of the provisions and strong cooperation between the authorities responsible for banking activity. It is for these reasons, in close connection with the preconditions imposed for its implementation and the timing²⁰⁴, that this third pillar of the banking union is at the center of a vigorous debate despite the general opinion that there is a high need to provide to European depositors a uniform protection system in order to guarantee the proper functioning and stability of the banking system.

§ 2 *Shadow Banking crisis resolution*

2.1 – *Definition of Shadow banking crisis*

As already discussed for banking institutions²⁰⁵, also for non–banking institutions, the first step is to investigate about the *definition of the crisis*.

Compared to the banking world, this is more complicated in relation to flexibility and not precise demarcation of the margins in which shadow institutions are identified and defined²⁰⁶.

authority”. In addition, the article specifies in paragraph 4 that “Alternative measures as referred to in paragraph 3 of this Article shall not be applied where the competent authority, after consulting the resolution authority, considers the conditions for resolution action under Article 27 of Directive 2014/59/EU to be met” – the so–called Early Warning.

²⁰⁴ For more information on the timing of implementation, see Article 20 of Directive 2014/49/EU “transposition”

²⁰⁵ See Chapter 5 §1.1

- *Crisis of a single entity*: in this case, it can be identified the crisis of a non-banks as a situation of financial and economic disequilibrium that, if not treated in a timely way, can lead to failure²⁰⁷;
- *Systemic crisis*: This term refers to a crisis that involves the entire system. In fact, although the non-banks have a boundary indented whose definition is constantly evolving, are clear the effects that the same can have. Given the high interconnection that the shadow system presents with the banking and financial world, they are traced in the "*demand for cash from their deposits*" and in the "*domino effect*"²⁰⁸.

Given the unclear profile of *non-banks*, it is difficult to perform the exercise to identify the reasons behind a *possible crisis of a given entity*. However, it is worth mentioning how, with regard to the past crisis²⁰⁹, several studies have analyzed how failures in the non-banking world have come to light in relation to a lack of vision by management that, through wrong choices driven only by the desire for profit, have led to financial disequilibrium from which then, in many cases, has resulted in failure.

The example reported is that of *American International Group Inc. (AIG)*, the largest American insurance company which, following the spilling of the crisis in 2008 and before being rescued by the Federal Reserve, declared losses and cancellations in the balance sheet for an amount of 321 billion dollars. In addition, the company had taken positions for more than \$460 billion in the sale of credit risk protection, of which \$60.6 billion only for the protection of assets secured by sub-prime mortgages. It was in fact only because of the loan of 85 billion (which was then extended to 200 billion) granted by the Fed that this insurance company was able to be saved.

With regard to *systemic crises*, as already mentioned in paragraph §1 of this paper, as for the banking environment, they can be caused by shocks of various nature both at the macroeconomic

²⁰⁶ As already discussed in Chapter 3, the Shadow banking "official" definition can be traced in the explanation provided by the FSB in 2011. By the way, this definition is not fully agreed, and for that, there are several other definition of shadow banking which cause a no-clear determination of the perimeter

²⁰⁷ Non-banks, like other companies, have a structure of balance sheet such that, if altered, it can lead to the bankruptcy of the same.

²⁰⁸ See Chapter 1, §1.1

²⁰⁹ Reference is made to the sub-prime mortgage crisis (2008) and the sovereign debt crisis

and microeconomic levels. As far as the former are concerned, they can have an impact on the non-banking world in two forms:

- *Indirect*: the transmission chain takes the form from a macro-economic shock that causes a cyclical recession whose effects are manifested on the Non-Financial Companies (NFCs) that in turn shift the risk of "insolvency" on the banking institutions that, through the financial engineering, shift it on the non-banks that experience a deterioration of their assets;
- *Direct*: given that one of the main characteristics of shadow banking is that it addresses the market directly, in the event of adverse macroeconomic conditions, these would have a depressing impact on the market which, being in this case the direct counterparty to the shadow system, would have a direct impact on non-banks institutions.

2.2 – Deficiency of a Community Regulatory System

As far as the shadow banking system is concerned, it can be stated that there is no defined and harmonized regulation like that existing within the perimeter of the banking system.

Before examining this issue in more detail, it is useful to know that the methods for preventing a systemic crisis can be identified as follows:

- *Regulation restricting the liquidity of the deposit like instruments*: this could be achieved by imposing commissions, suspending convertibility, and reforms of bankruptcy laws to subject repos to "automatic stay" rules;
- *Regulation to deal with systemic crises*: assuming that it is unlikely to succeed in designing a regulatory framework to prevent systemic crises given their stochastic nature of manifestation, a regulation aimed at defining the best strategies to deal with the crisis once they occur can however be implemented, in order to quickly restore the solvency of the system without imposing externalities on third parties. Efforts should be directed both at resolution – in terms of reducing costs when crises occur – and at reducing the probability of crises occurring.

These resolution mechanisms could include the use of contingent capital, the use of convertible debt to remunerate the managers of financial institutions and the development of special bankruptcy procedures for financial institutions that transform debt into equity using options;

- *Regulation restricting the use of deposit like instruments to fund long-term investments:* This could be achieved through policies on capital requirements, restrictions on the use of client assets, and liquidity requirements such as maturity splitting of liabilities,
- *Regulation reducing asymmetric information:* in detail, reference is made to regulations that encourage the reduction of asymmetries in information on the quality of assets used to guarantee deposits. Two broad families of instruments can be used for this purpose:
 - *External:* Restrictions on types of investments, concentration of assets, liquidity reserves, types of assets that can be used as collateral;
 - *Internal:* imposition of risk assessment methodologies for the assets used through policies such as the use of co-insurance and deductibles imposed on investors seeking insurance against default (CDS) and the regulation that modifies the incentives of credit rating agencies (CRAs).

After setting out the above, it is now necessary to investigate what legislation is currently in place for shadow institutions within the European perimeter.

The regulatory framework, differently from the banking world, is based on the works of the Financial Stability Board, that is, the body established in relation to the G20 of 2009 with the aim of promoting the stability of the international financial system, improving the functioning of financial markets and reducing systemic risk, through the exchange of information and international cooperation between supervisory authorities, central banks and the main supranational organizations. The policy framework imposed by the FSB has taken shape in several stages through various publications²¹⁰. The first of these is identified in the document published in November 2012 when, following the delegation of the elaboration of a definition of *shadow*

²¹⁰ The FSB in fact in response to the request of the G20 at the Seoul Summit in November 2010, issued different recommendations through various publications.

*banking*²¹¹, it was provided to them the task of elaborating policy recommendations for shadow banking entities. This *non-binding work* consists of a consultation document with the declared aim of strengthening shadow banking regulation through the implementation of recommendations in the *five* areas where financial stability risks from shadow banking have arisen²¹². In fact, the FSB has been coordinating and contributing to the development of policies to strengthen oversight and regulation of shadow banking, with a focus on measures that seek to:

(i) *Mitigate risks in banks' interactions with shadow banking entities:*

in order to achieve this objective, the BCBS, delegated by the FSB, decided to opt for an *indirect strategy*; or in other words, in order to reduce the risk of interaction, the focus was on increasing capital requirements for banks.:

- Increased the capital requirements applied to banks' re-securitization exposures and for liquidity facilities (under one year) provided to securitization vehicles;
- Increased the capital requirements under the internal ratings-based approach (IRB) for exposures to regulated financial institutions whose total assets are greater than or equal to US \$100 billion, and to unregulated financial institutions, regardless of size;
- Enhanced the banks' internal capital adequacy assessment process under Pillar II for securitization risk, reputational risk and implicit support;
- Enhanced the Pillar 3 disclosure requirements related to securitization.

(ii) *Reduce the susceptibility of MMFs to "runs":*

In order to reach this objective, the FSB requested in October 2011 to *International Organization of Securities Commissions* (IOSCO) to develop policy recommendation for MMFs. The result was reached in the October of 2012 when the IOSCO published a list of 15 recommendations cover a range of issues associated with MMFs including: *The perimeter of the Regulatory Framework; Valuation; Liquidity management; MMFs that offer a stable NAV; Use of credit ratings; Disclosure to investors; MMFs' practices in relation to repos.*

²¹¹ See Chapter 3

²¹² Reference is made to the five economic functions of *Shadow Banking Narrow Measure* as discussed in Chapter 3 §1.1.2.1 et seq.

No .1	Money market funds should be explicitly defined in CIS regulation.
No. 2	Specific limitations should apply to the types of assets in which MMFs may invest and the risks they may take.
No. 3	Regulators should closely monitor the development and use of other vehicles similar to money market funds (collective investment schemes or other types of securities).
No .4	Money market funds should comply with the general principle of fair value when valuing the securities held in their portfolios. Amortized cost method should only be used in limited circumstances.
No. 5	MMF valuation practices should be reviewed by a third party as part of their periodic reviews of the funds accounts.
No. 6	Money market funds should establish sound policies and procedures to know their investors.
No .7	Money market funds should hold a minimum amount of liquid assets to strengthen their ability to face redemptions and prevent fire sales.
No. 8	Money market funds should periodically conduct appropriate stress testing.
No. 9	Money market funds should have tools in place to deal with exceptional market conditions and substantial redemptions pressures.
No. 10	MMFs that offer a stable NAV should be subject to measures designed to reduce the specific risks associated with their stable NAV feature. Regulators should require, where workable, a conversion to floating/ variable NAV.
No. 11	MMF regulation should strengthen the obligations of the responsible entities regarding internal credit risk assessment practices and avoid any mechanistic reliance on external ratings.
No.12	CRA supervisors should seek to ensure credit rating agencies make more explicit their current rating methodologies for money market funds.
No. 13	MMF documentation should include a specific disclosure drawing investors' attention to the absence of a capital guarantee and the possibility of principal loss.
No. 14	MMFs' disclosure to investors should include all necessary information regarding the funds' practices in relation to valuation and the applicable procedures in times of stress.
No. 15	When necessary, regulators should develop guidelines strengthening the framework applicable to the use of repos by money market funds, taking into account the outcome of current work on repo markets.

Illustration 49 – IOSCO recommendations on MMFs

(iii) Assess and mitigate financial stability risks posed by other shadow banking entities and activities:

The objective of this phase is to identify which other institutions, other than MMFs, present risks to the system and then to elaborate, if necessary, policy recommendations. The identification process is based on a two-step process: first looking at “size” and “national experience” (authorities’ judgement) to derive a list of entity types (“filtered entities”); then assessing in detail their shadow banking risk factors (i.e.

maturity/liquidity transformation and leverage). After the assessment, the Authorities should adopt overarching principles and apply policy tools from a menu of optional policies (policy toolkit) for each economic function as they think best fits the non-bank financial entities concerned, the structure of the markets in which they operate, and the degree of risks posed by such entities in their jurisdictions. The overarching principles are:

- **Principle 1:** Authorities should have the ability to define the regulatory perimeter;
- **Principle 2:** Authorities should collect information needed to assess the extent of risks posed by shadow banking;
- **Principle 3:** Authorities should enhance disclosure by other shadow banking entities as necessary so as to help market participants understand the extent of shadow banking risks posed by such entities;
- **Principle 4:** Authorities should assess their non-bank financial entities based on the economic functions and take necessary actions drawing on tools from the policy toolkit.

(iv) Improve transparency and align the incentives in securitization:

The request to draw up the picture under examination has been delegated by the FSB to the IOSCO that, in coordination with the BCBS, in the July 2012, published the consultation report²¹³. The result of the consultation report was *three* possible policy actions aimed at aligning the incentives of securitization²¹⁴ with market confidence while avoiding impediments to cross-border activities in those markets²¹⁵:

²¹³ “Basel Committee on Banking Supervision [in collaboration with the] Board of the International Organization of Securities Commissions. Consultative Document. Margin requirements for non-centrally-cleared derivatives. July 2012.”

²¹⁴ Securitization is the process of financing long-term credit (e.g. loans) from short-term funds raised through direct market funding. Securitisation can have a positive effect on the real economy by transferring long-term credit risks to non-bank investors who are in a position to bear this risk.

²¹⁵ As declared by the BCBS: „The G20 Leaders agreed in 2011 to add margin requirements on non-centrally-cleared derivatives to the reform program for over-the-counter (OTC) derivatives markets. Margin requirements can further mitigate systemic risk in the derivatives markets. In addition, they can encourage standardisation and promote central clearing of derivatives by reflecting the generally higher risk of non-centrally-cleared derivatives. The consultative paper published today lays out a set of high-level principles on margining practices and treatment of collateral and proposes margin requirements for non-centrally-cleared derivatives.

- Enhancing monitoring of the implementation of retention requirements and its impact on the market (especially differences across jurisdictions in the approaches taken to adopt retention requirements such as the forms of retention and exemptions);
 - Improving disclosures by issuers for example on stress testing or scenario analysis undertaken on underlying assets;
 - Encouraging standardization of securitization products through, for example, development of standard detailed disclosure templates on the basis of existing initiatives such as those developed by the industry.
- (v) *Dampen procyclicality and other financial stability risks in securities financing transactions (SFTs) such as repos and securities lending:*

In order to achieve this objective, in 2012 the FSB published an interim report *Securities Lending and Repos: Market Overview and Financial Stability Issues* which provided an overview of the securities lending and repo markets, described their location in the shadow banking system, and discussed the financial stability issues arising from practices in these markets. The recommendations were: (i) *Improving regulatory reporting*; (ii) *Improving market transparency*; (iii) *Improving corporate disclosures*; (iv) *Improving reporting by fund managers to end-investors*; (v) *Introducing minimum standards for haircut practices*; (vi) *Limiting risks associated with cash collateral reinvestment*; (vii) *Addressing risks associated with re-hypothecation of client assets*; (viii) *Strengthening collateral valuation and management practices*; (ix) *Evaluating the establishment or wider-use of central clearing where appropriate*; (x) *Changing bankruptcy law treatment of repo and securities lending transactions*.

Following this publication, the FSB has then over the years continued to Implement the framework for recommendations by publishing in March 2015 the "*Consultative Document (2nd). Assessment Methodologies for Identifying Non-Bank Non-Insurer Global Systemically Important Financial*

These policy proposals are articulated through a set of key principles that primarily seek to ensure that appropriate margining practices will be established for all non-centrally-cleared OTC derivative transactions. These principles will apply to all transactions that involve either financial firms or systemically important non-financial entities. "

Institutions. Proposed High–Level Framework and Specific Methodologies" aimed at assessing potential structural vulnerabilities associated with asset management activities and developing policy measures to mitigate such vulnerabilities, if necessary. The document, developed in collaboration with IOSCO, aims to develop policy recommendations to address the risks arising from:

- Mismatch of funds liquidity;
- Leverage within the funds;
- Operational risk and challenges in transferring investment mandates in a stressful situation;
- Securities lending activities of asset and fund managers.

However, this framework does not apply to all shadow banking entities, but only to those that are considered "*important*" from the perspective of a possible systemic crisis. In detail, systemically important financial institutions (SIFIs) are institutions whose distress or disorderly failure, because of their size, complexity and systemic interconnectedness, would cause significant disruption to the wider financial system and economic activity²¹⁶. In this sense, the document provides a complete picture of the methodology procedural steps that must be respected in order to be included as "*addressees*" of the regulatory framework under examination:

²¹⁶ At the Seoul Summit in 2010, the G20 Leaders endorsed the FSB framework for reducing the systemic and moral hazard risks posed by SIFIs.

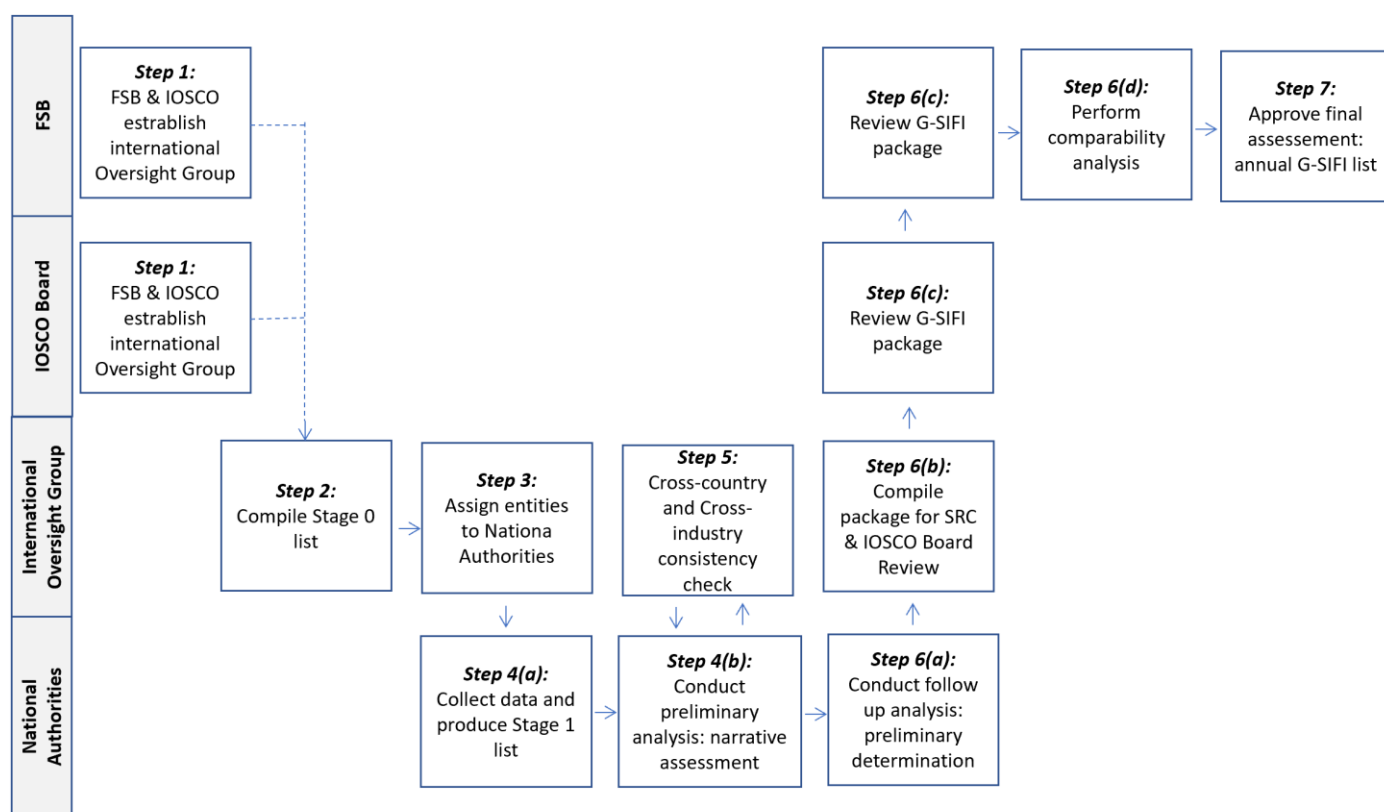


Illustration 50 – FSB NBNI G-SIFI assessment methodology procedural steps

In addition to what has been described, in 2015 the FSB, in collaboration with the Basel Committee for Banking Supervision (BCBS) and the International Organization of Securities Commissions (IOSCO), published an additional document with the aim of strengthening oversight and regulation of shadow banking: *“shadow banking into resilient market-based finance”*²¹⁷.

²¹⁷ In addition to the above-mentioned measures, those taken by BCBS and IOSCO are also of note::

- In October 2012, IOSCO issued Policy Recommendations providing a common basis for standards of regulation and management of MMFs in all jurisdictions. In addition, in November of that year it issued policy recommendations on transparency, standardization and incentive alignment in relation to securitization;
- In 2014–2015, IOSCO performed "Level 1" peer reviews (i.e. timing of adoption reviews) both in banking and non-banking sectors. IOSCO has also launched in 2016 updated "level one" peer reviews on the implementation of these recommendations. IOSCO will also consider the development of a regular monitoring plan and reports on the coherence and effectiveness of these reforms;
- In December 2015, IOSCO published a report on "Liquidity management tools in collective investment schemes", which presents the results of a survey of existing liquidity management frameworks in 27 member jurisdictions, with a focus on tools to address exceptional situations (e.g. strong pressure on redemptions). IOSCO is currently focusing its efforts on three areas of the asset management industry: liquidity mismatch in collective investment vehicles, identification of data gaps in policy makers' knowledge of the industry and a better understanding of loan funds (a recent industry innovation);
- The BCBS, in conjunction with IOSCO, also published criteria in July 2015 to identify simple, transparent and comparable securitizations. In response, in November 2015, the BCBS published a consultative proposal on the integration of the criteria into the framework for the regulation of securitization capital.

The paper details the positions and policies that the FSB and its members will take forward in order to transform the shadow banking sector into highly efficient and resilient funding based on the market:

- *Development of the guidance on the scope of consolidation for bank prudential regulation:* The BCBS will publish guidance for public consultation on the scope of consolidation for bank prudential regulation, in particular to capture step-in risk, around the end of 2015;
- *Findings on the possible harmonization of regulatory approaches to re-hypothecation:* The FSB will prepare its final findings on the possible harmonization of regulatory approaches to re-hypothecation of client assets and review possible financial stability issues related to collateral re-use by March 2016;
- *Implementation monitoring for the policy framework for shadow banking entities:* The FSB will publish the results of peer review of its policy framework for shadow banking entities in the first half of 2016;
- *Evaluation of the case for developing further policy recommendations:* Based on the findings from the peer review and information-sharing exercise, the FSB will evaluate the case for developing further policy recommendations for the relevant shadow banking entities and report the results to the G20 in the first half of 2016;
- *Implementation monitoring for MMFs and securitization:* IOSCO will start updated “level one” peer reviews on the implementation of its recommendations on MMFs and securitization in 2016. It will also consider developing a plan for regular monitoring and reporting on the consistency and effectiveness of these reforms;
- *Monitoring of the global trends and risks in the shadow banking system:* The FSB will continue to conduct its annual monitoring exercise and publish the next results in the fourth quarter of 2016.

– The BCBS published in December 2015, for public consultation, a conceptual framework to identify, assess and address the step-in risk potentially embedded in banks' relationships with shadow banking entities.

<i>Jurisdiction</i>	<i>Economic function</i>	<i>Entity types</i>	<i>Securities Regulator</i>	<i>Prudential Regulator</i>	<i>Central Bank</i>
France	EF1	Hedge funds; Bond funds; Mixed funds; Money market funds; Other funds	AMF		
	EF2	Finance companies		ACPR	
	EF3	Investment firms	AMF	ACPR	
	EF4	Insurance companies		ACPR	
	EF5	Securitisation	AMF	ACPR	
Germany	EF1	Hedge funds; Real estate funds; Money market funds; Bond funds; ETFs		BaFin	
	EF2	Finance companies		BaFin	Bundesbank
	EF3	Broker dealers (Investment firms)		BaFin	Bundesbank
	EF4	Insurance companies		BaFin	
	EF5	Financial vehicle corporations		BaFin	Bundesbank
Italy	EF1	Money market funds; Hedge funds; Fixed income funds; Open-ended investment funds	CONSOB		Bank of Italy
	EF2	Finance companies	CONSOB		Bank of Italy
	EF3	Investment firms	CONSOB		Bank of Italy
	EF4	Confidi (or financial guarantors)			Bank of Italy
	EF5	Structured Finance Vehicles	CONSOB		Bank of Italy
Spain	EF1	Hedge funds; MMFs (VNAV); Fixed income and mixed fixed income funds; REITs	CNMV		
	EF2	Finance companies			BdE
	EF3	Broker dealers	CNMV		
	EF4	Mutual guarantee companies			BdE
	EF5	Securitisation entities	CNMV		

Illustration 51 – Authorities responsible for the regulation and supervision of non-bank financial entities

From what has been discussed, it can be concluded that, while banks were subject to a common European legislative framework with the aim of preventing crises or at least limiting their costs, in the shadow environment the system is based on a set of recommendations provided by the FSB in conjunction with the BCBS and the IOSCO. This remains widely controversial because, if on the one hand it is a common tendency of the regulatory system to move from a system of "hard law" to a system of "soft law"²¹⁸. on the other hand, the lack of a common system at European level could be very damaging, especially in terms of "reaction" in the event of a crisis.

²¹⁸ Soft law, as opposed to hard-law, refers to quasi-legal instruments that have no binding force. This system is often associated with international law because it has the advantage of creating a flexible and specific discipline, capable of adapting to the rapid evolution that characterizes certain sectors of economic or social life

In fact, given the absence of a regulatory system aimed at the outcome of crises within the shadow banking perimeter, the objective of the next paragraph is to determine whether this could be burdensome and constitute a basis on which a possible crisis could emerge²¹⁹.

²¹⁹ From this the title of the paper: a possible next financial crisis? In the next Chapter will be stressed the differences with the banking system by analyzing how, while in the banking environment there are in place a pre- and post-regulation both for prevent and cure the effect of a possible crisis, this is not true for the shadow system.

Chapter 6 – Conclusions

As analyzed in the previous paragraphs, shadow banking, by virtue of the definition provided by the Financial Stability board in 2011, can be identified as a “*system of credit intermediation that involves entities and activities outside the regular banking system, and raises systemic risk concerns, in particular by maturity/liquidity transformation, leverage and flawed credit risk transfer, and/or regulatory arbitrage concerns*”. A peculiarity of this definition is the evidence that the phenomenon is characterized by being placed - in terms of activity, “*outside the regular banking system*” but at the same time posing systemic risks. In relation to this, it is not surprising, therefore, that part of the great interest that has led to turning the spotlight on this system, is found in the great interconnection with the banking system, with particular attention to the systemic risks that the same can generate.²²⁰

By simplifying and considering the OFIs as the only entities that make up the entire shadow banking perimeter²²¹, it is now worth analyzing the solidity of this relation with the banking world.

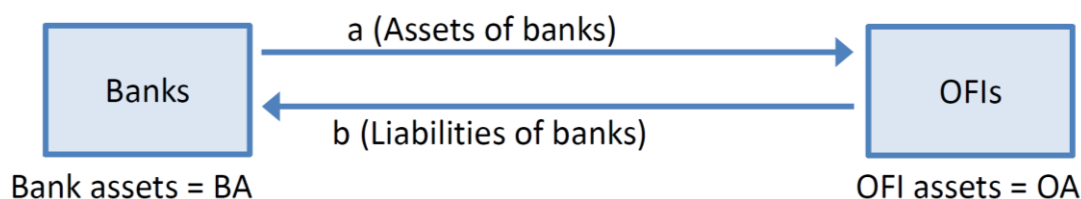
In order to provide a value about the "strength" of the interconnection²²², different formulas can be used depending on whether it is considered from the point of view of banks or OFIs. In detail, the formulas to be used are:

- $Banks' exposures\ to\ OFIs = \frac{Assets\ of\ Banks\ related\ to\ OFIs}{Banks\ Assets}$
- $Banks' use\ of\ OFIs' funding = \frac{Liabilities\ of\ Banks\ related\ to\ OFIs}{Banks\ Assets}$
- $OFIs' use\ of\ Bank\ funding = \frac{Assets\ of\ Banks\ related\ to\ OFIs}{OFIs\ Assets}$
- $OFIs\ exposures\ to\ Banks = \frac{Liabilities\ of\ Banks\ related\ to\ OFIs}{OFIs\ Assets}$

²²⁰ It is worth recalling that, by itself, the interconnection among the banking system and shadow banking is not a "risky" and "damaging" element. The attention that is focused on is justified by the evidence that, while the interconnection between financial sectors can help to diversify risk, linkages can also transmit risks during periods of stress. In particular “*Interconnectedness may have implications for financial stability through funding and credit risk channels, particularly where these channels are associated with the build-up of leverage or maturity/liquidity mismatches*”.

²²¹ This selection was made on the basis of the evidence reported by the FSB monitoring exercise, which indicated that “*the majority of jurisdictions reported higher OFI funding from banks than from insurance corporations or pension funds. For example, in Europe, interconnectedness between banks and OFIs tends to be larger than linkages between OFIs and either pension funds or insurance corporations. On the other hand, OFIs in the Americas are more interconnected with pension funds or insurance corporations than with banks*”.

²²² For this assessment, this work has been based on the structure of the financial statements of the various entities under consideration.



High-level interconnectedness measures:



Illustration 52 – Interconnection between banks and OFIs

The analysis showed that Banks and OFIs are directly connected, with funding channels operating in both directions: “banks extend credit to (or invest in) OFIs, OFIs provide funding to banks, or custodian banks receive the non-invested part of fund assets/operational deposits”²²³.

Analyzing the totality from a quantitative perspective, funding and credit interconnectedness between banks and OFIs, have assumed over the year values comprised between 4% - 8% for banks and 6% - 10% for OFIs experiencing strong growth in the period 2006-2008 and then decrease especially with regard to OFIs' use of funding from banks.

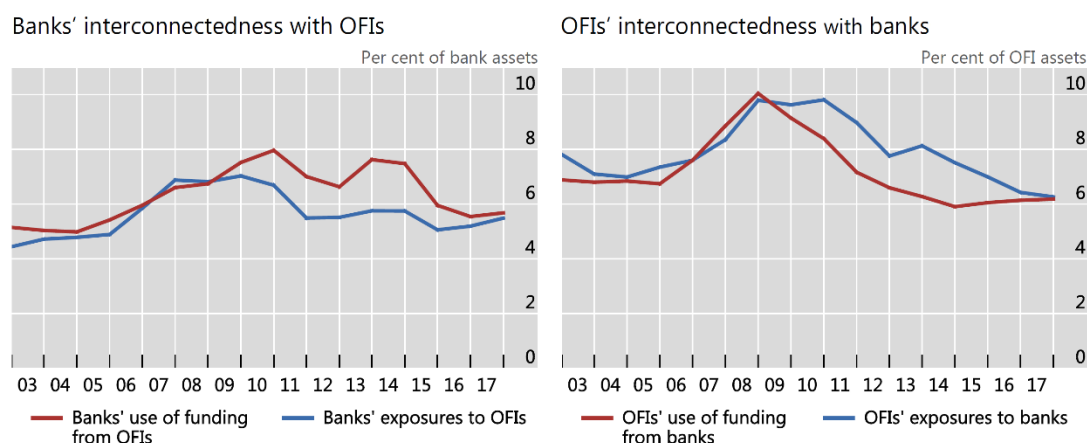


Illustration 53 - Trends in interconnectedness between banks and OFIs

²²³ FSB monitoring report, 2018

Having clarified the reasons behind the attention on the shadow perimeter, which are found in the considerable interconnection with the banking panorama and in the raising of concerns about systemic risk, it is worth to analyze the Bank Credit Cycle and the e Non-Bank Credit Cycle in order to understand how the interconnection originates and develops. Dividing the total perimeter under examination into EMEs, advanced economies, EU, and non-EU jurisdictions, a comparison between the two cycles shows that:

- Banks show an "anticipatory" trend compared to non-banks: in other words, this means that banks react more rapidly than non-banks in terms of growth and decrease of the credit cycle in relation to certain market signals;
- The two trends are positively correlated with the exception of the period 1970-1990 where it shows negative correlations with particular emphasis on advanced economies. This testifies to the dependence of banks' and non-banks' credit cycles on common drivers;
- The magnitude of the banking system's fluctuations is higher than that of non-banks, showing that certain shocks have a greater impact on the level of outstanding credit of banks than that of non-banks.

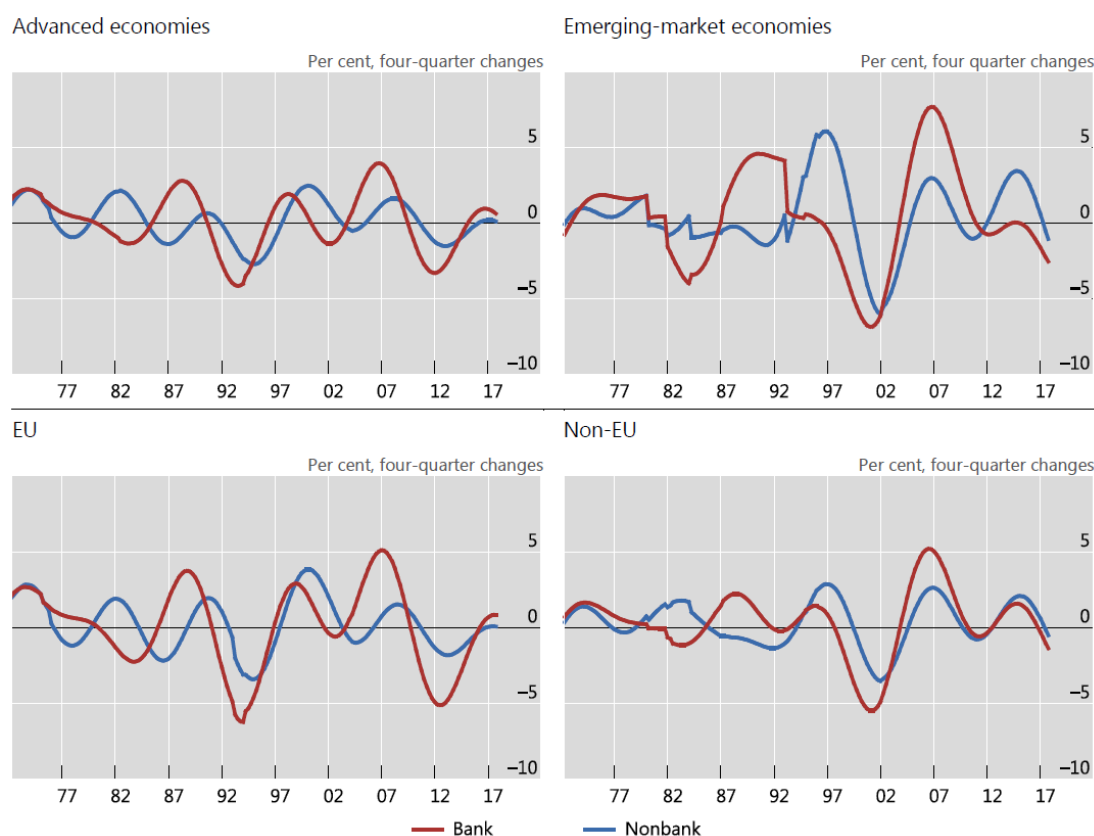


Illustration 54 – Bank and non-bank credit growth cycles, by jurisdiction grouping

The evidence relating to the credit cycles reported so far can be traced essentially to the role played by the banks within the financial system, which has led the legislator to impose prudential and regulatory rules on them²²⁴. In fact, while banks have both regulatory capital and risk management requirements²²⁵, shadow banking institutions have a more diversified perimeter and definitely not so rigid in term of regulation²²⁶.

This difference, as already discussed in the previous Chapters, in terms of real impact develops in a dual way:

- On the one hand, it facilitated banks, in a period of weak profitability, to increase asset turnover – hence the ROE, through the implementation of a business model oriented

²²⁴ In particular, the anticipatory trend of the bank credit cycle trend can be found in the risk management function imposed on the various credit institutions.

²²⁵ See Chapter 1

²²⁶ In particular, as already analyzed in Chapter 4 §1.2 et seq., within the shadow perimeter the regulatory impositions on the different entities are different from the one another.

towards the "*distribution*" of certain credit positions in the portfolio (the so-called Originate-to-Distribute model)²²⁷;

- On the other hand, it has also enabled various shadow banking entities to obtain a relevant position in the entire financial system of various European and world countries, without being "*reached*" by the supervisory authorities with the imposition of harmonized regulations both in terms of "geolocation" and "entities".

These regulatory differences are particularly significant with respect to regulatory capital. In fact, as already discussed in Chapter 4 §1.2, regulatory capital is an essential element in the balance sheet of financial intermediaries as it acts as a buffer in case of losses, thus avoiding the impacts of financial stress events on depositors²²⁸. In order to test the validity of this statement, and to understand how "risky" it is to not hold capital, the graph below shows the historical trends in the level of RWA (unsecured and secured) and the Basel IV output floor. From what illustrated by the chart, we can immediately see how (i) the level of RWA moves ahead of the "waves of default" and how (ii) the regulator, aware of the great importance of the role of regulatory capital, has raised the level of floor in capital requirements calculated under internal models at 72.5% of those required under standardized approaches for calculating capital requirements for all Pillar I risks.

²²⁷ One of the reasons that led the banks to "interact" with the shadow banking universe is the convenience of selling the credit positions in the portfolio in order to monetize them in the shortest possible time. In fact, as already clarified in the Chapter 3 § 2.2, in recent years, banks, due to market dynamics and regulatory capital regulations, have considered more convenient to distribute certain credit positions rather than keeping them on the balance sheet until maturity by implementing the distribution-oriented business model.

²²⁸ See Chapter 5 §1.3.2.4: Bail-in Tool

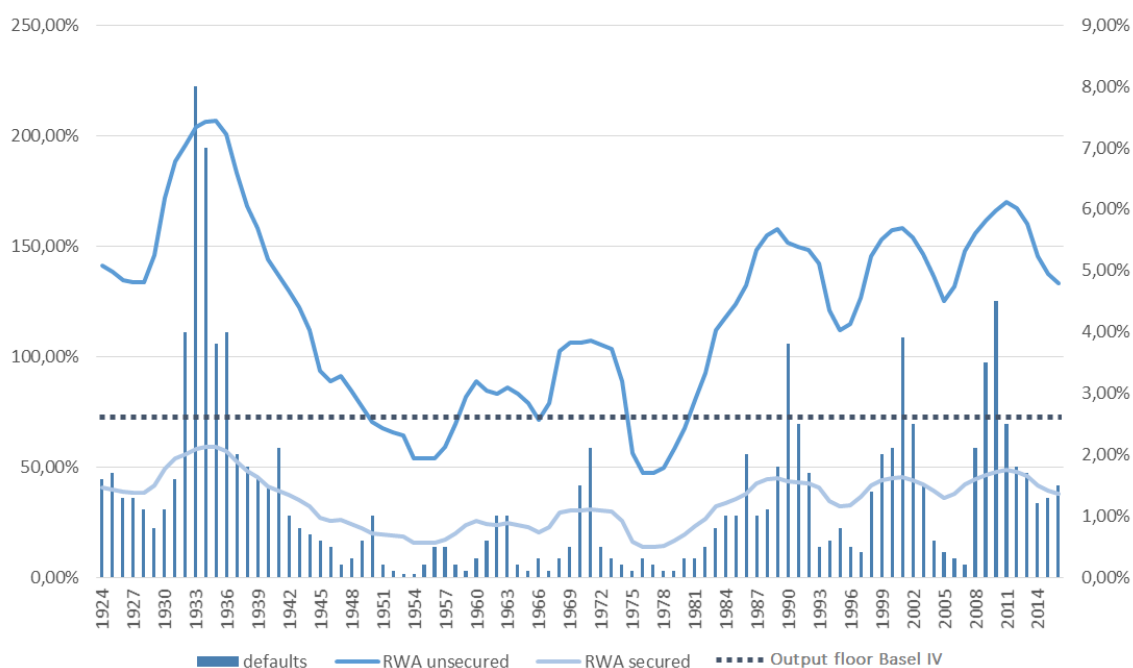


Illustration 55 – Level of RWA (unsecured and secured) and Output floor in relation to defaults

This poses the dilemma: given that this system of regulatory capital imposition is not applicable to the entire perimeter of the shadow banking institutions²²⁹ and, conversely, is this capital system, that has been (and continues to be) an element that protects bank depositors from the direct negative effects of the various crises of the 2000s, what would happen if a crisis occurred in the shadow banking sector?

The question previously posed, which is provocative, cannot be answered in this work: the objective of this paper, evident in its denomination, is to analyze if all that has been discussed in the previous Chapters, could constitute, in theory, a prerequisite for the origin of a possible crisis. Analyzing the events of 2008, the so-called sub-prime mortgage crisis was caused by various circumstances, first of all the change in the business model used by the banks connected with the high degree of confidence in the instruments for measuring and managing risk, which then had no effect as planned and expected²³⁰. The consequences of the crisis, which are still being experienced in the financial market today, have been the multiple banks domino-failures that have occurred²³¹

²²⁹ See Chapter 4

²³⁰ Reference is made to the instruments " provided for " in the regulatory framework of the various Basel agreements

²³¹ The emblematic American case that is remembered is that of the bankruptcy, in August 2008, of the American Colossus "Lehman Brothers", one of the largest American investment banks.

as well as the government interventions aimed at *bailing out*²³² the credit institutions (i.e. Bail-out tools). The events analyzed have certainly not been ignored by the European legislator, who, in the years following the crisis, carried out a wide-ranging effort to reform, harmonize and make more resilient the European banking regulatory framework, both from the point of view of *crisis prevention* (i.e. the increase in regulatory capital requirements) and from the point of view of *crisis resolution* (i.e. the implementation and simplification of a single European regulatory framework aimed at resolution of crises²³³).

Conversely, it is clear that the European regulator has not performed the same steps with regard to non-banks: in particular, as already analyzed in Chapter 4, within the shadow perimeter there are several institutions subject to different regulations dictated by different Directives. In particular, it is noticed that some institutions are subject to prudential control, imposition of regulatory capital and provisions of risk management tools (*Insurance Corporations – Directive 2009/138/EC*); others are only subject to prudential control but not yet to advanced regulatory capital systems and risk management tools (*Pension Funds – Directive 2016/2341/EU* and *Money Market Funds – Directive 2017/1131/EU*); others, in contradiction with the highly speculative activity carried out, are not "*required*" to hold a high capital reserve or to equip themselves with sophisticated risk management tools (*Alternative Market Funds – Directive 2011/61/EU*); lastly, others operate with the resources of retail investors through digital platforms and for this reason are not subject to regulatory capital disciplines but only risk management (*Peer-to-Peer Lending – Directive 2007/64/EC*).

In the author's view, this inhomogeneity in term of discipline is unjustified and erroneous since it does not take account of the ever-increasing interconnection between this phenomenon and the banking perimeter and the real economy, such that a regulatory gap in this perimeter could cause a serious *financial abyss*.

²³² For the European case, it is worth mentioning the many rescue plans for credit institutions in difficulty implemented by Belgium, Denmark, France, Germany, Greece, Luxembourg, the Netherlands, Portugal and Sweden, which, in total, have reached 3,166 billion euros (2,443 billion in the form of guarantees, 472 billion in the form of recapitalizations, 251 billion in the form of credit lines and loans).; In America it is remembered the already mentioned maxi rescue of the insurance company AIG to which was granted a loan of 200 billion by the FED

²³³ See Chapter 4

In consideration of the above-mentioned aspects, therefore, it is expected that, in the absence of a considerable regulatory effort aimed at eliminating the "*regulatory gap*" between the banking and non-banking sectors – and within the non-banking sector itself, the *next financial crisis* may occur precisely on the basis of the inefficiencies of the shadow sector, in particular as a result of the lack of instruments for measuring and managing credit risk and the absence of an adequate regulatory capital buffer.

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