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**"MUTUAL AND COOPERATIVE BANKS: THE REFORM OF**  
**CORPORATE GOVERNANCE"**

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## Introduction

The financial world, in the last years, is facing a rather daring and dire, situation. Not only the banking sector is suffering, but also all the other aspect of the financial world. This is in main part due to the Economic crisis, which inflicted itself upon the market in the late 2008 – beginning of 2009. As of today, the world is still facing its consequences, though withstanding to quite tumultuous “waters”. The Cooperative Banks were, and are, a part of the financial world who, maybe, has taken the most affront in the aftermath.

There are three main aspect that the BCC are expected to face: the one related to the aftermath of crisis, the poor supervision and management and also the ever going process of technological progress. As such, it become obvious that the BCC sector was in need of a drastic change, as to become stronger in the face of new possibilities and obligations.

The process has been put in motion in 2016, with the law nr. 49/2016. This law has implemented the reform of BCC system in Italy, totally reorganizing the organizational set-up of such banks. The main aim was to integrate the cooperative banks, as to create banking groups. The expected results are that the banks were be better suited to respond to the new market context, by sharing the burdens, and better management by adhering to a group of bank, having imposed a parent as a overseer.

Whether the results will be favorable, and the goal reached remains to be seen, however, the most important and rather ambiguous aspect within the reform remains the cohesion contract. The latter governs the power, expectations and obligations of both sides: the parent of the group, and the adhering banks. However, for the drafting of the cohesion contract, the reform gives only the minimum indications regarding the basis upon which it should be based. The reform provides only the purpose of the contract, leaving to the parent of the group the freedom to choose upon which principles to draft it.

In this context, understanding the principles upon which a bank might choose to build its cohesion contract for the adhering banks to commit to, attracts particular interest.

This thesis presents a few sources of inspiration for the parent company, analyzing several frameworks whose principles can be put at the core of the cohesion contracts. It is then provided an analysis of whether the Credit Default Swaps can provide an insight regarding the financial distress of the bank, and whether such aspects as bank's profitability, liquidity profile, efficiency follow the trend of the CDS spread of such banks. The analysis considers banks during the timespan between 2008 and 2016.

The thesis chapters are organized as follows.

*Chapter 1* focuses upon the banking system, its history putting an emphasis on the historical background of cooperative banks. The main part related to their regulation and the reason behind their success. Here I provide insights related to the main problems plaguing the banking sector until recent day, and the need for a drastic change.

*Chapter 2* provides insights regarding the reform of the BCC, relating the importance of corporate governance and the reasons behind the reform of the later. I here provide an in-depth analysis of the reform itself, its main provision, highlighting the issue behind the cohesion contract, and lack of specific guidelines for it. The timeline and the expected results of the reform are also discussed.

The *3<sup>rd</sup> Chapter* is related to the main aspect of this thesis. Its aim is to provide the mentioned financial principles which could be used as building blocks for the cohesion contracts. An in depth analysis is provided for several such frameworks as Fondo di Tutela Interbancario dei Depositi (FTID), Bank Recovery and Resolution Directive (BRRD), Rating Agencies, Internal Capital Adequacy Assessment Process (ICAAP) and Supervisory review and evaluation process (SREP). Each of the mentioned framework can provide guidelines, or rather specific principles to be used for the drafting of cohesion contracts.



The 4<sup>th</sup> Chapter is related to the second part of thesis, thus follows more the technicalities rather than the theoretical part. Hereby, I try to provide insights whether the Credit Default Swaps stand as a good proxy of banks' financial situation. This chapter provides a literature review of the matter, citing researches which found in their analysis that the CDS provide more information richness regarding the risk level of the bank, comparing with stock market or bond market. I then follow with the explanation of the financial ratios which we used for building the econometric model used in the analysis.

And last, the 5<sup>th</sup> Chapter which assesses the correlation between financial ratios retrieved from the Financial Statements and Annual reports of the banks and the CDS spread. Hereby is assessed whether truly the CDS spread, its changes on the market could be explained by the accounting ratios. As a reference were chosen the ratios which constitute the core of the FTID analysis of riskiness. The choice was influenced by the fact that such ratios, albeit being only five, prove to be enough to analyze every aspect of bank's financial position. Hereby are also provided conclusions and findings regarding the empirical results, with some proposals for future development and analyses.



# Chapter 1: Cooperative Banks – their evolution and regulation

## 1.1. Historical summary

The Italian financial system is one of the oldest in Europe. Its roots run deep in the old financial system, that functioned on the basis of gold and silver coins, the city of medieval Italy - Florence, Genoa, Venice, etc. It is these cities where the first banks, exchanges, financial institutions and other elements of a now-conventional financial system appeared.

The history of banking states that, presumably, the Italian banking system was founded in 14<sup>th</sup> century, with the whole banking activity dominated in that time by the famous Bardi and Peruzzi families<sup>1</sup>. “*Both these banks extended substantial loans to Edward III of England to finance the 100 years war against France.* Then in 1397 was founded Banca Monte dei Paschi di Siena, headquartered in Siena, Italy, the oldest Italian bank which is still operating until present days. Although it might have been one of the oldest, it is not the first and not one of the most successful to evolve during the time.

The main characteristics of the modern Italian banking system have been shaped up in the 20s/30s of XIX<sup>th</sup> century. After the economic crisis of the 1929-1932 that started in the USA and successfully reached Europe the Italian banks faces difficulties due to the fact that they had financed big enterprises that had found themselves in dire financial situations, so the government has been forced to initiate the nationalization of a big part of the banks<sup>2</sup>, and to institutionalize the Comitato Interministeriale per il Credito ed il Risparmio (CICR) and the Central Bank of Italy - Banca d'Italia.

The main functions<sup>3</sup> of CICR are:

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<sup>1</sup> “*The Bardi family were an influential Florentine family that started the powerful banking company, the Compagnia dei Bardi. The Peruzzi were bankers of Florence, among the leading families of the city in the 14th century, before the rise to prominence of the Medici*” – source: <https://en.wikipedia.org>

<sup>2</sup> The largest of the Italian banks remained nationalized until the beginning of the 1993 when the process of privatization was started.

<sup>3</sup> As stipulated by Consolidated Law on Banking (*it.* Testo unico bancario TUB d.lgs. 1° settembre 1993, n. 385)

- ensuring the normal functioning of the credit system in Italy;
- developing a credit policy and monitoring its implementation;
- the control of all the important structural changes in the banking system, the opening of the new credit institutions and revoking of licenses. With the approval of the Committee the CICR makes changes in the bank's statute and changes in the appointment to senior posts;

and much more. Despite the multiplicity of functions, CICR has no right to exercise direct control over the credit system. This function is delegated to the central bank.

## 1.2. The banking sector

The Italian central bank was founded in 1893, with the merging of the 3 biggest banks at the moment: Banca Nazionale nel Regno d'Italia, Banca Nazionale Toscana and Banca Toscana di credito per le industrie e il Commercio. Already starting from 1893 the bank has a close relationship with the state, despite the fact that is a legal entity – a privately owned company.

In 1926, during the reorganization of the Italian system of credit institutions, the Bank was put in charge of credit institutions, he receives the exclusive rights to issue banknotes and begins to perform the functions of the central bank.

Though years after, with the enactment of the Consolidated Law on Banking (it. Testo Unico Bancario, hereinafter TUB) under the Legislative Decree no. 385/1993<sup>4</sup>, the article 1, 1° co., lett. b) defines the bank as “*an institution authorized to carry out banking activities*”.

The banks play the role of a government agent, issues licenses to financial institutions allowing to conduct relevant banking and financial transactions. Just like other central banks of the EU, the Italian central bank acts in accordance with the specified rules of European Monetary System (EMS), in coordination with the ECB and the European System of Central

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<sup>4</sup> Updated version of the Legislative Decree of 21 April 2016, n. 72

Banks. The second level of the credit system is represented by commercial banks and specialized credit institutions.

The second level - are the *commercial banks*. According to Bank of Italy at the beginning of 21<sup>st</sup> century there were approximately 841 Italian banks. 1/3 of them was part of banking groups. *“The statistical data demonstrates that 240 banks have been incorporated as stock-exchange-listed companies these accounting for about eighty percent of the sector’s total assets, while the shares of savings banks and mutual banks are respectively 12 percent and 4.4 percent of the assets.”*<sup>5</sup>

It is stated that the world’s oldest bank (Monte dei Paschi di Siena) has been placed only on the 3<sup>rd</sup> place, yielding the first two to UniCredit and Intesa Sanpaolo.

The system of commercial banks in the past few years has suffered major changes which occurred due to the deterioration of the overall position of Italy, banking problems, sovereign debt and also, to some extent, due to the close "connection" of many banks with the Bank of Greece<sup>6</sup>.

In the last decade or more the Italian banking system has been evolving at a very high-speed pace. In its structure (besides the central and commercial banks) includes also the cooperative ones, which represent very specific kind of banks.

### 1.3. The cooperative banks

Cooperation is one of the antique ideologies, taking a part in peoples’ life since the human beings first appeared on earth, guiding them toward prosperity, as soon as people found out that cooperating that is the best way to survive in world’s harsh condition.

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<sup>5</sup> “Italian Commercial Banks” Article Source: <http://www.commercialbanksguide.com/> -

<sup>6</sup> Reference made to the “The Greek government-debt crisis” (also known as the Greek Depression) is the sovereign debt crisis faced by Greece in the aftermath of the financial crisis of 2007–08. The Greek crisis started in late 2009, triggered by the turmoil of the Great Recession, structural weaknesses in the Greek economy, and revelations that previous data on government debt levels and deficits had been undercounted by the Greek government” - source: <https://en.wikipedia.org>

The cooperation develops first in the agricultural sector, where poor people and artisans decided to unite due to a scarce presence of machineries. By uniting they would've had the opportunity to have access to machineries and inventories, without having to pay the full price to own them. The cooperative ideology was first explained by Robert Owen<sup>7</sup> which proposed, after seeing the stagnation that Napoleon wars have brought upon the UK, to settle up people into working associations, creating a society where everyone plays their role, and contributes to better living conditions, all the while benefiting from it. This was the prototype of a “true cooperative”

The cooperative ideology has, since then, passed to other sectors, until in 1859 has been founded the first “Banche Popolari”

To better understand the Bcc it is opportune to specify that the ancestors of cooperative banks were the so-called “Casse Rurali” according to Renzo Costi<sup>8</sup>, (Costi, 2007). They evaluated throughout the years into being more complex.

The first event that contributed to the founding of the Casse Rurali was the work of such distinction scholars as Friedrich Wilhelm Raiffeisen<sup>9</sup> that in 1862 has instituted his first credit union in Germany, who's a model of cooperation based on “localism” and “cristian motivations”. This model was taken over to Italy and with the help of Wollemborg<sup>10</sup> that in 1893 has laid the foundation for establishing the rural banks also in Italy, being inspired by

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<sup>7</sup> Robert Owen (May 1771 – November 1858) – a Welsh social reformer and one of the founders of utopian socialism and the cooperative movement. Source: Wikipedia.org

<sup>8</sup> Renzo Costi specifies in his book “*L'ordinamento bancario*”, 2007

<sup>9</sup> Friedrich Wilhelm Raiffeisen (1818 - 1888) was a pioneer of rural credit unions. After his named have been named several credit union systems. In his book “The credit-banks as a mean to fight the misery of the rural population as well as the urban artisans and workers” he expressed his thoughts about the ways to combat the social problems in villages was the credit cooperatives, united with the production cooperative. His idea of cooperatives states that the members are not required to make quota-payments of admissions, to purchase company shares but also do not have the right to participate in the profit. The cooperative allocates funds to the formation of a common capital, it needs to buy the necessary materials and items for the domestic needs of the country and to fulfill the credit operations.

<sup>10</sup> Leone Wollemborg (1859-1932), Italian politician and economist, born in Padova. He made significant contributions to the idea of “cooperativity”, basing this idea on the Christian perception of cooperation and solidarity. He made significant contributions to the spread of cooperative enterprises, specifically rural credit unions and agricultural cooperative banks. – source: Wikipedia.org

Raiffaisen's model, implementing the spirit of cooperation – a credit tool for improving the economic conditions of the poor. As a consequence of this movement, Wollemborg founded the first rural bank in Italy – in Loreggia, Padova in 1883, meanwhile Cerutti, a couple of years later, founds the first Cassa Rurale Cattolica in Gambarare, province of Venice.

As a result of the development of rural banks, in 1905 the government undertook the attempt to found the Federazione Italiana delle Casse Rurali, struggling to institute it until 1917 in Rome, when it was finally recognized. Its purpose was to represent and protect the group, whilst promoting and improving the associated banks. 33 years later (in 1950) was substituted by Federazione Italiana delle Cassa Rurali e Artigiane.

The cooperative banks for Italy were and remain a huge part of its history. From the beginning, a big share in the Italian banking system has had the local banks, organized in the form of the cooperative. The Banca di Credito Cooperativo (BCC) and Cassa di Risparmio (CR) were local banks, or better “territorial” banks, (the founders of such banks being set in within the same territory where the bank was founded. Together with mutual banks, they were always significant for the banking sector and still continue to hold that position.

With the rise of fascism, the banks have faced a lots of opposition and a rough decline, due to the fact that the idea of cooperation and organization between the citizens and state was heavily opposed by the fascist regime, hence starting from year 1922, when the rise of the fascism took place, the accelerated development of cooperative bank (or whatever form of cooperative organizations were formed) was interrupted, or even more so – many banks were being forced to close.

### **BCC regulation**

In 1937 the Testo Unico delle Casse Rurali e Artigiane (T.U.C.R.A.) is enacted, which, however, does not favoring the numerical expansion of the Rural Banks after their decrease in number after the fascist regime. Their numbers had considerably lessened from almost 3500 in the 1922 – to just 804 in 1947.

Starting from 1993 the functioning of the cooperative banks was greatly influenced when the Consolidated Banking Law (TUB) Legislative Decree 385 of 1 September 1993 was adopted. The articles nr. 33 to nr. 37 are related to the cooperative banks, and specify duties, obligations, and rights of each cooperative bank.

Four years later, in 1997 was created the founded the Depositors' Guarantee Fund of the Credito Cooperativo (*it.* Fondo di Garanzia dei Depositanti del Credito Cooperativo). The aim of funding the Guarantee fund was to ensure an adequate protection to the depositor in the BCC consortium.

In 2004 was founded the Bondholders' Guarantee Fund of the Credito Cooperativo (*it.* Fondo di Garanzia degli Obbligazionisti del Credito Cooperativo), to protect the credit rights of bondholders. At that time the cooperative bank was the only one that was offering such a guarantee to their clients.

### **The success of Cooperative Banks:**

As a matter a fact, the cooperative banks had had always faced success, growing during the of 19<sup>th</sup> – beginning of 20<sup>th</sup> century to reach almost 23% of the total loan amount of loans on the market (specifically in 1910). Although they might have seen a slight decrease, and a decline, almost in the '30<sup>s</sup> when their share dropped below 10%, their share went up after the war.

The European Association of Co-operative banks (EACB)<sup>11</sup> had provided states that the mission of this banks are “*is to promote the economic interest of their members, who are their customers. [Co-operative banks] do so by offering quality products and services at attractive prices from the perspective of what is good for the customer. They have an impact presence on the conditions of products in the whole banking market and support the economic and social integration of individuals*”

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<sup>11</sup> *The European Association of Co-operative Banks* (EACB ) is the leading trade association for the co-operative banking sector with 31 member institutions and co-operative banks located in 24 countries worldwide. Source: <https://en.wikipedia.org/>



The services offered by these type of bank, the products, the methods used by them when building up relationships with its customers, are not straight positive. Nonetheless, despite the existing of some negative sides in the organizations of its working process, it is indisputable that the cooperative banks have their share of influence in the progressing of the Italian economy.

Such banks have two main functions: one will be to act as a financial intermediary, attracting savings and giving loans and as an organization, taking on social responsibility. This means that they offer a full range of banking products and services, typical for and carried out by other banks, but also have certain features. For example, offering loans on very favorable terms to their founders but the key feature of cooperative banks is that they aim to build long-term relationships with its own clients, often interacting with the local social and political institutions, being actively involved in the life of the local community, which is familiar to them in detail and to the development of which they contribute to a large extent.

Nonetheless, facing many obstacles, especially during the fascist regime, the activity of Italian cooperative banking system during more than 130 years since its foundations proved not only the ability to overcome the crisis, occupy a worthy competitive position in the market, territorial distribution of branches and service network, but also to serve as an intermediary of social credit, which is particularly required by customers in the period of financial turmoil.

What makes them also different from the usual commercial banks, is that the cooperative banking system is prone to using the traditional “relationship lending”, that is *“the process of collecting private, customer-specific information on potential borrowers, and then using it to engage in profitable banking activities”* (Scott, 2006). Thus, they’re more inclined to use both “soft” information and “hard” when making the decision to lend money to a certain company, but when the hard information is objective, quantifiable and can be analyzed without the presence of the gatherer, the soft information will always be subjective, having little value, due to the fact that in fact, it represents only the personal assessment and

opinion of the loan officer. It is stated that Cooperative banks rely on the soft information when assessing their clients due to their specific governance, regulation, values, and missions (Cornée, 2014). Such financial institutions put a great emphasis on the personal characteristics of the persons/company asking for loans and judge the possibility of its future success and development based on the rumors and information gathered in the area (Cornée, 2014).

For Italian regional banks, an important characteristic was the implementation of certain *credit philosophy* that involves lending money to the client only based on the assessment of his honesty and decency, information retrieved from psychological tests. However, in this case, the bank's employees will automatically seriously endanger the entire region since the lending of money focuses more on the morality of the client and less on financial terms of the transaction. (Boot, 2000) For instance, for individuals - the bank can be less diligent when calculating the creditworthiness, meanwhile for legal entities - when determining the principal amount of money to be lent could analyze the balance sheet less than needed). The dense network of interconnected entities can launch a chain of negative consequences in the whole region in the case of non-repayment of some loans.

## Chapter 2: The Reform of Mutual and Cooperative Banks

At present state, the European banking sector is highly fragmented and some of its premises seem to be ill-chosen. In some countries and financial institutions this problem can be observed in a more acute form, but in general this sector is working with a profitability level that is barely lower than the cost of capital employed (cost of equity), while it retains such large volumes of non-performing loans and hard-to-measure assets, all of it being sufficient to have a tremendous negative impact on the bank's capitalization for lots of years to come.

The financial system was constantly subject to inefficient controlling actions and ineffective supervision frameworks. The crisis from 2008-2009 exposed all of financial system's weaknesses, implying that the whole framework was in a dire need of being revised. An adequate example would be Italy with its paralyzed banking sector that not only prevents the revival of the Italian economy but also slows down the investment processes.

Over the years, the cooperative banks and their influence over the financial "soundness" of the banking sector has received little attention, comparing with commercial banks. This discrimination toward the cooperative banks seems inappropriate, taking into account that the cooperative banks hold a considerable share of the banking sector, a few of them even being leading players in it.

It is argued that the Italian Banks are full of weaknesses in front of the everlasting progress. The weaknesses might be their size – where the small ones face problems related to the risks, or with the impossibility to be progressive, and the big ones can be influenced by their excessive concentration of the credit risk – or also might be related to their juridical form.

As it can be seen from the table below, with over 300 banks, a large number of branches and too many employees working in the sector, the Italian banking system might be facing enormous maintenance costs. The problem is aggravated even more by the fact that lots of

the banks are too small, or too outdated or operate in an irrational way, that makes it quite difficult to gain profits.

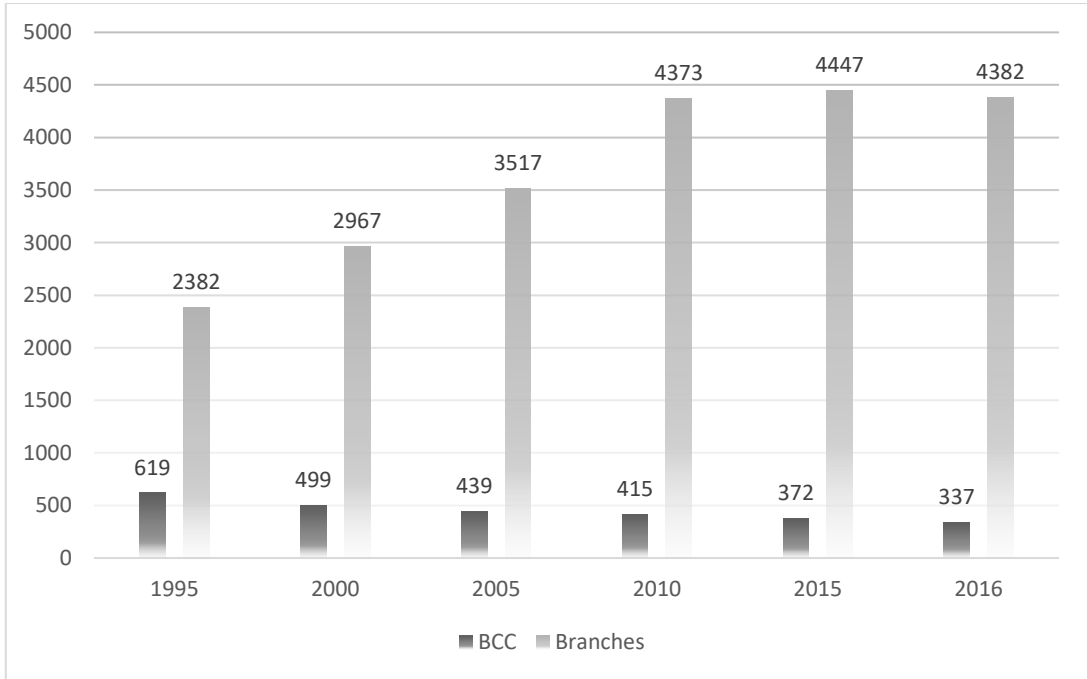


Chart 1: The dynamics of BCC and their branches in the period 1995 - 2016<sup>12</sup>  
 Source: <http://www.creditocooperativo.it/>  
<https://infostat.bancaditalia.it>

Despite the problems that the Italian banking sector was facing and the long recession, it still has proven to be sound and resilient, being able to withstand shocks and adapt to all the changes. Nevertheless, the extensive financial crisis that the system was subject to - until late 2014 – with the 10% GDP drop, and a 25% drop in industrial production, the amount of Non-Performing Loans (NPL) in bank’s balance sheets was well above the admitted level.

In a fair view, while comparing with other countries within the EU, we might find that the Italian Banking system was not so affected by the 2007-2008 crisis, having the advantage

<sup>12</sup> Data as of September 2016

over other banks within Eurozone. The impact of the crisis was heavier for the emerging economies as a whole, their banking sector being much more exposed to the derivatives, which had played the central role in the aforementioned crisis. It's worth noticing that Italian banks were also less exposed to the real estate problem, which acted as a trigger for the derivative hot-potato effect. The robustness of Italian system is undeniable as whole, its critical issue representing the critical amount of accumulated NPL. Italian banking sector's troubles seem to represent the apex of the entire European zone problems lately, with many EU sources asking the same question: whether the next financial crisis is on its way?

At the end of the day, the Italian government decided to take control over the dire situation of the banking sector, by developing a healthy plan of restructuring, consolidation, and recapitalization of the system, that can put an end to the poor management that was going on for decades.

## 2.1. The issues of corporate governance

*"After 20 years we are taking action regarding cooperative banks..."*

*Italian Prime Minister Matteo Renzi.*

*20<sup>th</sup> of January 2015*

The table reported above emphasized that the BCC indeed reflect a very significant presence in the Italian banking sector. They currently hold more approximately 7.7% of the deposits in Italy. Being founded at the end of the 19<sup>th</sup> century, the banks have indeed managed to affront periods of deep crisis, and successfully overcome them.

Despite the robustness of the system, BCC still presented issues related to the governance, and order to affront also them the Govern has also presented a comprehensive set of measures. Subsequently this recognized as the *Reform of Corporate Governance*. The issues might be presented as follows:

## **Credit risk**

One of the first issues that stimulated the reform of governance was related to the *credit risk* of the banks. This riskiness has its roots (in part) in the long recession following the 2008 crisis, which had also a tremendous impact on BCC's. Beside the recession, the fact that BCC's are also called *territorial banks* denotes that BCC's have a limited possibility to diversify their portfolio, unlike the banks operating worldwide. Some argue that this effect of credit riskiness was also enhanced by the fact that the BCC's had made bad choices were consumers were concerned. The BCC's were taking on clients previously refused by other banks, during the acute financial crisis. The choices had an immediate impact upon their capital.

The Non-Performing loans had triggered a series of costly adjustments, which followed up by absorbing the earnings. This precluded bank's possibility to grant new credit. Since the BCC might increase their capital exclusively through self-financing, this option had gradually become impossible. Moreover, the speed with which the new institutional and regulatory framework evolve, a simple injection of capital within BCC will still not be enough. The increasingly low interest rates and the loan disbursement stagnation, the bank's profitability has swayed dangerously.

Since the BCC were founded in the 19<sup>th</sup> century, it became evident that the choices and methods used to affront the new realities of the financial world has as well become outdated. The credit management modus operandi often rise conflict of interests, due to the fact that the controlling structures were not always able to correctly evaluate the level of risk the banks are exposed to.

The reform of BCC would in fact permit the Government to handle all the aforementioned shortcomings and vulnerabilities of the system.

## 2.2. The reform's timeline

The process of modification has started in 20<sup>th</sup> of January 2015, where the Council of Ministers has given green light to the reform of the Italian Banking sector. The reform has taken almost a year to be implemented. Subsequently, on 10<sup>th</sup> of February 2016, the government has approved it and adopted by the Decree-Law Nr. 18 of 14<sup>th</sup> February 2016<sup>13</sup>, converted with amendments by Law No. 49 of 8<sup>th</sup> April 2016.

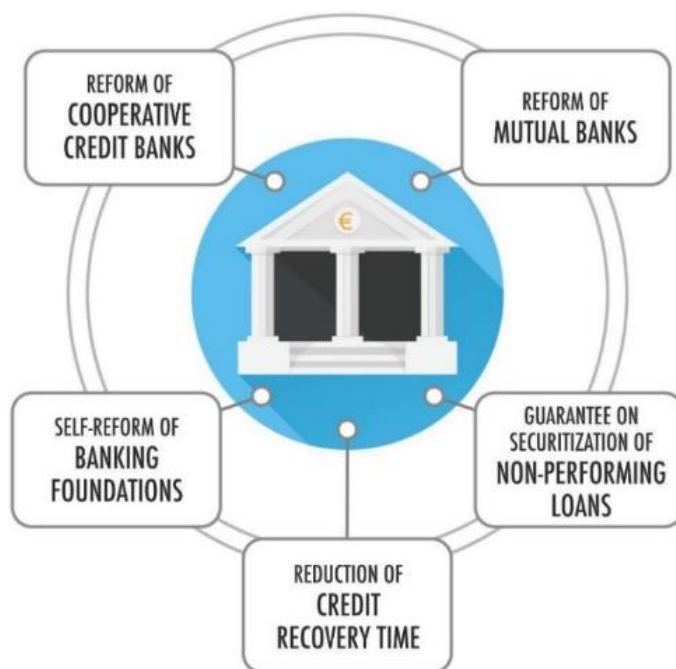


Figure 1: Key reforms of the Italian Banking System.  
Source: Ministero dell'Economia e delle Finanze

From 15 April 2016 has therefore come in force *The Reform of Cooperative Banks*. The specific reform's purpose is mainly:

- i) to reform the Italian BCC, and
- ii) to solve the non-performing loans issue.

<sup>13</sup> The Decree came into force after its publication in Official Gazette on 15 February 2016; Source: <http://www.gazzettaufficiale.it/eli/id/2016/2/15/16G00025/sg>

One of the most important premises of the new Decree has been:

- a) the Italian Cooperative banks are forced to join a group. Those banks who were unwilling to join a group, and those whose amount of assets exceeds 8 billion €, were allowed and, respectively, forced to become an S.p.A.
- b) the group who the other banks will join to (holding or parent) is bound to have a 1 billion € in capitalization, and also to get his approval from the Bank of Italy. The law itself does not specifically say which one of the 3 institutions - Cassa Centrale Banca, Cassa Centrale Raiffeisen or ICCREA Holding SpA – is to be appointed as the holding company, but as such only one of the three, the ICCREA Holding SpA, meets the requirement of having the necessary 1 billion € capitalizations, thus is most likely to play the role of the parent.
- c) the adherence to the parent, and the governance will be governed and organized by the so-called “*cohesion contracts*”<sup>14</sup>, that represents a mechanism of delegation of function and powers to the parent (holding) company.
- d) the capitalization of the BCC will be subject to some reforms as well, specifically that
  - i) a single shareholder’s share capital in the BCC have been incremented from € 50,000 to € 100,000;<sup>15</sup>
  - ii) previously maximum number of shareholders has been 200, whether now being increased to 500<sup>16</sup>
  - iii) BCC may be allowed to issue shares, but only with Bank of Italy’s approval.<sup>17</sup>

As the BCC banks are bound to adhere to the holding company through the *cohesion contract*, they all have a set of characteristics that they are bound to be compliant with,

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<sup>14</sup> The Cohesion contract will be explained in detail the in the next sub-chapter 2.3

<sup>15</sup> Decree-Law Nr. 18 of 14th February 2016 - Art. 2b

<sup>16</sup> Decree-Law Nr. 18 of 14th February 2016 - Art. 2a

<sup>17</sup> Decree-Law Nr. 18 of 14th February 2016 - Art. 7c



forming a *Cooperative Banking Groups* (hereinafter **Groups**). The parent company responsibilities are specifically explained by the Art.1 3b (1)

Art. 1 ("Art. 37-bis) 3b (1) of the Decree 18/2016:

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“The powers of the parent company include:

The identification and implementation of strategic and operational objectives for the group as well as other powers necessary for the activities' management and coordination, proportionate to the risk level of member-banks, including control and power of influence on banks members, aimed to ensure the enforcement of prudential requirements and other provisions in the banking and financial legislation applicable to the group and its members;”

Thus the holding company, that controls the others, has to set out some of the premises and indicators that the former BCC will have to rise up to, as specified in the Art.1 3d:

Art. 1 ("Art. 37-bis) 3d of the Decree 18/2016:

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“The powers of the parent company include:

[providing] the criteria and conditions for membership, as well as membership denial, and exclusion from the group, according to non-discriminatory criteria in line with the principle of solidarity' among the cooperative bank...”

These criteria and conditions for membership are not specified yet, but their provision are vital, allowing the holding to understand the riskiness of the future group member.

At the end of the day the reforms mentioned above are called upon in order *to reorganize* such a large part of the Italian Banking System.

Concerning the reform of cooperative credit – the transformation of the largest banks into S.p.as might be the optimal way to remodel the complexity and size, since such banks (with assets exceeding 8 billion €) has long since lost the *territorial bank* status and character.

Meanwhile, the reform of the BCC is focused quite on the opposite, maintaining the character and distinctiveness of such banks. Despite the issue of some European Supervisory and Resolution, mechanisms, these should not hinder the support of local territorial

economies. It has become necessary to manage not only the efficiency, costs and quality, but also combine it all with the structural peculiarity and culture.

On 2<sup>nd</sup> of November 2016 Bank of Italy publishes the 19<sup>th</sup> update to the Circular no. 285 of 17 December 2013, in which it lays down specific provisions for banks supervision. The bank inserted in the third part the fifth chapter concerning the “*Cooperative banking group*”, which is implemented in articles. 37-bis and 37-ter of the Consolidated Banking Act introduced by the reform of cooperative banks referred to in Law Decree of 14 February 2016, n. 18, converted into law, with amendments on April 8, 2016. The specific provisions are related in particular, to the minimum organizational and operational requirements of the parent company, the minimum content of cohesion contract, the process for the constitution of the Cooperative Banking Group and its membership, to the specific requirements, including the minimum requirement equity of the parent company.

### 2.3. Cohesion contracts

The *Cohesion contract* (*it. contratto di coesione*) represents a sort of *hand-off responsibilities* from the BCC to the holding company of the group. However, is not giving the parent company full freedom. The cohesion contract will also discipline the obligations and responsibilities of the parent, in particular. The cohesion contract is not about compensation or distribution the common advantages from the signing it. By signing it, the bank is handing the parent company the rights to coordinate and manage it in accordance with the principles stipulated within the contract. The member bank of the group will still hold their own powers and will be left owners of their own assets. Besides, they will also hold a certain level of freedom in its managing. The group leader will be only expected to direct and control the group members, for retaining their risk level at plausible, best spelled lower, levels.

ECB defines the Cohesion contracts as an instrument that “*sets out the powers of the parent company, in accordance with the principle of mutuality, including:*

- (i) *the power to identify and implement the strategic orientation and operational objectives of the Group adjusted to the risk level of the BCC in question;*
- (ii) *the power to approve or reject, in exceptional cases, the appointment of one or more BCCs' board members up to the majority of its members; and*
- (iii) *the power to expel a BCC from the Group in the event of a serious breach of one or more of the terms of the cohesion contract, and other types of sanction proportionate to the seriousness of the breach in question.*

*Cohesion contracts also provide for joint and several guarantees of the obligations assumed by the parent company and the BCCs, in accordance with the prudential regulations of the Groups and individual banks in the Group*<sup>18</sup>.

Bank of Italy defines that *“the parent company can recapitalize BCCs in difficulty through ‘financing shares’, a special category of shares that are fully eligible for inclusion in the core equity capital (CET1) of the issuing BCC. In order to allow a large investment in relation to a BCC’s capital and to ensure that the financial intervention includes sufficient rights of governance, intervention by the parent company is not restricted to the limits as to amount, location and voting rights usually applying to any cooperative shareholder of the BCC.”*<sup>19</sup> Meanwhile in the 19th updated of circular 285 defines the contract as *“the agreement between the parent company and affiliate banks, in art. 37a, paragraph 3 of the TUB”*

The bank signing the contract would be assessed on individual basis, and evaluated based on its worthiness. The level of autonomy of all the banks within the group will be will be proportional to their risk level, which is defined based on the individually determined parameters. Based on which parameters the parent bank should base his analysis will be discussed later on in the chapter 3.

The parent retains the rights to appoint/remove the management boards of its BCC, as well as the right to expel the bank from the group should it find it necessary. Besides the

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<sup>18</sup> Opinion of the European Central Bank of 24 March 2016 on the reform of cooperative banks, a guarantee scheme for securitizations of non-performing loans and the lending capacity of alternative investment funds (CON/2016/17)

<sup>19</sup> *“Italy’s less significant banks: general overview and supervision”* by Bank of Italy, 2016

parent will also be able to impose sanctions and initiate corrective actions regarding the banks in the group. It is stated that, most often, the shares of the parent will be held by the same BCCs.

It is to be stated, that there is no final version of the contract. The reform has not provided a delineated version of the contract for the group leaders to draft the contracts for their own groups. There's a certain level of confusion enthralled within the notion of the cohesion contract, thus it leave room for speculation. The core reason behind the thesis is to understand which of the financial frameworks should be better used by the group leader upon drafting their own contracts. As it is based on analyzing the risk level of the members, such financial institution like rating agencies or FTID come in handy. Each institution has their own framework, with their own pillars to analyze the riskiness of the companies, and provide a judgement. I will take into account the possible sources, and analyze in more in detail in chapter 3.

#### 2.4. Reform's expected Impact

Alessandro Azzi, the president of Federcasse defines the reform as "*good*" and "*capable of preserving the leading social role and territorial autonomy which has always been characteristic of BCC*", while hoping "*that already in 2017 or at the end of 2017 will be able to cross the finish line*".

However, as of late, the circular of ECB published in 2016<sup>20</sup> stipulates that reaction of the ECB is quite general regarding the reform. In general the ECB anticipates the same positive reactions and from the banks themselves. However, it stipulates in the same circular, that the parent bank's exclusive powers to direct and coordinate the bank which have affiliated, has to be more clarified. It represent a too ample and ambiguous notion, to specifically understand the expected obligations. Also, the ECB have emphasized how it

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<sup>20</sup> Opinion of the European Central Bank of 31 August 2016 on the Banca d'Italia's circular implementing the reform of Italian cooperative banks (CON/2016/41)

would be useful to define explicitly the main objective of the reform, namely to define the exclusive management and co-ordination powers of the parent company on the affiliated banks, and also specify that the operational support structures of the subsidiaries remain functionally dependent on the functions Parent company control. They mentions that “*the draft circular does not fully clarify the parent bank’s decision making powers with regard to granting loans over a certain amount*” (ECB, 2016) and that, according to Italian legislation, the parent should lack such powers to approve any loan, or guarantee. That said, the ECB highlights some of the criticalities that could undermine the effectiveness of the newly introduced reform.

It is to mention that, disregarding the fact that the EC is looking favorably upon the reform, it does not mean that the market itself has a positive reactions. Since the publishing of the Decree law, the banks went into an uproar. They have argued that the reform disregards the principles of enterprise freedom (imposes dissolution of the dissent and contractual domination over the others) and the principles of equality (a fifteen larger BCCs have rights that do not have the fewest). Various sources have claimed that the reform will not, in truth, work in favor of the market, but will weaken the cooperative system and increases systemic risk. Since the banks which adhere to the group have to transfer amount to the group, the fear is that better bank will be depleted in favor of those worst managed, since it is up to the parent how to manager the gathered funds.



## Chapter 3: Cohesion Contracts: References for principles

As a reference for setting out the indicators could be taken many supervisory institutions and Review Frameworks. For a reference, an analysis of possible frameworks such as Fondo Interbancario di Tutela dei Depositi (FITD), Bank Recovery and Resolution Directive – BRRD, Supervisory review and evaluation process – SREP, Internal Capital Adequacy Assessment Process – ICAAP and Rating Agencies was in order. Each of these framework could provide an insight as of how the group leader should frame the Cohesion Contract with

### 3.1. Interbank Deposit Protection Fund – FITD

The Interbank Deposit Protection Fund (*it.* Fondo Interbancario di Tutela dei Depositi (FITD)) was first institutionalized in 1987 and represents a private law consortium founded on a voluntary basis first, which subsequently become mandatory. The Fund, supervised by the Bank of Italy, acts as a deposit guarantee institution to those banks that adhere to it, that are all the banks except the cooperative and mutual ones (that, nonetheless, have the same type of deposit insurance provided by the Fondo di Garanzia dei Depositanti del Credito Cooperativo (FGDCC)).

The Fund provides every depositor with a refund of the deposit. The maximum was, until recently, equal to 103,291.38 €, but was subsequently reduced to only 100,000 €. As a compensation for the reduction of the insured amount, the recovery procedure has become much faster, thus being fixed to 7 days from the bank's liquidation decree.

The premises of the fund are set out in accordance to the directive 2014/49/EU, that modifies the provisions contained in the directive 94/19/EC, amended by the directive Nr. 2009/49/EU, regarding the limits of coverage and repayment period.

FITD carries out his deposits coverage by setting down a system of indicators and thresholds that the bank must comply with in order to receive the Fund insurance protection. The purpose is to minimize the possibility of another banking crisis and thus eliminate the risk of undergoing related to it costs. He then sets down a system of measuring the bank's riskiness and its possible issues. Its aim is i) to keep the bank at a "healthy level", and thus minimize the necessity of the fund's intervention for protecting the depositors, or protect the cost of intervention in the case one becomes necessary, and ii) to detect the riskier, as to implement actions to prevent it from going into bankruptcy, and thus requiring a financial intervention.

For being able to take advantage of the Fund protection each bank is required to pay a contribution quota, that equals

$$\text{Proportional quota}^{21} = 100 \times \frac{\text{Contribution Base}}{\text{Total Reimbursable Funds}}$$

The Fund divided the financial indicators into 2 groups: that are reported quarterly and semi-annually, and also introduced the consolidated ratios for those banks that belong to a group.

### **FITD indicators**

The main indicators are related to bank profiles: Asset Quality, Solvency, Profitability, and Liquidity. (FITD, 2012)

➤ Asset Quality Profile (A1)

$$A1 = \frac{\text{Bad debts (net of adjustments)}}{\text{Supervisory capital}}$$

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<sup>21</sup> In thousands of euros



The first of the semi-annual ratios, that determines the bank's ability to carry out potential losses, without running the risk of going into insolvency. The supervisory capital in the denominator will exclude Tier 3 elements.

➤ Solvency Profile (P)

$$P = \frac{\text{Supervisory capital, including Tier 3} - \text{Total capital requirements}}{\text{Risk weighted assets (RWA)}}$$

This indicator (previously nominated as B1) provides an insight on the bank's capital, called upon to show the excess on capital compared to risk-weighted assets.

➤ Liquidity Profile (L)

$$L = \frac{\text{Receivables from clients}}{\text{Payables from clients} + \text{Circulating bonds} + \text{structured payables from clients and bonds at FV}}$$

The indicator above shows the bank's structural liquidity.

➤ Profitability Profile (D1) (D2)

There are the two ratios – D1 and D2 – that represent the profitability profile of the Bank. The first one:

$$D1 = \frac{\textit{Operating expenses}}{\textit{Gross Income}}$$

gives a perspective on the bank’s usual business, underlining the possibility of the bank to undertake any further expenses. Meanwhile, the D2 indicator measures Losses on Loan vs Pre-Tax Profit.

$$D2 = \frac{\textit{Loan Losses (net of recoveries)}}{\textit{Profit before Tax}}$$

Indicator D2 would be calculated only if both the numerator and denominator are positive. In any other cases would be applied the following scheme.

Numerator	Denominator	Coefficient
Positive	Positive	Depends on the value of the ratio
Negative	Positive	0
Negative	Negative	0
Positive	Negative	4
Zero	Pos/Neg	0

*Table 1: D2 Indicator Calculation  
Source: Interbank Deposit Protection Fund Manual*

### Thresholds

As represented by the FITD Manual, the Fund has set out thresholds for the ratios, and according to which the banks would be divided into 5 risk classes, that is: “Low”, “Medium-Low”, “Medium”, “Medium-High” and “High”. A coefficient is then assigned to these classes, as can be seen in the table below:

	Low risk	Medium-Low risk	Medium risk	Medium-High risk	High risk
Indicator A1:	Up to 10%	from 10% to 20%	from 20% to 30%	from 30% to 50%	More than 50%
Indicator P:	More than 6%	between 3% and 6%	between 2% and 3%	between 1% and 2%	inferior to 1%
Indicator L:	Up to 90%	between 90% and 100%	between 100% and 130%	between 130% and 200%	More than 200%
Indicator D1:	Up to 60 % or operating expenses = 0	between 60% and 70%	between 70% and 80%	between 80% and 90%	More than 90 % or operating expenses < 0
Indicator D2:	Up to 20% or Loan losses <=0	between 20% and 40%	between 40% and 50%	between 50% and 60%	More than 60% or Profit before Tax < 0

Table 2: Ratios and Thresholds assigned to each class  
Source: Interbank Deposit Protection Fund Manual

There is a coefficient from 0 to 8 assigned to each class, that is:

	A1	P	L	D1	D2
Low risk	0	0	0	0	0
Medium-Low risk	1	0,5	0,5	0,5	0,5
Medium risk	2	1	1	1	1
Medium-High risk	4	2	2	2	2
High risk	8	4	4	4	4

Table 3: The coefficients assigned to each class  
Source: Interbank Deposit Protection Fund Manual

The sum of all the coefficients will give the value of the Aggregate Indicator (AI), based on the who's value the bank will be given a Statutory Position (FITD, 2012). The statutory position is represented as follows:

Value of AI	Statutory Position
from 0 to 3,5	Low risk
from 3,5 to 6,5	Medium-Low risk
from 6,5 to 8	Medium risk

from 8 to 10,5	Medium-High risk
from 10,5 to 14,5	High risk
more than 14,5	Expulsion

Table 4: Bank's statutory position according to the values of the Aggregate Indicator  
Source: Interbank Deposit Protection Fund Manual

As reported in the table, when the AI value is more than 14,5 the respective bank will not be eligible for the Fund's protection of deposits anymore.

### **Consolidate ratios for banking groups:**

Since 2012 the consolidated sheet ratios are calculated in a new way, implementing the *principle of prevalence*, meaning that bank belonging to a group would be assessed using the group information, not his individual ones, thus the bank receives the banks AI, not its own.

As mentioned, the indicators used by the FITD to assess the riskiness of the bank could be used as a reference by the parent company, for measuring the riskiness of the banks. Another reference could be the BRRD that we would discuss below.

### **3.2. Bank Recovery and Resolution Directive - BRRD**

The Bank Recovery and Resolution Directive (hereinafter "BRRD") is the Directive 2014/59 /EU of the European Parliament and of the Council of May 15, 2014, related to European rules of crisis management, which establishes a resolution framework and a recovery plan for investments firms and credit institutions. The purpose of this directive was to *"provide national authorities with common powers and instruments to pre-empt bank crises and to resolve any financial institution in an orderly manner in the event of failure, whilst preserving essential bank operations and minimizing taxpayers' exposure to losses"*<sup>22</sup>

<sup>22</sup> Council of Europe press release about the BRRD, Brussels, 20 December 2013  
Source: [http://www.consilium.europa.eu/uedocs/cms\\_data/docs/pressdata/en/ecofin/140277.pdf](http://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/ecofin/140277.pdf)

Starting from January 1<sup>st</sup>, 2016, the BRRD has come into full force in Italy being introduced as a crisis prevention measure, harmonizing rules for preventing banking crisis, besides providing a “bail-in” procedures for the banks facing a crisis risk. The “*Bail-In*” represents a measure under which the losses of the bank are transferred first to the shareholders, then to the stockholders with a conversion of their claims into equity to absorb losses and recapitalize the banks in difficulty, (all but certain types of deposits and liabilities). Although the Bail-in might be a necessary provision, it is quite an unstable one, because “*an inappropriate design of the instrument may jeopardize the achievement of objectives that inspired it, becoming itself a source of instability*” (De Aldisio, 2015)

The directive sets out the thresholds and parameters; once surpassing the limits, the bank is obliged to call the resolution authority, to ask for implementing the recovery plan. Afterward, the authority “*through the use of resolution tools, to ensure the continuity of its critical functions, preservation of financial stability and restoration of the viability of all or part of that institution, while the remaining parts are put into normal insolvency proceedings.*” (European Commission, 2014)

BRRD main key elements:

- a) Preparation and prevention – due to the fact that the resolution authorities, cooperating with the banks, are bound to set out the recovery plan on how to deal with the moments of crisis, during this process the institution might find some issues, that could be addressed in advance, thus lessening the risk of a crisis occurring, if the bank would solve it beforehand.
- b) Early intervention – should it seem fit to intervene, the resolution authorities have the right to appoint the boarding members, dismiss the administrator and make any other changes in bank’s management, as it sees fit, as to fix the problems before they would become too critical.

- c) Resolution – as the bank seem doomed, the BBRD is empowering the resolution authorities to use the specific tools in order to improve the situation, such as: “*sell or merge the business with another bank, to set up a temporary bridge bank to operate critical functions, to separate good assets from bad ones and to convert to shares or write down the debt of failing banks* (bail-in). (European Commission, 2014)

Minimum Resolution Toolkit	1. Sale of business
	2. Bad bank-good bank separation
	3. Bridge bank
	4. Bail-In

- d) Cooperation and coordination - in the case any of any of cross-border banking groups is to fail, the resolution authorities would be able to cooperate and coordinate the measures to get the most optimal outcome for the group.

As specified above, BRRD specifies the “Recovery Plan Indicators” that are a set of parameters at which the recovery plan is to be implemented. As specified by the Art.9 (1)

**Art. 9 (1) of the 2014/59/EU Directive**

“Competent authorities shall require that each recovery plan includes a framework of indicators established by the institution which identifies the points at which appropriate actions referred to in the plan may be taken. Such indicators shall be agreed by competent authorities when making the assessment of recovery...”

One of the terms is, though, that the indicators (resolutions triggers) have to be easily monitored, transparent and clear (Franke, Krahen, von Lüpke, 2014).

Responsible for setting out the indicators and parameters of the recovery and resolution plan has become the European Banking Authority (hereinafter EBA). Truth be told, EBA

plays a central role, being the responsible of preparing guidelines and technical standards to achieve the convergence of the rules and practices in the field of crisis management. Related to the BRRD, the European authority has released specific guidelines called EBA-GL-2015-02 from 6 May 2015 “*addressed to the competent authorities and to those institutions which are obliged to develop recovery plans according to Directive 2014/59/EU.*”, (EBA, 2015), identifying the minimum qualitative and quantitative indicators that the banks have to include in their resolution plans. The indicators are divided into categories that have to be covered: capital, liquidity, profitability and asset quality indicators plus market-based and macroeconomic ones (EBA, 2015).

### **Recovery Plans Indicators**

EBA has set down two lists of indicators, first the “Minimum list of recovery plan indicators” and second the “Additional recovery plan indicators”.

#### Minimum list of recovery plans indicators<sup>23</sup>

1. Capital indicators
  - 1.1 Common Equity Tier 1 ratio
  - 1.2 Total Capital ratio
  - 1.3 Leverage ratio
  
2. Liquidity indicators
  - 2.1 Liquidity Coverage Ratio
  - 2.2 Net Stable Funding Ratio
  - 2.3 Cost of wholesale funding

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<sup>23</sup> EBA has divided the minimum list of recovery plan indicators into 2 different categories, the first four (Capital / Liquidity / Profitability indicators / Asset quality indicators) being mandatory, meanwhile the last two (Market-based / Macroeconomic indicators) could be disregarded in the case that the institution proves that they are not relevant.

3. Profitability indicators
  - 3.1 (Return on Assets) or (Return on Equity)
  - 3.2 Significant operational losses
  
4. Asset quality indicators
  - 4.1 Growth rate of gross non-performing loans
  - 4.2 Coverage ratio [Provisions / (Total non-performing loans)]
  
5. Market-based indicators\*
  - 5.1 Rating under negative review or rating downgrade
  - 5.2 CDS spread
  - 5.3 Stock price variation
  
6. Macroeconomic indicators\*
  - 6.1 GDP variations
  - 6.2 CDS of sovereigns

### **Additional recovery plans indicators**

1. Capital indicators
  - 1.1 (Retained earnings and Reserves) / Total Equity
  - 1.2 Adverse information on the financial position of significant counterparties
  
2. Liquidity indicators
  - 2.1 Concentration of liquidity and funding sources
  - 2.2 Cost of total funding (retail and wholesale funding)
  
3. Profitability indicators
  - 3.1 Cost-income ratio (Operating costs / Operating income)
  - 3.2 Net interest margin



4. Asset quality indicators
  - 4.1 Net non-performing loans / Equity
  - 4.2 (Gross non-performing loans) / Total loans
  - 4.3 Growth rate of impairments on financial assets
  - 4.4 Non-performing loans by significant geographic or sector concentration
  - 4.5 Forborne exposures<sup>4</sup>/ Total exposures
  
5. Market-based indicators\*
  - 5.1 Price to book ratio
  - 5.2 Reputational threat to the institution or significant reputational damage
  
6. Macroeconomic indicators\*
  - 6.1 Rating under negative review or rating downgrade of sovereigns
  - 6.2 Unemployment rate

As specified in the Guidelines manual “*An institution should be able to provide the competent authority with an explanation of how the calibrations of the recovery plan indicators have been determined and to demonstrate that the thresholds would be breached early enough to be effective.*” (EBA, 2015), which means that the banks are bound to make an in-depth analysis of their possibilities and future strategy,

### 3.3. Supervisory review and evaluation process - SREP

Another reference for assessing bank’s riskiness could be Supervisory Review and Evaluation Process, (hereinafter “SREP”), that basically represents an indicator of bank’s position regarding the capital requirements and bank’s risk management.

SREP gives the supervisory authorities a set of instruments to examine the bank's level of risk from four different perspectives:

- Business model – the supervisors are assessing the banking business model, for measuring the level of “dispersion” it has in term of business lines, for instance – a bank that works with shipping companies would be affected by a slowdown in international trade, thus has to take into account this specific risk;
- Governance and risk management – the supervising authorities are inspecting the organizational structure of the bank, while also controlling whether the risks are properly managed;
- Capital adequacy – the same authorities are measuring the possibility of the bank to absorb the eventual unexpected losses;
- Risk to liquidity and funding- here the examination is related to the fact that the bank might be eventually exposed to a sudden cash withdrawal and has to be able to cover the need

The teams<sup>24</sup> prepare the SREP yearly and proceed with sending an each bank a letter<sup>25</sup> where it specifies the requirements and measures that it has to implement. By default, the bank is required to hold a certain amount of capital, usually referred to as “Pillar 1”. Under SREP, after individual evaluation, the bank might be also asked by the supervisors to hold additional capital and/or even set down some qualitative requirements as to achieve an

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<sup>24</sup> “Joint Supervisory Teams (JSTs) conduct the day-to-day supervision of significant institutions. The JSTs comprise staff from both the ECB and the NCAs of the countries in which the credit institutions, banking subsidiaries or the significant cross-border branches of a given banking group are established. A JST is established for each significant institution. The size, overall composition and organisation of a JST can vary depending on the nature, complexity, scale, business model and risk profile of the supervised credit institution” (ECB, 2014)

<sup>25</sup> This letter contains a SREP that is individualized to each bank's profile.

optimal level of consistence between their risk profile and capital (Pillar 2). Pillar 2 captures all the risk not treated already in Pillar 1. (BCBS, 2006, art. 724)

In 2014, on seventh of July, EBA published guidelines on general methodologies EBA/GL/2014/13 for the SREP and explained its common framework.

Categorization of institutions			
Monitoring of key indicators			
Business Model Analysis	Assessment of internal governance and institution-wide controls	Assessment of risks to capital <ul style="list-style-type: none"> <li>• Assessment of inherent risks and controls</li> <li>• Determination of own funds requirements &amp; stress testing</li> <li>• Capital adequacy assessment</li> </ul>	Assessment of risks to liquidity and funding <ul style="list-style-type: none"> <li>• Assessment of inherent risks and controls</li> <li>• Determination of liquidity requirements &amp; stress testing</li> <li>• Liquidity adequacy assessment</li> </ul>
Summarizing overall SREP assessment			
Regulatory measures			
Quantitative capital measures - Quantitative liquidity measures - Other supervisory measures			
Early intervention measures			

*Table 5: Common SREP framework overview  
Source: EBA/CP/2014/14*

The supervisory authorities are bound to give a quantitative estimation to the capital and liquidity adequacy, related to them risk, and then assess the profitability, risk management, internal governance and business model. The quantitative estimator is from 1 to 4<sup>26</sup>.

<sup>26</sup> “In the assessment of the individual SREP elements, competent authorities should use a range of ‘1’ (no discernible risk) to ‘4’ (high risk), reflecting the ‘supervisory view’ of the risk based on the relevant scoring tables in each element-specific title”.( EBA/GL/2014/13)

The indicators cover all Pillar 1 and Pillar 2 regulatory ratios and market indicators, such as price per share or CDS spreads, and others, better explained below.

**SREP key indicators:**

The supervisors have to check a series of Financial and Non-Financial indicators:

The Non-Financial are grouped by two categories, as can be seen in the table above, it relates the Business Model Analysis, and the Internal Governance.

*Business Model indicators*

Preliminary assessment	<ul style="list-style-type: none"> <li>Identify main activities, product lines, geographies, market positions</li> <li>Identify the institution’s peer group on the basis of the rival product/business lines targeting the same source of profits</li> </ul>
Identification of the areas of focus for the BMA	<ul style="list-style-type: none"> <li>Identify the business lines which are most important for future business model sustainability and the ones most likely to increase vulnerabilities</li> </ul> <p>Assess supervisory reviews and findings, internal and external audits, strategic plans and peer comparisons</p>
Assessment of the business environment	<ul style="list-style-type: none"> <li>Develop an understanding of macroeconomic and market trends as well as strategic peer group intentions (analysis of competitive landscape)</li> </ul>
Quantitative analysis of the current business model	<ul style="list-style-type: none"> <li>Analyze and assess the institution’s profitability, balance sheet, concentrations and risk appetite taking the recent past and future trends into account</li> </ul>
Qualitative analysis of the current business model	<ul style="list-style-type: none"> <li>Assess external and internal dependencies, reliance on reputation, strength of the relationships and areas of competitive advantage</li> </ul>
Analysis of the strategy and financial plans	<ul style="list-style-type: none"> <li>Quantitative and qualitative analysis of strategic plans and projected financial performance, including the underlying success drivers and assumptions as well as execution capabilities</li> </ul>

Assessment of the business model viability	<ul style="list-style-type: none"> <li>• The institution's current business model's ability to generate acceptable returns over the following 12 months</li> <li>• Assess the acceptability of returns against ROE, funding structure, risk appetite</li> </ul>
Assessment of the sustainability of the institution's strategy	<ul style="list-style-type: none"> <li>• The sustainability of the institution's strategy on its ability to generate acceptable returns over the next three years</li> <li>• Assess the plausibility of assumptions and the risk level</li> </ul>
Identification of key vulnerabilities	<ul style="list-style-type: none"> <li>• Examples: unrealistic strategy, excessive concentrations or volatility, excessive risk taking, funding structure concerns and external issues</li> </ul>

*Table 6: SREP assessment of Business Model indicators  
Source: Deloitte Malta Banking SREP map*

*Assessment of internal governance and institution-wide controls*

Overall internal governance framework	<ul style="list-style-type: none"> <li>• Is the organization fit for purpose?</li> <li>• Does the management know the institution's structure and risks?</li> <li>• Are adequate policies in place e.g. to avoid conflicts of interest, outsourcing?</li> </ul>
Corporate and risk culture	<ul style="list-style-type: none"> <li>• Has the institution a corporate and risk culture adequate for its business and risk appetite?</li> <li>• Are there independent whistle-blowing processes? • Is the culture clearly communicated across all levels?</li> </ul>
Organization and functioning of the management body	<ul style="list-style-type: none"> <li>• Is the number of members of the management body adequate and do they demonstrate a sufficient level of commitment and independence?</li> <li>• Is the management body effective? • Adequacy of internal control procedures?</li> </ul>

Risk management framework, including ICAAP & ILAAP	<ul style="list-style-type: none"> <li>Review an institution's ICAAP and ILAAP and determine their (1) soundness, (2) effectiveness and (3) comprehensiveness</li> <li>Review of stress testing programs and determine the appropriateness of, e.g. scenarios, assumptions and methodologies</li> </ul>
Internal control framework, including internal audit function	<ul style="list-style-type: none"> <li>Do independent control functions and clear decision making processes exist?</li> <li>Are adequate risk reporting policies and compliance functions established, approved by the management body?</li> </ul>
Information systems and business continuity	<ul style="list-style-type: none"> <li>Does accurate and reliable risk data exist (up-to-date, complete)?</li> <li>Can on-demand data requests be met?</li> </ul>
Remuneration policies and practices	<ul style="list-style-type: none"> <li>Is the remuneration policy in line with the risk profile, corporate values and risk appetite?</li> <li>Ratio of variable and fixed remuneration is appropriate – are the provisions on the limitation of the variable component complied with?</li> </ul>
Recovery plan arrangements	<ul style="list-style-type: none"> <li>Are adequate recovery plans available?</li> </ul>

Table 7: SREP assessment of internal governance and institution-wide controls  
Source: Deloitte Malta Banking SREP map

Meanwhile the Financial indicators are categorized by the: Capital Risk, and Liquidity/Funding Risk.

Assessment of risks to capital

Measuring risk to capital			
<i>Credit and counterparty risk</i>	<i>Market risk</i>	<i>Operational risk</i>	<i>Interest Rate Risk in the Banking Book (IRRBB)</i>

1. Assessment of materiality of risk
2. Evaluation of the nature, composition and sub-categories of risk categories
3. Evaluation of the accuracy and prudence of methodologies
4. For credit and counterparty risk, e.g. assessment of the quality of the credit portfolio, the applied credit risk mitigation techniques, the level of loan loss provisions and CVA
5. For market risk, e.g. evaluation of profitability and market concentration risk
6. For operational risk, e.g. assessment of the significance of operational risk exposures and reputational risk
7. For interest rate risk in the banking book, e.g. evaluation of scenario analysis and stress testing results

#### Assessment of risk management and controls

- Policies and procedures
- Risk identification and measurement
- Risk management, monitoring, reporting
- Organizational framework
- Internal control framework
- Respective risk strategy and appetite

#### Assessing whether own funds suffice to cover risks to capital

<i>Capital requirements</i>	<i>Determining total SREP and overall capital requirements</i>	<i>Additional considerations</i>
<p><i>Overall capital requirements</i></p> <ul style="list-style-type: none"> <li>➤ CRD IV counter-cyclical buffer (0–2.5%)</li> <li>➤ CRD IV conservation buffer (2.5%)</li> <li>➤ Macro-prudential requirements (0–5%)</li> </ul> <p><i>Total SREP capital requirements (TSCR)</i></p>	<p>SREP own funds depend on the identified risks to capital while taking expected and unexpected losses over a one-year horizon as well as model and governance deficiencies into account. SREP, CRD IV and macro prudential buffers have to be reconciled to avoid double counting.</p>	<p><i>Excessive leveraging is assessed by</i></p> <ul style="list-style-type: none"> <li>➤ Comparing the leverage ratio to peers</li> <li>➤ Evaluating its distance to the regulatory minimum</li> <li>➤ Considering stressed events</li> </ul>

➤ CRR own funds requirements (8%)	Analysis whether OCR and TSCR can be held stable over the economic cycle and stress scenarios
➤ SREP additional own funds requirements	

*Table 8: SREP assessment of risks to capital  
Source: Deloitte Malta Banking SREP map*

### Assessment of risks to liquidity and funding

Risk to liquidity
<i>Liquidity risks- Are liquidity buffers sufficient?</i>
<ol style="list-style-type: none"> <li>1. Identify the short and medium term liquidity needs by: <ul style="list-style-type: none"> <li>• Calculating the liquidity needs and availability over different time horizons</li> <li>• Assessing if the LCR is appropriate and reflects the liquidity needs adequately</li> </ul> </li> <li>2. Evaluate whether the liquidity buffer and counterbalancing capacity are sufficient to meet the liquidity needs by assessing: <ul style="list-style-type: none"> <li>• Volume of assets to be liquidated</li> <li>• Quality and classification of liquid assets, using the LCR specifications</li> <li>• Capability to sell liquid assets swiftly</li> </ul> </li> <li>3. Conduct independent liquidity stress tests to assess liquidity needs and buffers</li> </ol>
Risk to funding
<i>Funding profile and plan - Is funding stable &amp; market access assured?</i>
<ol style="list-style-type: none"> <li>1. Analyze the funding profile by evaluating: <ul style="list-style-type: none"> <li>• Sufficiency of stable funding instruments</li> <li>• Maturity mismatches</li> <li>• Whether the funding profile and level of asset encumbrance could increase funding costs</li> </ul> </li> <li>2. Assess the stability of the funding profile, e.g.: <ul style="list-style-type: none"> <li>• Significance of certain asset classes</li> <li>• Funding metrics, e.g. loan/deposit ratio and NSFR</li> <li>• Concentration in funding sources</li> </ul> </li> </ol>



- 
- The impact of an increased demand for unsecured debt due to asset encumbrance
3. Examine the current and future market access:
    - The volume of funding demands on certain markets or counterparties compared to the capacities of these institutions
  4. Compare the funding risk to the funding plan

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Governance and risk management requirements
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- Appropriate framework to identify, measure, manage, monitor and report risks
- Consistency between policies/procedures and the liquidity risk tolerance
- Adequate implementation of liquidity stress tests
- Integration into the overall risk strategy
- Effective internal limit and control system
- Adequate liquidity contingency plan
- Sufficient technical and human resources

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*Table 9: SREP assessment of risks to liquidity and funding  
Source: Deloitte Malta Banking SREP map*

The supervisors, besides setting the key indicators, has to provide, also, thresholds based on which the bank's health will be judged. Because of the key indicators monitoring the competent authorities would release an SREP score, which represents a trigger for them to decide, under 2 possible situations, whether or not to apply the early intervention:

1. Should the authority, in accordance with the guidelines provisions, assign an overall score of "4", will have to, without delaying, take the decision whether to apply the measures of early intervention or not.
2. Should the overall bank's SREP score be "3", but any individual element mentioned in Article 27(1) of Directive 2014/59/EU such as:
  - internal governance and institution-wide controls
  - business model and strategy
  - capital adequacy
  - liquidity adequacy

receives a score equal to “4”, the authorities might decide to act upon the early intervention nonetheless.

### 3.4. Internal Capital Adequacy Assessment Process - ICAAP

Basel II, back when it was adopted in 2006 introduces a new requirement for the institutions. In the second Pillar, it is required for the companies to perform mandatory procedures on asserting the level of risk they are under the binge of defaulting. For these measures, the banks are required to demonstrate that they are ensuring, on a daily basis, a healthy level of adequate capital resources.

. ICAAP’s focus is on Capital Management, that is bank’s capital adequacy. There is in fact a system of dualism between 2 complementary processes, ICAAP on one side, with SREP on the other, representing the first two principles, out of four, of the second Pillar under Basel II.

The following diagram depicts the process of the dualism of the SREP and ICAAP.

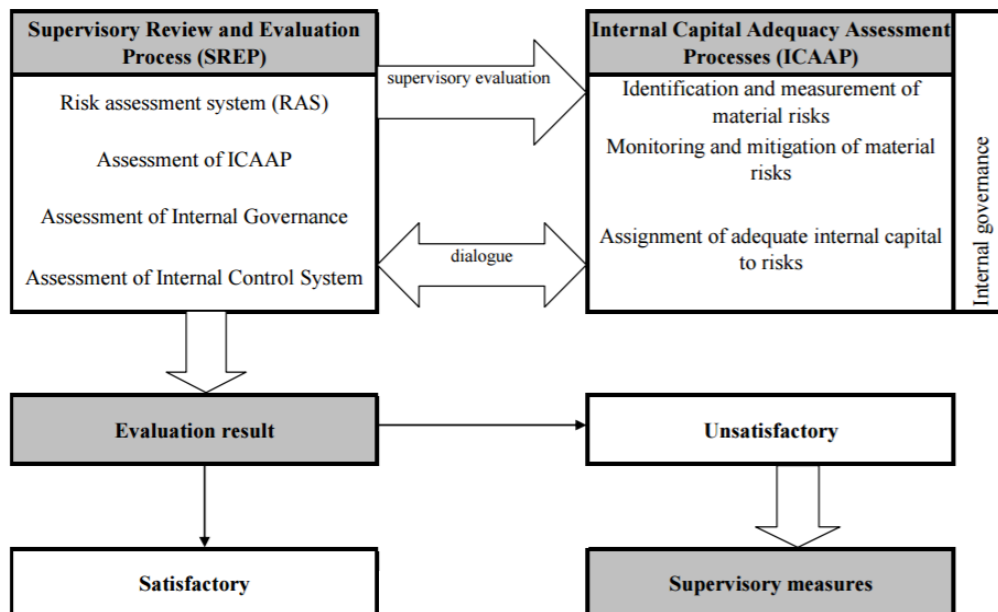


Figure 2: The Supervisory Review Process

The company will conduct ICAAP. The purpose of it is to induce to:

- correctly measure, identify and monitor risks to which the bank might be exposed to;
- when monitoring the risk profile, they are requested to hold sufficient amount of internal capital
- correctly measure and manage the risk, and maintain the system
- provide some stress-testing techniques
- also, correctly identify the roles of the management and board of directors

*“In the process of interaction and dialogue between supervisors and institutions concerning ICAAP supervisors question institutions on how they have assessed the risks they take and how they set their overall risk bearing capacity. Supervisors use a ‘building block’ approach to break down the risks into discrete individual elements. The dialogue covers risk management, internal controls, the organization of the institution’s business, and how the institution allocate capital against risk. Such discussions are without prejudice to the institution’s responsibility to design and implement an ICAAP which is appropriate for its own business.*

*While the guidance on interaction and dialogue is directed mainly at supervisory authorities, it will also be of relevance to institutions because (i) they must meet requirements on internal governance and the ICAAP, and (ii) they have a clear interest in knowing how supervisors intend to approach the interaction between the SREP and ICAAP, how the dialogue will be structured, and how this may influence supervisory judgements and actions”. (CEBS, 2005)*

### 3.5. Rating Agencies

The basic model of assessing the bank's level of risk is based usually on the ratings. Such models are divided in two main types: one is internal – thus assessing the riskiness independently and internally based on a unique methodology, meanwhile the second is external – assigned by a rating agency. At the same time almost all the models of internal ratings are also based on external ratings.

The overall goal of all ratings is to answer the question of how much the entity or economic instrument is reliable. The reliability can be predicted for country, company or bank.

Most reliable are ratings assigned by international rating agencies such as: Standard & Poor's, Moody's Investors Service and Fitch Ratings. Credit ratings assigned by the big three - S & P, Moody's, Fitch - play an essential role in the process of banking risk assessment. Many regulators, to assess the credit risks of financial institutions in different countries, welcome the use of ratings. Considerable attention to ratings is also paid in Basel II, in Basel III.

Interpretation	S&P and Fitch	Moody's	Meaning
Highest quality	AAA	Aaa	Extremely strong capacity to meet financial commitments.
High quality	AA+	Aa1	Very strong capacity to meet financial commitments.
	AA	Aa2	
	AA-	Aa3	
Strong capacity of payment	A+	A1	Strong capacity to meet financial commitments, but somewhat susceptible to adverse economic conditions and changes in circumstances.
	A	A2	
	A-	A3	
Adequate capacity of payment	BBB+	Baa1	Adequate capacity to meet financial commitments, but more subject to adverse economic conditions. Considered lowest investment grade by market participants.
	BBB	Baa2	
	BBB-	Baa3	
Uncertainty. Likely to fulfill obligations	BB+	Ba1	Less vulnerable in the near-term but faces major ongoing uncertainties to adverse business, financial and economic conditions.
	BB	Ba2	
	BB-	Ba3	
High-risk obligations	B+	B1	More vulnerable to adverse business, financial and economic conditions but currently has the capacity to meet financial commitments.
	B	B2	
	B-	B3	
Vulnerable to default	CCC+	Caa1	Currently vulnerable and dependent on favorable business, financial and economic conditions to meet financial commitments.
	CCC	Caa2	
	CCC-	Caa3	
Near or in default or bankruptcy	CC	Ca	Currently highly vulnerable.
	C	C	Currently highly vulnerable obligations and other defined circumstances.
			Payment default on financial commitments.
	D	D	

Figure 3: Interpretation and meaning of Ratings

Also, the process of rating a new company is depicted in the picture below:

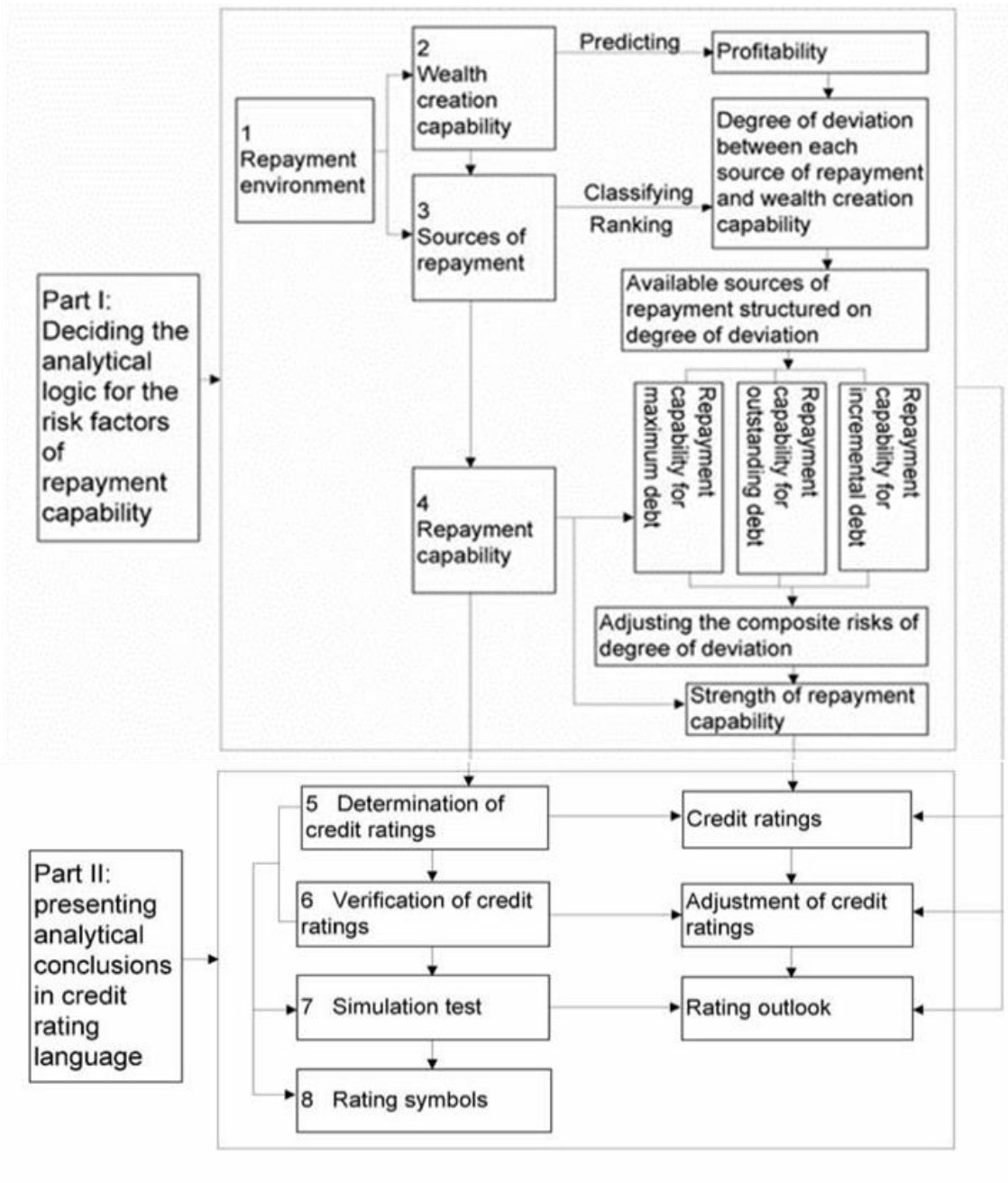


Figure 4: The mechanism of an Rating process

On practice though, this dependence on external ratings can be quite dangerous. The main disadvantage is that the rating agencies do not respond promptly to changes in counterparty's financial situation. There are real examples where companies with high

ratings were on the verge of bankruptcy, but the rating agencies reacted only after the event has occurred. The most obvious example, of course, is the bankruptcy of “Lehman Brothers” bank in 2008, which has been assigned, little the time of the bankruptcy, the highest ratings from all three rating agencies.

To carry out a more effective risk assessment is required to improve the existing models. The leading rating agencies are already offering models that assess the credit risk of the counterparty banks on a daily basis. Such models are based on market-based instruments - securities. The main question for these models is to select the correct underlying instrument for the assessment.

Shares do not quite fit for these purposes, because:

- 1) a change in the value of shares, as a rule, does not necessarily reflect changes in the financial condition of the company;
- 2) the number of shares in circulation is limited and
- 3) shares do not have many parameters to evaluate, for example, there is no expiration date.

Bonds are also not the best tool for this kind of model, as are debt instruments and, therefore, depend on the parameters of a particular debt. The best tool for the such models are the derivative securities, namely the Credit Default Swaps (CDS), which are market-based instrument of credit risk assessment on a daily basis.

CDS shows important advantages, namely that they permanently assessed by thousands of market participants, taking into account all available information on their banks of interest, as soon as the information becomes public. This fact significantly increases the flexibility of credit risk assessment, when compared with external ratings. The later are revised once a year, which represents a serious limitation. The CDS market is a global market, which is an indicator of investor appraisal on the credit quality of a particular instrument, its issuer or the bond market as a whole.

Chapter 4 will discuss the aspects of CDS market price movements as a source of information for the financial system. This chapter will present an analysis of the functioning

of the mechanism, structure and current state of the CDS market and its predictability of bank's riskiness level increase. The results may contribute to the improvement of existing credit risk assessment methodologies counterparty banks.



## Chapter 4: CDS as a sign of bank's financial distress

Around the world, investors and analysts' interest in the comparatively young financial instruments - Credit Default Swaps (CDS) has sharply increased. This instrument is perceived as a clear and unbiased indicator of the operational and credit risk companies.

The predictability power of this tool represents an actual topic lately, in the view bank's market troubled times. The (possible) accurate and faultless risk assessment on the basis of this instrument would imply not only a significant transaction costs reduction for a number of market agents, but also an improve of financial system functioning as a whole. At the same time, excessive confidence in the instrument, who's information efficiency is subject to manipulation and depends on the economic environment, would imply unjustified losses for those taking investment decisions and for companies, the risk of which is incorrectly estimated

### 4.1. CDS functioning mechanism

Credit default swap (CDS) - is a bilateral agreement on the transfer of risk default basic (insured) object from one economic agent to another. Borsa Italiana, on its site, defines the CDS as *“a contract under which the holder of a credit (protection buyer) agrees to pay a fixed periodic amount, usually expressed in basis points compared to a notional principal amount, in favor of the counterparty (protection seller ) which, in turn, assumes the credit risk borne by the business in the event of the occurrence of a default event and uncertain future (credit event)”*<sup>27</sup>.

The functioning mechanism of this contract is presented in figure below:

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<sup>27</sup>

Source: <http://www.borsaitaliana.it/bitApp/glossary.bit?target=GlossaryDetail&word=Credit%20Default%20Swap> – originally in Italian language.

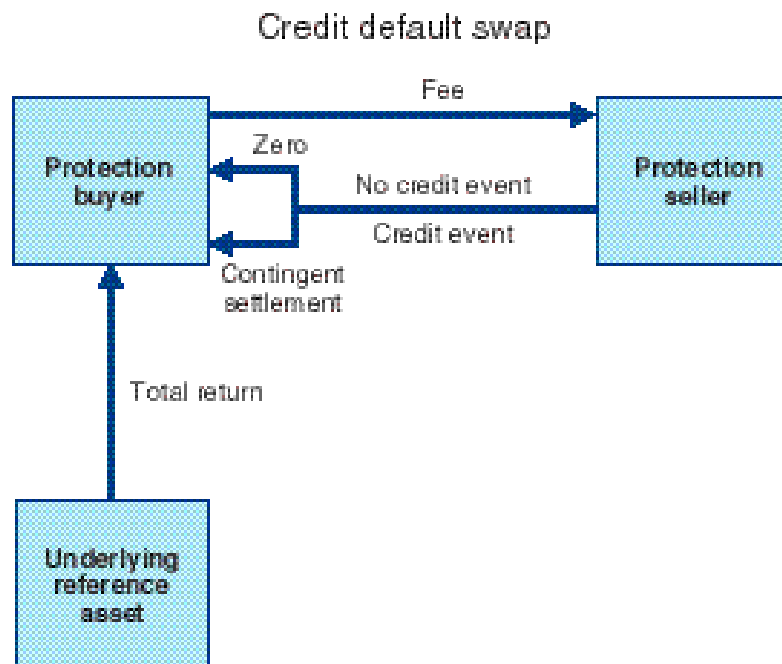


Figure 5: Mechanics of CDS transaction

An important advantage of the instrument is that it allows to sell the risk of default on the debt separately from the liability. The instrument was first introduced in 1997 by the J. P. Morgan who subsequently offered the other banks to buy the "against default insurance" on American "blue chips"<sup>28</sup> – Ford, IBM and few others.

As stipulated, the CDS is the insurance against the defaulting of a security, usually bond or bond-related certificate, hence the so-called price of this contract is a representation of the market that the issuer of the bond will default. CDS contracts are "priced" in basis points (bp): for example, 80 means that for a nominal value of 1,000 pays each year an "insurance premium" equal to  $1,000 * 0.8\% = 8$ . As the perception of the risk of insolvency increases, it obviously increases the price to buy protection against that risk.

CDS contracts have gained popularity, since it acts as an insurance against non-payment. It also gives the opportunity to speculate upon them. Should the issuer of a bond,

<sup>28</sup> "A blue chip is stock in a corporation with a national reputation for quality, reliability, and the ability to operate profitably in good times and bad. The most popular index that follows U.S. blue chips is the Dow Jones Industrial Average" – source: Wikipedia

representing the point of interest of buyer, fail, the last one will also be incentivized to procure also a CDS contract related to the mentioned securities. As such, they are receiving the interest, along with the premium, even though they recognize a big chance of failure of the bond issuer.

### **Information efficiency of the CDS market.**

The question whether the CDS is efficient has been one of the question that scholars has asked themselves since the CDS weight in the market, and become more and more popular. The market could be considered to be efficient only if it meets 3 of the parameters, such as:

1. All the market participants have access to the information, without bearing the costs of obtaining it.
2. the absence of transaction costs associated with conducting transactions in the market; and
3. all the market participants realize that the prices contain all the current information

Hence, an efficient market is a market where product's prices reflect all available information. In the framework of the neoclassical theory, the term "market efficiency" is understood exclusively as information effectiveness, that is, the degree of speed and completeness of the reflection of all information affecting asset pricing.

Taking into account the increasing popularity of the CDS products have gained, analysts became concerned whether investors could rely on the CDS analysis when making investment decisions. Before, such analysis were conducted only with concern to stock market, or bond market starting with Singleton & Pinches in the early 1978 and until Zhang (2013); Although most of the works published was related to the fact whether the stock market reacts to announcements about a downgrade of the rating. The results showed that the market does not incorporate and anticipate the information becoming available from the companies themselves (such as quarterly financial statements that the companies publish),

but only react when a rating agency such as Standard & Poor's, Moody's, or Fitch downgrade their rating.

But whether the CDS market incorporates as well the information, that was left to be seen. In 2009, Zhang published a paper where he tried to see whether the Credit Default Swaps (CDS) do react to bad financial news, or economic distress. Zhang went forward analyzing how the stock market reacts to the same events. The results he subsequently finds show that the “*CDS price increases by 37% to 96% on a single day in response to credit event news that are related to economic distress, financial distress, SEC probes, M&A or LBO. [whereas] stock price drops by 2% to 9% upon the first four types of credit news but rises by 7% on the LBO news*” (Zhang, 2009). The findings show that the stock market seems to be much noisier, with respect to the CDS market, as it seems to overreact to one of the five events that might impact the financial world.

Many other scholars have tried to analyze the predictability of rating downgrades as well. Hull, Predescu and White in 2004 have concluded the same type of analysis and found that the CDS spreads (prices) have the tendency to incorporate and predict the changes and downgrades the rating agencies provide stating that “*There is anticipation of all three types of ratings announcements* <sup>29</sup>*by the credit default swap market*”, but find that “*results for positive rating events were much less significant than our results for negative rating events*”. Thus the negative events are much more predictable rather the positive announcements. In the same year, Micu, Remolona, and Wooldridge verify their theory, providing the same results, which were in line with findings of Di Cesare who 2006 has examined a list of global banks, as to find whether the same markets (CDS, stock and bond) were able to predict rating downgrades. He finds that the CDS one was the most effective of all of them for providing such insights. However Micu, Remolona, and Wooldridge state that even if the CDS market does hold certain level of predictability, it still reacts whenever a downgrade is announced.

However, the results provided until now were related only to the reaction the CDS prices might have to rating downgrades. They do not analyze the direct connection of

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<sup>29</sup> Reviews for Downgrade, Downgrades and Negative Outlooks

accounting information provided by the banks on quarterly basis, and the prices of the Swaps. In 2011 Jenkins, Kimbrough and Wang, examining 3 periods divided into pre-crisis, during crisis and post-crisis, published their findings which showed a strong connection between the information published and CDS spreads. Their results showed that “*CDS market responded efficiently to both earnings surprises and accruals prior to the credit crisis of 2007 and 2008. During the crisis, however, the CDS market appeared to underreact to both measures. In the immediate aftermath of the crisis, CDS market appeared to overreact to both measures, although this tendency to overreact appears to have dissipated by mid-2010. Our results suggest that the CDS market is generally efficient with respect to accounting information during periods of relative economic stability but call into question its resilience during less stable periods.*” (Jenkins, Kimbrough and Wang. 2011) “*We find that, consistent with the prior literature on the changes in credit spreads, changes in macroeconomic conditions and firm-level fundamentals are important determinants of CDS spread changes. Among the firm-level fundamental variables, changes in stock return volatility and changes in leverage ratio are the most dominant.*” (Tang & Yan, 2015)

It is worth stipulating, that CDS contracts are directly linked to the risk tied to the underlying assets. Whenever a good news is received, the market reacts by decreasing the spread of the contracts, and vice versa whenever a bad news is published.

## 4.2. The CDS Data Set

### **Data description**

As a depended variable was used the 5 year senior CDS spreads of the sample of Italian banks represented below. The choice of such a contract as the beacon of the analysis was influenced by the fact that CDS considered to incorporate information regarding defaulting situations of states of deep financial distress, and might thus be used as an indicator of firm’s dire financial situation.

For the purpose of the empirical analysis, the data used was extracted from the Thomson Reuters Eikon – Datastream which gets the information and data feed from CMA New York, these providing the closing bid and ask quotes. The database provides not only information regarding the CDS bids and ask prices, but also a wide range on information regarding the Financial Situation of the banks across the globe. (It is to be mentioned, however, that the information regarding the specific financial data, which prove interesting for this analysis, was not present on the Thomson Reuters Eikon – Datastream)

In order to be able to conduct the analysis I chose the period between first of January 2008 until September 2016.

The nine years taken into account for the analysis, thus the time frame were:

1. The first year, for which Financial Data regarding the banks were available, that is 2008. The choice was influenced not only that the information regarding the CDS on Datastream spreads were available exclusively for the period starting with late December 2007, but also by the publication of Financial Statements. 6 banks out of 8 lacked the Financial Data in their archives published on their respective sites prior to 2008, thus retrieving such data became impossible.
2. The last period for Financial data availability was 2016 – third trimester. This choice was influenced by the fact that the banks do not publish their accounting information for the 4th semester until the next year, thus for the time of gathering data for the analysis, the Financial Statements for the 31 December 2016 would have not been published. Because of such late publishing, the information the analysis will include information only until the 3rd semester of 2016.

The extracted data was referred to CDS spreads (in basis points) for daily CDS rates. My data span for the mentioned period resulted in 18115 panel observations. The number of observations per bank is not equal across the sample. This occurs due to the fact that, for instance, Italease ceased to exist as a independent entity, and many of other bank lacked the information registered on Thomson Reuters Eikon – Datastream.

The information about CDS available on was narrowed down to the sample of Italian banks – the results yielded 8 banks, given the fact that only a portion of banks invested in CDS trading have information registered on Thomson Reuters Eikon – Datastream.

Italian Banks	
	Unicredit
	Intesa San Paolo
	BNL
	BP Milano
	Italease
	Mediobanka
	UBI
	Bana Popolare

Figure 6. Sample of the banks used for the analysis

The goal is to measure the risk propensity of these institutions and Credit Default Swaps have been chosen as a major measure of a bank's risks. The analysis comprises a two period span. The first one is the *during-the-crisis* period, before the crisis of the subprime mortgages that launched a massive economic disaster across all the countries. It started with yearly 2008 until March 2009. The period starting from 2009 onward was named as *post-crisis*, containing the period of adaptation of the economy to the new realities of the economically affected world..

**Dependent variable**

As related above, for the sake of the analysis will be used five-year senior CDS spreads for the 8 Italian banks who’s data is available on Datastream. I have chosen the 5-year contract, due to the fact that they are considered as being more liquid with respect to other standard maturity contracts,<sup>30</sup> also because they are considered to be the “*benchmark maturity in the CDS market*” (Chiaromonte & Casu. 2011) The spreads of the CDS was

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<sup>30</sup> Hull in 2004 sustained that the 5yr contracts represent the most widely traded contract among all maturities.

downloaded with a daily frequency, however, they were adjusted to the explanatory variables which were available only quarterly.

Since the analysis could be based, only upon the two period of economic disaster and the period following it, up until today, it is interesting to follow the dynamics of the dependent variable. *“The impact of the sub-prime episode on market indicators of the financial soundness of global LCBGs was quite pronounced. CDS spreads on the debt of these institutions initially widened as a result of investor concern over exposure to sub-prime mortgages.”* ECB (2007, pag.46)

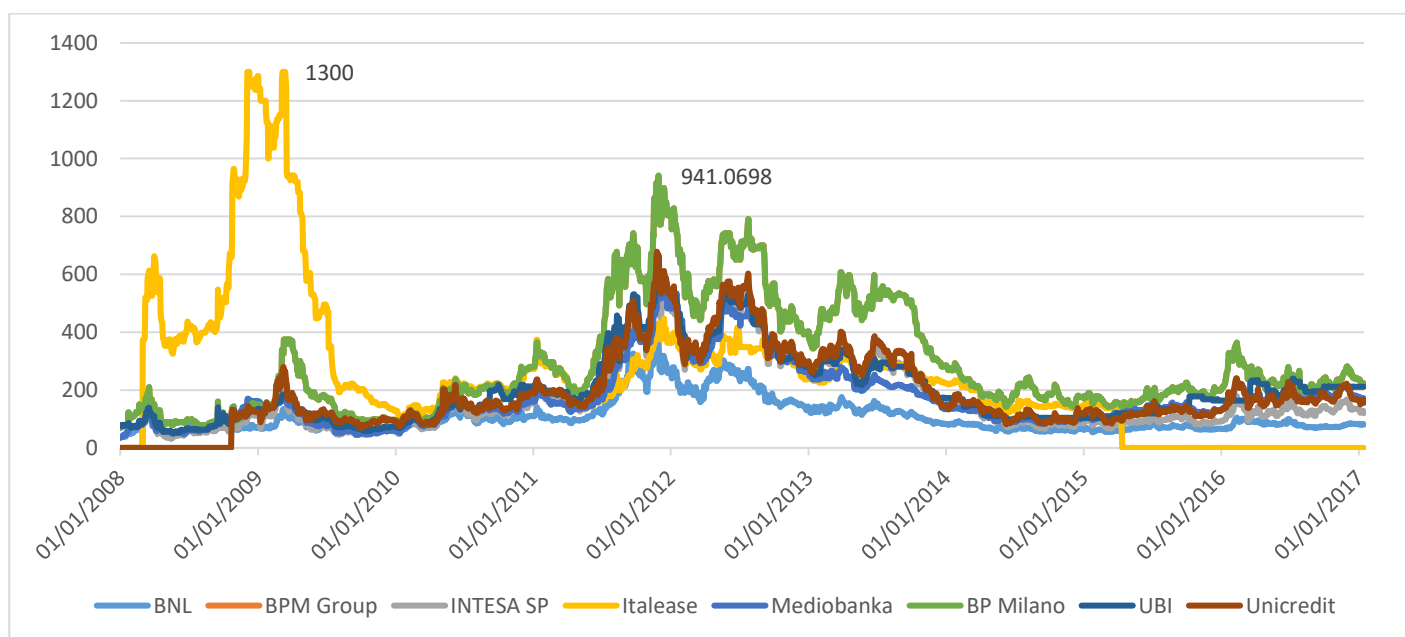


Chart 2: Dynamics of CDS prices  
Source: own elaborations

During this period, the prices of the CDS have grown considerably, having reached previously unseen peaks. This tendency can be seen clearly from the Italease bank, which seems to have the most been affected by the crisis. As we can see, their spreads for 5YR CDS contracts surged until reaching its maximum value of 1300 on 3rd of December 2008, when the crisis was in its full uprising. *“Italease was a rising power within Italian finance [...] but*



*it stumbled badly in the derivatives market, selling dud products to clients, for which it was eventually forced to pay hundreds of millions of euros in compensation, leaving its reputation in tatters.*<sup>31</sup> As such, the Italease bank was subsequently acquired, or merged with Banco Popolare in March 2015, after having troubles staying in the business by its own. However, taking a glance at the highly volatile bank, from the perspective of CDS prices and its dynamics during the crisis, is considered interesting.

It is decided that the end of crisis to be considered the end of March 2009. The chart above indeed presents the same idea, the spreads for CDS going back down, however, with respect to the pre-crisis periods, they were mildly higher.

As such, it becomes obvious from the chart that the banking sector has been heavily impacted. Looking at the period between 2011 and 2014 – we can denote a great rise for the prices of CDS, what is peculiar that is for all the banks this time, not only Italease, which during the surge of the crisis has been affected the most.

However, the lack of data regarding the CDS spreads during the pre-crisis period is due to the fact that DataStream presents information starting with late December 2007. As such, a descriptive chart regarding the pre and during-the-crisis period is impossible. However, the paper published in 2009 by European Central Bank and in 2010 by the Bank for International Settlements denote the fact that the spreads of CDS contracts have been indeed affected, leaving the levels of CDS spreads mildly higher than prior to the crisis.

Another interesting point of the analyzing the CDS spreads, is to analyze them within the perspective of information efficiency. As presented earlier, an “*efficient CDS market can serve as a barometer to regulators and investors regarding the credit health of the underlying reference entity.*” (Zhang & Zhang, 2013) It is quite intriguing to find whether the publishing of accounting information on quarterly basis is incorporated within the CDS spread.

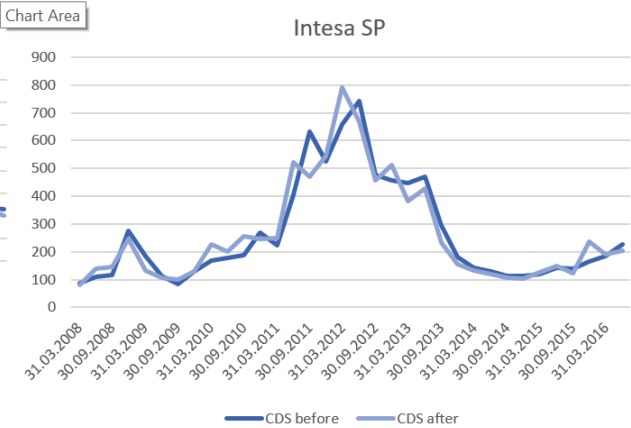
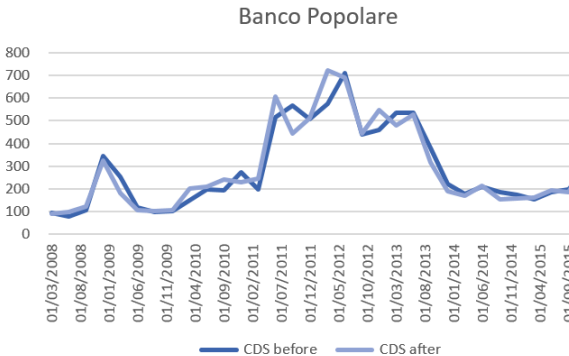
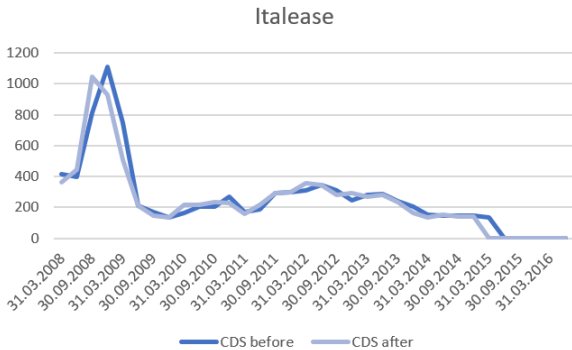
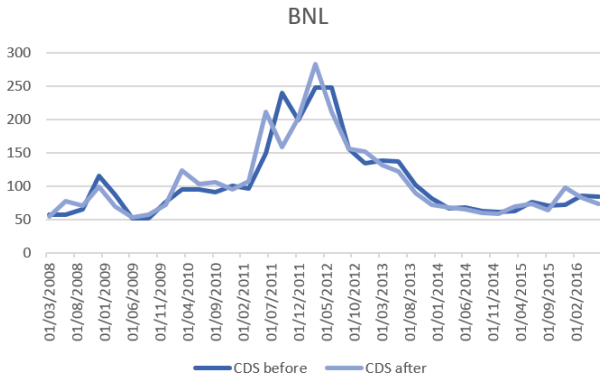
For finding out, we took the average spread before and after the publication of the balance sheets and income statement. As each of the banks publishes the information on their

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<sup>31</sup> By Financial Times: <https://www.ft.com>

sites at their own leisure, and that that such information is usually published with delay of a month, or more, we verified the publication of the financial statements for all the trimesters of the year.

The average spreads we have consecutively taken the 7 days prior to making the accounting information public, and 7 days after, to give the market the opportunity to incorporate such information and to react to it. The given period of one week was deemed long enough such that all the market participants would have already incorporated the information.



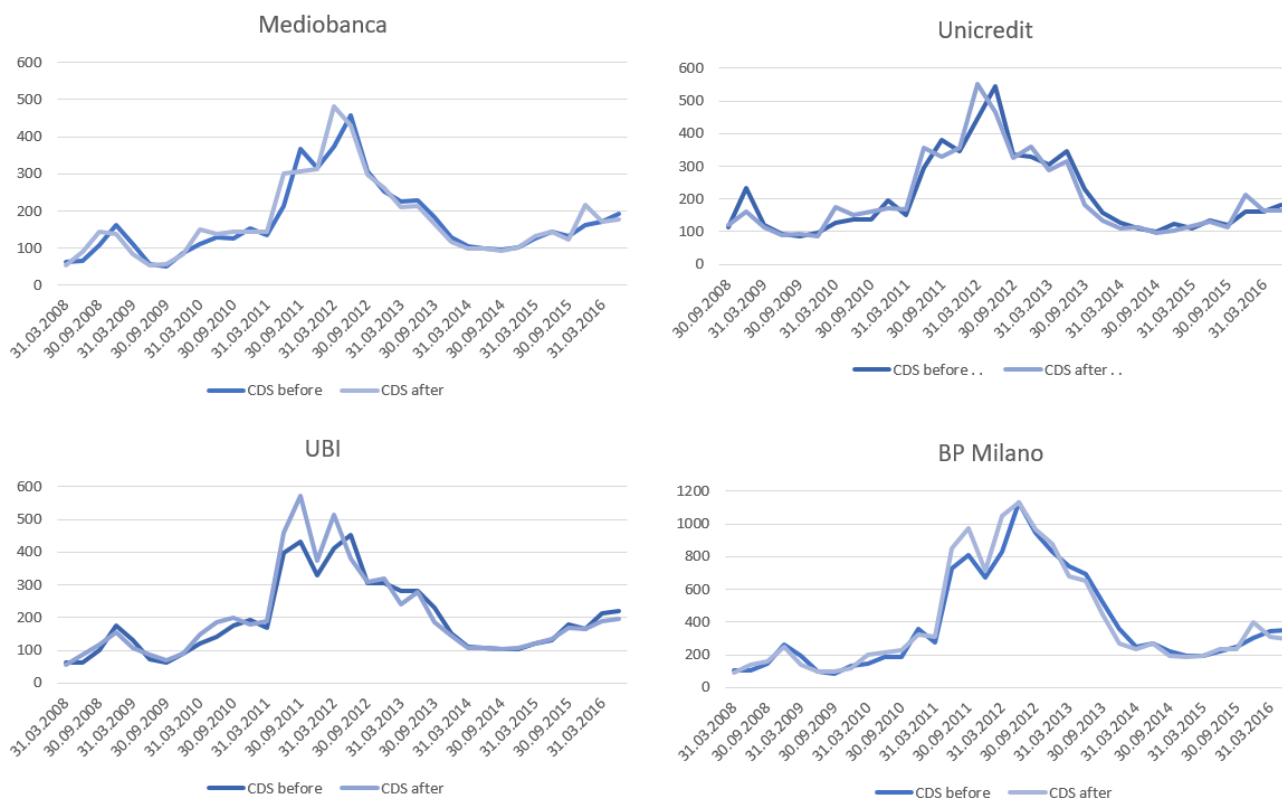


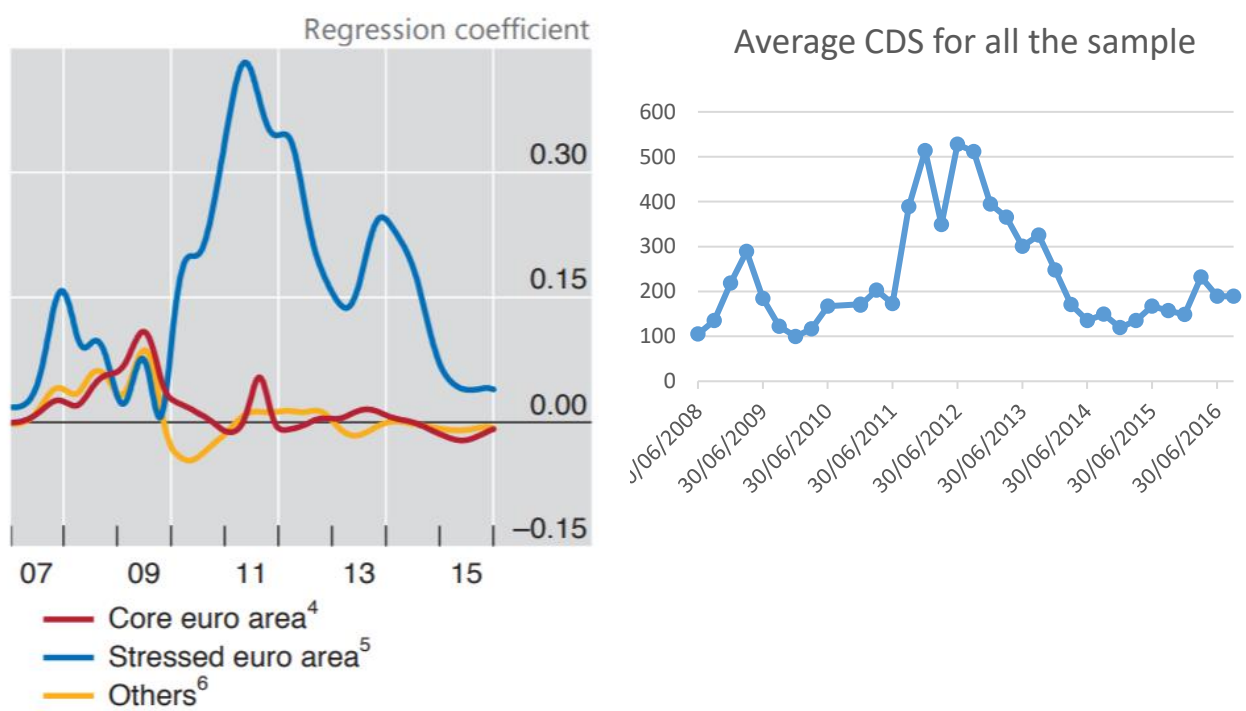
Chart 3: Dynamics of CDS prices before and after the publication of financial information for each bank in the period 2008 - 2016  
 Source: own elaborations

The graphs above present the dynamics of prices of CDS before and after the publication. The darker shade presents the average prices of CDS one week before the publication of Financial Statements, meanwhile the lighter presents the CDS average of prices one week after the publication. It is interesting to see the dynamics of the market as soon as the financial information reaches the market. As the graphs present, the *CDS after* line, which represents the average of the CDS spreads one week after the publication of the bank's financial statement, the line is always above the *CDS before* line almost in 80% of the cases. In the wake of the ever-growing restlessness of the financial world and the continuously deteriorating of economy of Italy, it is not surprising that the CDS market reacts usually with

increasing the spread of CDS, which represents a dire indicator or the financial distress that the banks face.

Also, as the market reacts almost immediately to the information, and the published data is incorporated within the price of the CDS, it denotes yet again the fact that, indeed, the CDS market proves a high information efficiency.

Another point of view of the CDS market can be represented below:



The leftside picture is taken from the BIS Annual Report, that present the “*movement of bank and sovereign CDS premia, estimated from a regression of sovereign CDS on the CDS spreads of banks headquartered in the country concerned. The time variation in the coefficients is obtained by running regressions using observations weighted by a Gaussian distribution centred on each week, with a 12-week standard deviation*” (BIS, 2015). The blue line, named the *Stressed Euro Area*, refers to such countries as Ireland, Italy, Portugal and Spain. Meanwhile the figure on the right is the trend line of all CDS prices, average for the entire sample in basis point. It is obvious that the trend line repeats the peaks and doves of the BIS chart, however small in comparison with the BIS analysis was the sample on the

right. This comparison sustains the idea that all the Euro Area has suffered the same impact as all over the world.

### 4.3. Financial ratios

The heart of this analysis is related to the fact whether the accounting data is enough to predict or explain the changes occurred in the CDS spreads within the time-span. The explanatory variables chosen are the five Indicators written down by The Interbank Deposit Protection Fund (it. Fondo Interbancario di Tutela dei Depositi (FITD)) which are related to bank profiles: Asset Quality, Solvency, Profitability, and Liquidity. I decided to focus upon these specific variables, as they analyze from all perspectives the balance sheets of the banks, thus drawing a focused representation of the bank's financial situation based on the accounting numbers. There are many works by scholars (Ming-Li and Liang in 2011, Chiaramonte and Casu, 2011, Zhang, 2005) who have analyzed the predictability power of CDS, based upon the cross-analysis with the standard financial ratios, such as Return on Equity, Net Interest Margin, Loan Loss Reserve/Gross Loans, capital impairment ratio, Tier 1 Ratio etc,. However, analyzing the predictability power on the basis of FTID ratios represented an unexplored domain until now.

The information regarding the ratios mentioned below was collected from the public information and Financial Statements the banks make public on their sites. The Financial information of the banks present on Datastream did not prove detailed enough to compare the banks. For this matter, has been decided to search for the necessary information for the ratios in the Financial Statements and Annual reports published by the banks. In term of validity of the data, this approach has guaranteed a more realistic image of bank's situation.

For increasing the number of the observations, quarterly data was taken instead of annual. However, not all the banks are consecutive in publishing their accounting information

on their sites, many of them failing to publish information for March and September<sup>32</sup>, opting for publishing only Financial Statements for half of the year, and end of the year. This have obviously impacted the number of observations across the sample, which differs from one indicator to another.

➤ Asset Quality Profile (A1)

Invariably, asset quality profile represent a vital domain for the bank. The poor management of assets has been the main reason many banks went into default, for the reasons of past lending policies, or present ones. The Asset Quality does represent also one of the most difficult aspects to manage, and also to assess in a bank analysis (Waymond, 2007). For analyzing the Asset Profile of banks, the following ration has been used.

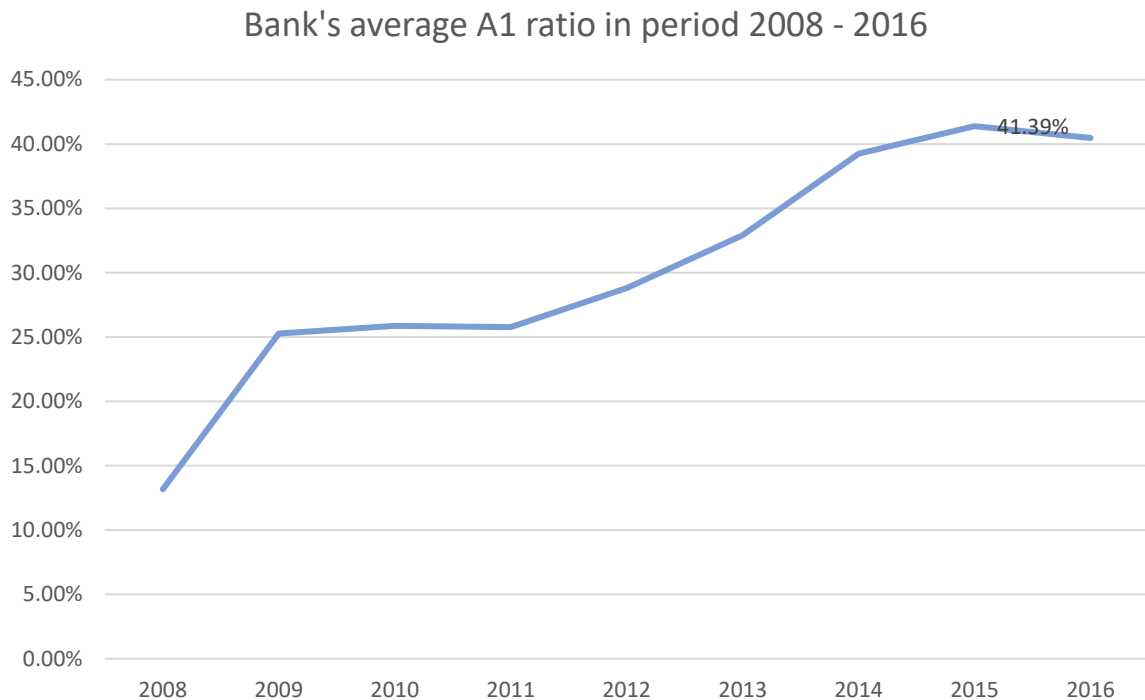
$$A1 = \frac{\text{Bad debts (net of adjustments)}}{\text{Supervisory capital}^{33}}$$

The ratio determines the bank's ability to carry out losses, without bearing the risk of becoming insolvent. An increase in the A1 indicator (ratio) would represent a greater probability that the bank would default. Thus, a positive change in the indicator will bring the same change in the CDS spreads.

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<sup>32</sup> On many occasions, banks such as Unicredit, Banca Popolare or Intesa San Paolo have not made public the Financial Statements for the first and third trimester, preferring to make public information about half and end of the year.

<sup>33</sup> The supervisory capital in the denominator will exclude Tier 3 elements.



*Chart 4: Dynamics of A1 ratio*

*Source: own elaborations*

From the chart presented above, we can state the trend of the mentioned indicator for the analyzed period, in the average for all the banks from the sample. The yearly averages were the average of ratios calculated for all 4 trimester. Given the peculiarity of the data used as base, and the restraints that such simple analyses have, we can nonetheless observe that the Italian economy has presented a quite dire situation in the years since 2008, reaching his highest in 2015. It is worth mentioning though, that only in a timespan of a year, the A1 indicator has practically doubled, which means that the banks have become twice riskier in only a couple of months. This were the immediate effects of the financial crisis, which hit the world, including Italy, in 2008. This is the most drastic hike for the years to come. Even if the economy presented an upward trend, it at least were gradual giving the country the opportunity to adapt.

Below it is reported the thresholds and present classes for the A1 indicator.

	<u>Low risk</u>	<u>Medium-Low risk</u>	<u>Medium risk</u>	<u>Medium-High risk</u>	<u>High risk</u>
<u>A1 indicator</u>	Up to 10%	from 10% to 20%	from 20% to 30%	from 30% to 50%	More than 50%

Table 108: : Indicator A1 thresholds and present classes

Source: FTID

As can be observed, the trend is ever worrying. The A1 indicator started low, at 12% in 2008 which represents the fact that the Italian banks were doing quite well. However, the time seems to have propelled the indicator always higher, so now for the Italian banking structure is facing a dire forecast, reaching its highest 41.39% - which placed the Italian banking industry in the Medium-High risk.

➤ Solvency Profile (P)

Solvency profile represent the ability of the banks (or the banking group) to meet their long-term financial obligations. The degree of bank's ability to cover the risks – it not only vital for bank's staying on the surface, but it's the key for being successful and dynamic. Hence, the management must always bear in mind to keep the balance between the risky assets and their coverage, with the use of equity capital together with attracted resources. The equation used by FTID for the Solvency profile is presented below:

$$P = \frac{\text{Supervisory capital, including Tier 3 - Total capital requirements}}{\text{Risk weighted assets (RWA)}}$$

This ratio helps understand the adequacy of the bank and its possibility to absorb eventual losses, should such situation occur. The lower the P indicator, the worse for the bank itself.



### Bank's average P ratio in period 2008 - 2016

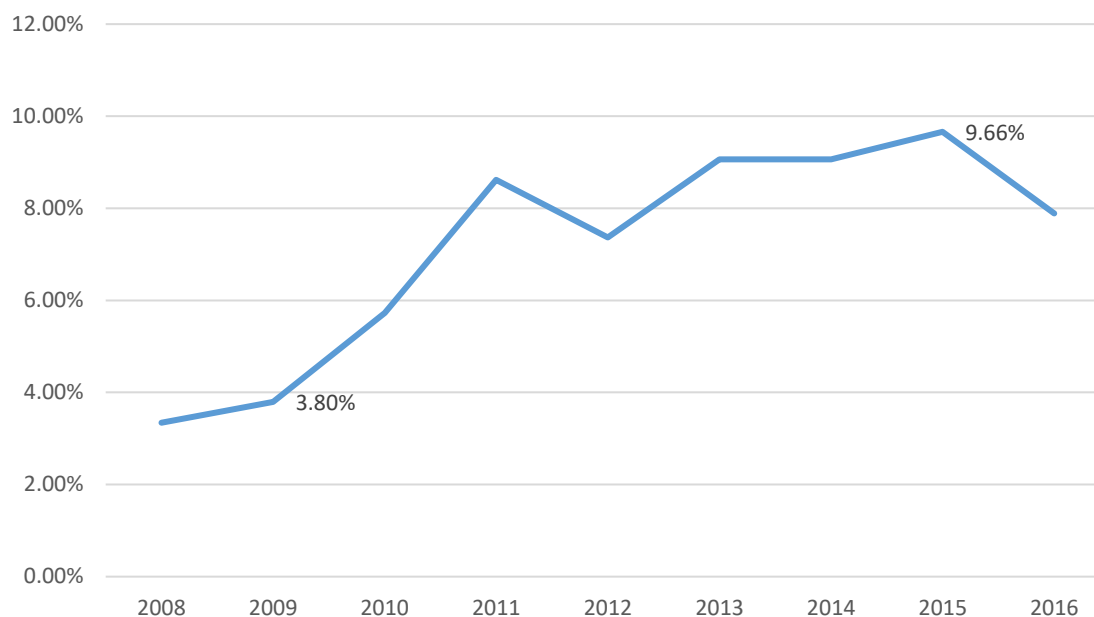


Chart 4: Dynamics of P ratio

Source: own elaborations

	<u><b>Low risk</b></u>	<u><b>Medium-Low risk</b></u>	<u><b>Medium risk</b></u>	<u><b>Medium-High risk</b></u>	<u><b>High risk</b></u>
<u><b>P indicator</b></u>	<u>More than 6%</u>	<u>between 3% and 6%</u>	<u>between 2% and 3%</u>	<u>between 1% and 2%</u>	<u>inferior to 1%</u>

Table 11: Indicator P thresholds and present classes

Source: FTID

Chart 4 is showing us the trend of the P indicator. As can be noticed from it, the banking industry started in the risky area from the 2008, being ranged in the Medium Low risk class, with a range of 3.8%. Nonetheless, we can notice that it has presented quite an improvement in the years to come, being ranged as not low risk in the 2015, however its latest trend in

going down since 2015, so that we could conclude that the banking industry is facing economic misfortunes.

Related to the effect and relationship between the indicator, and the CDS prices, a negative relationship is expected in changes in the ratio and the CDS spread. It will mean that the bank has more of a capital buffer.

➤ Liquidity Profile (L)

The liquidity management represent one of the basis of good banking structure functioning. It represent the ability to increase their assets, and pay out their obligations without having to incur unacceptable losses. The poor liquidity management might result in a liquidity crisis, which brings in toe the bankruptcy for the bank.

FTID ratio for analyzing the liquidity of the banks is represented below:

$$L = \frac{\text{Receivables from clients}}{\text{Payables from clients} + \text{Circulating bonds} + \text{structured payables from clients and bonds at FV}}$$

How we can observe from the table above, the more liquid the bank is, the better. However, is worth mentioning that this ratio creates uncertainty “*The relationship can be interpreted positively when banks with fewer deposits, and hence lower liquidity, are not perceived positively by the market. An increase [in liquidity] should therefore correspond to growth in CDS spreads. On the other hand, the relationship can be interpreted negatively when a high level of loans, for the same level of deposits, is perceived by the market as a positive signal, since sample banks are commercial banks and loans represent their core business. Growth in liq1 should therefore correspond to a decrease in CDS spreads.*”

(Chiaramonte & Casu, 2010) Nonetheless, the thresholds set by the FTID show that the lower the better, so that we should expect a positive relation

Bank's average L ratio in period 2008 - 2016

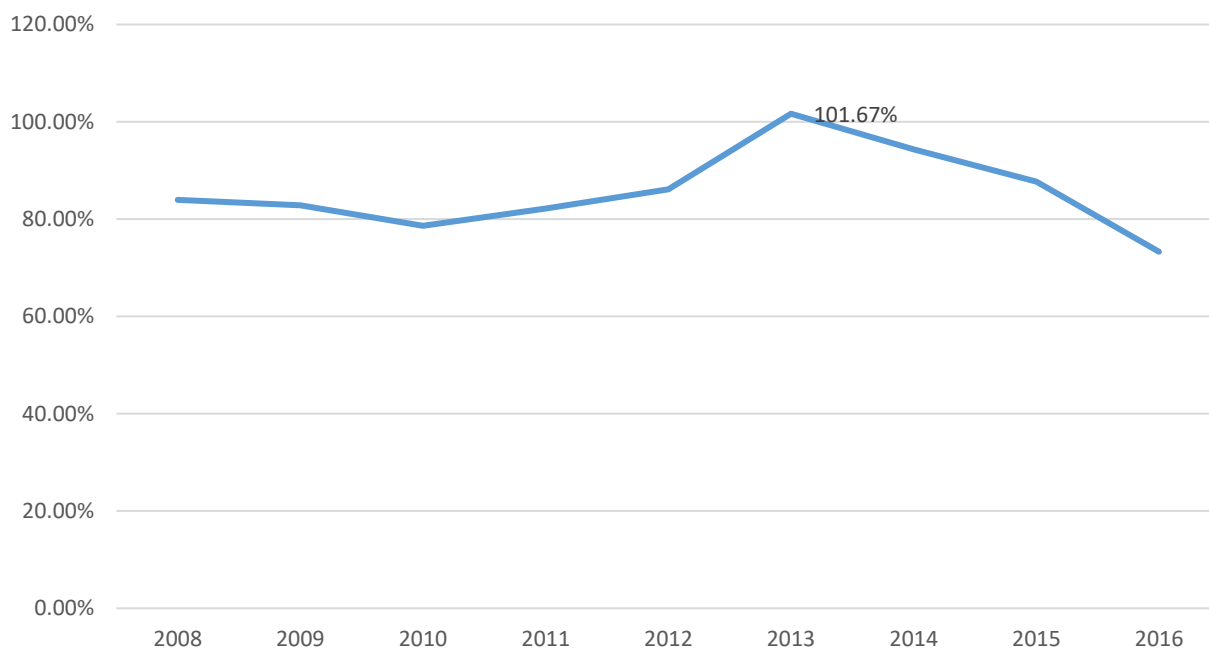


Chart 5: Indicator L - dynamics

Source: own elaborations

<u>L indicator</u>	<u>Low risk</u>	<u>Medium-Low risk</u>	<u>Medium risk</u>	<u>Medium-High risk</u>	<u>High risk</u>
	Up to 90%	between 90% and 100%	between 100% and 130%	between 130% and 200%	More than 200%

Table 12: Indicator L thresholds and present classes

Source: FTID

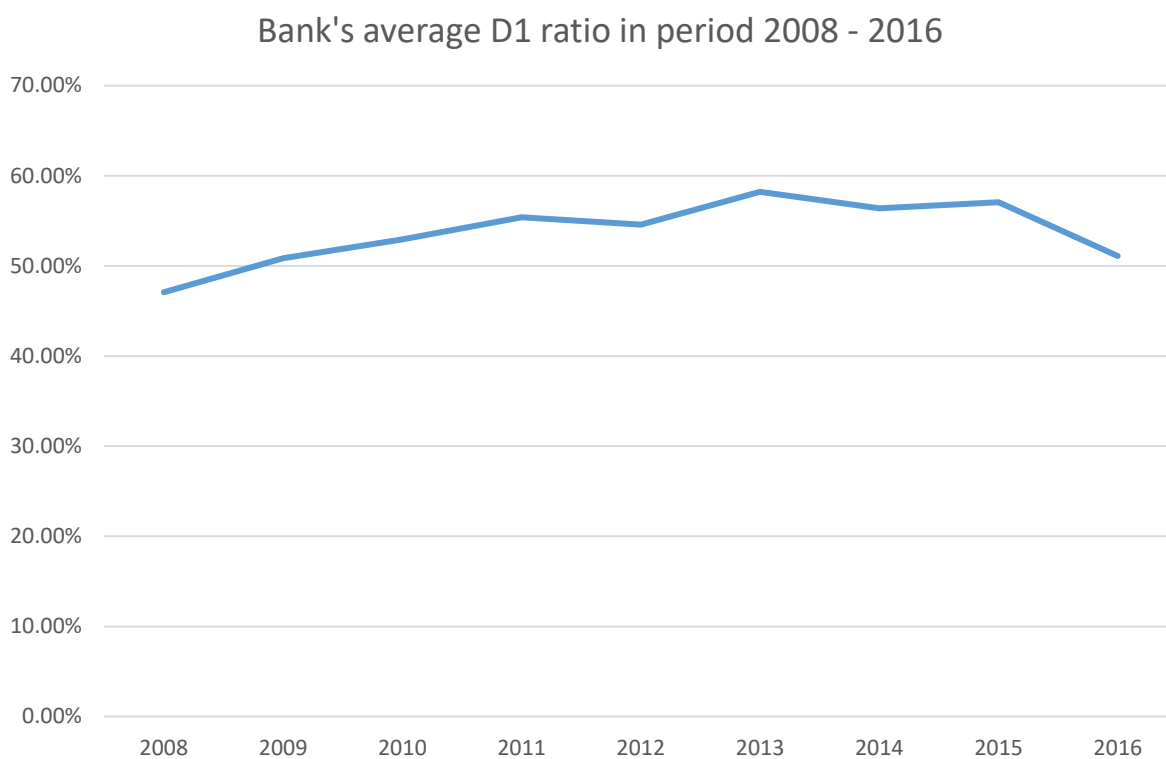
Judging by the trend in the chart above, the banking industry started low in the year 2008, ranging at 83.94%. The results might have settled in for a while, however, due to a poor management and failing to account to a number of liquidity measures, banks started to become less liquid. Its peaks were reached by the 2013, presenting a disconcerting 101.67%. Nonetheless, the chart above presents that the trend is downward for the last years,

➤ Profitability Profile (D1) (D2)

The ratios within this particular profile influence and reflect the ability of the bank to make money. The Profitability ratio is always perceived positively by the market. However, our financial history present situation when banks were heavily undervalued, and their market-to-book ratio were quite low, even if the bank had exuberantly high profits. The same situation goes the other way, with banks being overvalued. Nonetheless, the D1 ratio presented below draws up an understanding of bank's possibility to take on more expenses.

The following ratios, D1 and D2 are a measure of profitability chosen by the FTID. As it is specified by the FTID, "*Indicator D1 underlines an aspect of the ordinary business of the bank; it evidences both the coverage, through the gross income, of costs of the typical banking activity and the ability to meet possible extraordinary expenses*" (FTID, 2012)

$$D1 = \frac{\textit{Operating expenses}}{\textit{Gross Income}}$$



*Chart 6: Indicator D1 - dynamics  
Source: own elaborations*

	<u><b>Low risk</b></u>	<u><b>Medium-Low risk</b></u>	<u><b>Medium risk</b></u>	<u><b>Medium-High risk</b></u>	<u><b>High risk</b></u>
<u><b>D1 indicator</b></u>	<u>Up to 60 %</u> <u>or operating</u> <u>expenses = 0</u>	<u>between 60% and 70%</u>	<u>between 70% and 80%</u>	<u>between 80% and 90%</u>	<u>More than 90 % or operating expenses &lt; 0</u>

*Table 13: Indicator D1 thresholds and present classes  
Source: FTID*

As we can see in the chart above, the banking industry was coping quite well in the early 2008. Judging by the thresholds represented, the industry had very low level of risk in the first year of the analysis, but going onward the riskiness only increased. A strong positive

trend can be noticed for the years to come, however, coherent with the previous ratios, in the 2016 might be noticed a slight decrease in the percentage, which will undoubtedly bring to more positive results for the banking industry. In is worth mentioning, though, that the results

$$D2 = \frac{\text{Loan Losses (net of recoveries)}}{\text{Profit before Tax}}$$

Bank's average D2 ratio in period 2008 - 2016

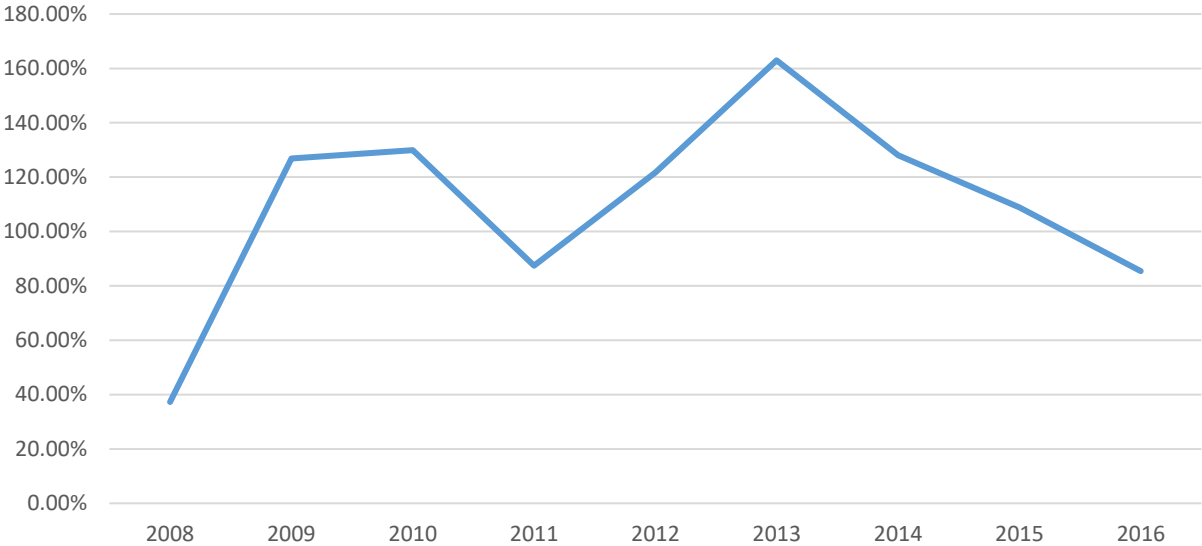


Chart 7: Indicator D2 - dynamics  
Source: own elaborations

The thresholds set for this indicator are:

	<u><b>Low risk</b></u>	<u><b>Medium-Low risk</b></u>	<u><b>Medium risk</b></u>	<u><b>Medium-High risk</b></u>	<u><b>High risk</b></u>
<u><b>D2 indicator</b></u>	Up to 20% or Loan losses <=0	between 20% and 40%	between 40% and 50%	between 50% and 60%	More than 60% or Profit

<u>before Tax &lt;</u>
<u>0</u>

Table 14: Indicator D2 thresholds and present classes

Source: FTID

It is worth noticing that during the financial crisis and the years of banking industry's adaptation to it, many banks have had tremendous losses. However, as specified by the FITD guidelines, the D2 ratio is calculated only if the denominator and numerator are both positive, otherwise, the indicators will not be calculated. Unfortunately, many banks in the sample during the years have written off extreme amount of money, which in fact can be noticed in the chart above. From the perspective of profitability, the banks results to have serious problems, resulting in a such a haphazard delineation of the trend line. It might have started low risk in 2008, but in just one year we can see drastic changes, jumping at more than 120% which in fact represents very high risk status for the banks or the banking industry itself.

For the impact for CDS prices, the higher both the ratios, the worse off for the bank, the higher the CDS spread.

Hereby, is presented a brief summary of the expected influence of the ration presented above with the CDS prices (spread). The resulting relationships are positive for each, except the P indicator, which has a negative correlation. Thus, an increase in the the value of P indicator will result in a decrease in the CDS spread, hence a lowering in the bank riskiness.

<i>Indicators</i>	<i>Description</i>	<i>Relationship</i> <sup>34</sup>
<u>Asset Quality Profile</u>		
<i>AI</i>		Positive
<u>Solvency Profile</u>		
<i>P</i>		Negative

<sup>34</sup> The impact the a change in the indicator brings in the level of riskiness of the bank. Since the riskiness of the issuing bank is tightly related with the prices for CDS contracts, the change in the indicators will bring the expected change in CDS spread.

<u>Liquidity Profile</u>	
<i>L</i>	Positive
<u>Profitability Profile</u>	
<i>D1</i>	Positive
<i>D2</i>	Positive

Table 15: Variables and the expected sign of influence upon the dependent variable

Using the software STATA, descriptive statistics are calculated for the variables A1, P, L, D1 and D2. Table 15 will show the summary statistics for the ratios.

variable	Obs	Mean	Std. Dev.	Min	Max
CDS_7_day	264	232.5163	200.7886	37.92499	1248.47
a1	200	.3630791	.3009073	.0087965	1.593315
p	197	.0894875	.0841389	-.0504039	.6834706
l	244	.9916267	.6716564	.605907	5.753767
d1	254	.6141484	.2328366	.0591221	2.816859
d2	179	1.329724	1.117861	.1415065	6.089568

Table 16: Variables and the expected sign of influence upon the dependent variable

Using the same software, a more in depth analysis is provided for the independent variables, showing information about the deviations from the mean value, for the each of the entire sample of banks.



Bank	A1	P	L	D1	D2
<b>BNL</b>	<b>0.01</b> (0.01)	<b>0.14</b> (0.01)	<b>0.85</b> (0.06)	<b>0.65</b> (0.05)	<b>0.34</b> (0.15)
<b>BP</b>	<b>0.46</b> (0.27)	<b>0.05</b> (0.02)	<b>0.93</b> (0.04)	<b>0.66</b> (0.07)	<b>1.7</b> (1.18)
<b>BPMilano</b>	<b>0.16</b> (0.09)	<b>0.06</b> (0.09)	<b>0.93</b> (0.03)	<b>0.62</b> (0.12)	<b>1.05</b> (1.02)
<b>IntesaSP</b>	<b>0.53</b> (0.16)	<b>0.12</b> (0.04)	<b>0.73</b> (0.02)	<b>0.52</b> (0.05)	<b>0.99</b> (0.69)
<b>Italease</b>	<b>0.59</b> (0.46)	<b>0.2</b> (0.16)	<b>2.78</b> (1.73)	<b>1.03</b> (0.69)	<b>1.92</b> (1.39)
<b>Mediobanca</b>	<b>0.07</b> (0.04)	<b>0.1</b> (0.15)	<b>0.69</b> (0.05)	<b>0.39</b> (0.05)	<b>1.04</b> (1.16)
<b>UBI</b>	<b>0.28</b> (0.13)	<b>0.07</b> (0.03)	<b>1</b> (0.05)	<b>0.65</b> (0.05)	<b>1.98</b> (1.34)
<b>Unicredit</b>	<b>0.73</b> (0.14)	<b>0.05</b> 0.01	<b>0.87</b> (0.10)	<b>0.6</b> (0.04)	<b>1.54</b> (0.9)
<b>Total</b>	<b>0.36</b> (0.3)	<b>0.09</b> (0.08)	<b>0.99</b> (0.67)	<b>0.61</b> (0.23)	<b>1.33</b> (1.12)

*Standard Deviation in the parentheses*

*Table 17: Summary statistics on five balance sheet ratios*

Table 17 presents information regarding each of the independent variables for the banks. The first number represent the Mean, meanwhile lower, in the parentheses are presented the standard deviation for each of the numbers. The table present that the lowest average A1 for all the sample is held by Mediobanca, meanwhile the highest by Unicredit. This means that from the perspective of assets quality, Mediobanca is deemed less risky. The average if this indicator for the sample is 0.36. The P indicator lowest average mean is 0.05 held by two banks, Banco Popolare and Unicredit, meanwhile the highest value is held by BNL. For this indicator the lower the riskier, and rom this perspective, BNL results to be the most solvent from all the sample. For the industry in total this variable equals 0.09. However, the L indicator presents a quite different picture, the lowest average ratio being held by Medibanca, meawhile the highest by Italeasea. Now, in term of the later bank, it is

understandable, since it has stumbled badly on selling the derivatives to its customers, and when it was impacted by the market, the liquidity ratio surged. This of course will also influence the average L ratio for all the sample. Providing the same summary analysis without Italease, the mean for the sample is equal to 0.90 which is fairly good, standing in the Medium-Low Risk stage according to the thresholds set by the FITD. From the Liquidity point of view, Italease seems to be the least liquid, meanwhile Mediobanca the most. On the other side, the D1 indicator maintains its lowest with Mediobanca, its average being of just 0.39 and its highest with Italease again. It was to be expected, given that Italease stumbled badly with the profitability during the years of crisis. Disregarding Italease however, we see that for the fairly operating banks, the average ratios are at the level of 0.60 – that is in Medium-Low Risk stage again. The same is provided by the total average of D1 for the sample – 0.61. Thus, the whole bank sample is settled in the Medium-Low Risk stage. And last, the D2 average lowest value is held by BNL with only 0.34, meanwhile the highest by UBI, with 1.98. The D2 indicator provides warring results, due to the fact that it is the indicator regarding the losses. The ratios are mostly different due tot the fact that banks are usually entitled to withholding the losses the most time possible, then writing off tremendous amounts of them at one moment.

## Chapter 5: Empirical Analysis

In this chapter, the statistical analysis of the information richness will be provided. It was decided to use a linear approach, starting from general model, and with time, adding more specifications. Data are organized as a panel, for the timespan between 2008 and 2016.

### 5.1. Empirical Methodology

The understand whether truly the financial ratios reported in the FTID could explain the changes in the CDS prices (spread. It was to be expected, since the sample of the banks taken for the analysis provided enough financial data (taken quarterly), and also sufficient CDS observations, such results were to be expected, as the sample is not random, and the results are not general for all the banks.

#### **The regression model**

The regression equation is represented as follows:

$$CDS_{i,t} = \alpha + \beta(BankRatios)_{it} + \varepsilon_{i,t} \quad (1)$$

where  $i$  is the number of the bank, and where  $t$  represents the time period and  $\varepsilon_{i,t}$  stands for the error term. It was chosen to introduce the linear equation since it has proven itself to be the best in terms of the explanatory capacity of the variables. The logarithmic regression did not allow capturing the trend of Credit Default Swaps.

It is to be mentioned that this analysis will be based solely on time-varying variables (in specific FITD ratios based on Financial Statement Accounting information) thus, it will not include any market-specific variables. Previous investigations which depicted the

relationship between financial ratios and CDS spreads, and not only, have always included market specific variables, in order to rationalize market conditions or other unexplained uncertainties such model might require. However, due to the fact that the sample of our analysis is homogenous, and also operated on the same market, all the banks operating on the Italian territory were affected in the same way by the external forces, there is not necessity to provide some additional variables for such conditions. As such, the choice of providing an analysis, which will include only the bank specific variables, was obvious.

Since the econometric model for the regression is decided, the second step is to understand the estimation technique, which proves more suitable for the model. The choice stands between Fixed Effects and Random Effects.

The Random Effect Model rationale is that, assuming that there is variation across the banks in the sample, we can argue that such variation is uncorrelated with the predictor on the independent variables, and thus is totally random.

As such, including all financial ratios, the equation for the RE will be:

$$CDS_{i,t} = \alpha_1 + \alpha_2 A1_{i,t} + \alpha_3 P_{i,t} + \alpha_4 L_{i,t} + \alpha_5 D1_{i,t} + \alpha_6 D2_{i,t} + \varepsilon_{i,t} \quad (2)$$

However, some might argue that taking the sample of rather different banks operating on Italian ground, there might be still some hidden correlation for the unobserved effect with the explanatory variables. It is only rational to assume the presence of some unobservable variation from one bank to another, thus we add the  $\mu_i$  variable to stand for such effects, and add consistency to the model. This brings inconsistency in the Random Effect Model. Hence, we will employ the Fixed Effect Model, because “...*this model controls for all time-invariant differences between the individuals, so the estimated coefficients of the fixed-effects models cannot be biased because of omitted time-invariant characteristics...*”<sup>35</sup> In order to account for the hidden characteristics which might bias the Random Effect Model.

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<sup>35</sup> “*Panel Data Analysis Fixed and Random Effects using Stata*” by Oscar Torres-Reyna, Princeton University, 2007

Hence, the equation will be transformed to:

$$CDS_{i,t} = \alpha_1 + \alpha_2 A1_{i,t} + \alpha_3 P_{i,t} + \alpha_4 L_{i,t} + \alpha_5 D1_{i,t} + \alpha_6 D2_{i,t} + \mu_i + \varepsilon_{i,t} \quad (3)$$

A model with a random effect occurs only in the case of uncorrelated random effects with regressors. This requirement is often violated. Since the key issue is to choose between the Fixed Effect Model or Random Effect Model, seeing if there is some correlation between the characteristic that affect the explanatory variable, it was decided to test the assumptions by running the Hausman test. Woolridge (2010) states that the choice should be against RE when the results show a correlation between the variable and the indicators.

## 5.2. Regression findings.

In this section the results of the regression will be discussed. Subsequently, analysis will validate the model's adequacy and the sensitivity of the coefficients of significant variables. The two models described in the previous subchapter, by equations (2) and (3) were processed with Stata Software.

Some preliminary clarifications are in order.

- i) It is worth mentioning that the number of observations for the ratios differs for each, which is due to the fact that, as mentioned earlier, not all the banks are consistent in uploading their Financial Statements on trimestral basis. Some of them, occasionally, published only the Financial Statement for July and the Annual Report for December. As such, the necessary information and number for calculating the FITD ratios were impossible to find, hence for the specific trimester the ratio was not calculated, which in turn diminished the number of observations.
- ii) The market might need a certain amount of time to incorporate the information, and this time span is not discovered yet. In order to test the dynamic of the

financial data influence of and information efficiency of the CDS, same regressions were performed using the CDS prices for the different time periods, specifically:

<b>Dependent variables</b>		
CDS_1_day	CDS_6_day	CDS_11_day
CDS_2_day	CDS_6_day_average	CDS_11_day_average
CDS_2_day_average	CDS_7_day	CDS_12_day
CDS_3_day	CDS_7_day_average	CDS_12_day_average
CDS_3_day_average	CDS_8_day	CDS_13_day
CDS_4_day	CDS_8_day_average	CDS_13_day_average
CDS_4_day_average	CDS_9_day	CDS_14_day
CDS_5_day	CDS_9_day_average	CDS_14_day_average
CDS_5_day_average	CDS_10_day	CDS_15_day
	CDS_10_day_average	CDS_15_day_average

*Table 18: Dependent variable at different time regarding the publication of financial information*

All the specified time period were analyzed under Random Effect Model, Fixed Effect Model tested with the Hausman test. In the core of the analysis will be showed only the most significant (from theory's perspective) points in time, such as results for CDS\_1\_day, CDS\_7\_day and CDS\_15\_day. However, for more information about the dynamics, a big share of the regressions would be included in the Appendix part.

When analyzing the information efficiency for the CDS (Chapter 4) it has been specified by Micu, Remolona, and Wooldridge (2004) and Zhang (2009) that the CDS tend to have the immediate reaction (comparing to bonds and stock) to the newly made public information of bankruptcy. Thus we might assume a quite a rapid impact upon the market,

the following table shows the data related to CDS prices one day after the information is made public.

In the Table 19 are presented the results for the Random Effect Model (1), which assumes there is no bank specific variables to be accounted for:

VARIABLES	CDS_1_day					
<b>A1</b>	<b>-12.18</b> (64.08)					<b>-17.69</b> (67.81)
<b>P</b>		<b>-279.1*</b> (166.5)				<b>-157.8</b> (202.5)
<b>L</b>			<b>-24.54</b> (22.55)			<b>253.3**</b> (125.2)
<b>D1</b>				<b>-65.98</b> (55.74)		<b>94.99</b> (183.5)
<b>D2</b>					<b>13.24</b> (12.00)	<b>7.382</b> (14.44)
Observations	199	196	243	252	177	142
R-squared						
Number of banknum	8	8	8	8	8	8

Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

*Table 19: Panel Regressions Random effects  
Source: Own elaborations*

For the Random Effect panel regression emerges that the results are in line with the theory expected. All five of the variables have the expected sign, (check Apex. 1), with one exception, A1 in negative instead of positive, which means that an increase on A1 would infer a decrease, rather than increase in CDS prices, which does not stand as correct according to the expected sign provided by the FTID guidelines. However, only one of them, the L indicator that stands for the liquidity of the banks results to be significant, even if not strongly. All of the remaining variables result to be non-significant.

As specified earlier, the RE model does not take into account some possible characteristics, whose existence is only plausible we assume, thus, for avoiding biased results we perform the regression under Fixed Effect Model

The results for regression under Fixed Effect Model are:

VARIABLES	CDS_1_day					
<b>A1</b>	<b>-30.53</b> (71.80)					<b>63.33</b> (90.72)
<b>P</b>		<b>-261.9</b> (171.7)				<b>-86.64</b> (203.8)
<b>L</b>			<b>-44.70*</b> (24.72)			<b>794.2***</b> (285.9)
<b>D1</b>				<b>-94.77</b> (57.88)		<b>161.9</b> (222.3)
<b>D2</b>					<b>11.82</b> (12.25)	<b>12.83</b> (14.80)
Observations	199	196	243	252	177	142
R-squared	0.001	0.012	0.014	0.011	0.006	0.068
Number of banknum	8	8	8	8	8	8

Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 20: Panel Regressions Fixed effects

Source: Own elaborations

The Fixed Effect Model provide results that are more in line with the expectations, rather than the Random Effects. As can be seen, all the variables have the expected sign, however, yet again, only one variable L is significant (and to a stronger degree when confronted with Random Effect Model).

As to better understand which of the models is better suited for running the regression, the Hausman test was performed. The results are provided in the table below:



VARIABLES	CDS_1_day											
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	FE	RE	FE	RE	FE	RE	FE	RE	FE	RE	FE	RE
<b>A1</b>	<b>-30.53</b> (71.80)	<b>-12.18</b> (64.08)									<b>63.33</b> (90.72)	<b>-17.69</b> (67.81)
<b>P</b>			<b>-261.9</b> (171.7)	<b>-279.1*</b> (166.5)							<b>-86.64</b> (203.8)	<b>-157.8</b> (202.5)
<b>L</b>					<b>-44.70*</b> (24.72)	<b>-24.54</b> (22.55)					<b>794.2***</b> (285.9)	<b>253.3**</b> (125.2)
<b>D1</b>							<b>-94.77</b> (57.88)	<b>-65.98</b> (55.74)			<b>161.9</b> (222.3)	<b>94.99</b> (183.5)
<b>D2</b>									<b>11.82</b> (12.25)	<b>13.24</b> (12.00)	<b>12.83</b> (14.80)	<b>7.382</b> (14.44)
Observations	199	199	196	196	243	243	252	252	177	177	142	142
R-squared	0.001		0.012		0.014		0.011		0.006		0.068	
Number of banknum	8	8	8	8	8	8	8	8	8	8	8	8
Hausman Stat.		0.321		0.169		3.963		3.420		0.336		11.29
Hausman P-Value		0.571		0.681		0.0465		0.0644		0.562		0.0459

Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 21: Panel Regressions FE, RE and Hausman Test

Source: Own elaborations

Hausman test, under the null hypothesis stipulates that both estimation model are respectively adequate for testing, and when compared, the results should not differ from one another. The alternative hypothesis stipulates that the Random Effect Model is not adequate, thus should be rejected in favor of Fixed Effect Model.

This rejection is due to the fact that the Random Effect Model is inconsistent, since it fails to provide a proxy for measuring the specific characteristics, which affect the estimator. Thus, for lack of inconsistency is better substituted with Fixed Effect. The choice is based upon the difference between the two set of coefficients. The bigger the number, the bigger the Hausman statistic, and thus the bigger the difference between the model.

As we can see from the previous table, taking into account the Hausman p-values presented, the null hypothesis is rejected, thus the adequate choice would result the using of Fixed Effect Model. Not only that it provides a more aligned with theory results, but under Hausman test, it indicates to be the suited type of econometric method. However, it must be point out that the R-squared value are quite low, or rather the scarce ability of the model to provide insight referring to the change of the CDS prices.

Yet, on the other hand, some might argue that 1 day since the information become public is little time to allow the market to incorporate this information, and, thus react.

Jacobs, Karagozoglou and Peluso (2010) in their work related to the tie between the CDS prices and the Credit Ratings mention that the prices of CDS should be taken on weekly basis to avoid the influence of the weekend trading. Meller and Otto (2013) sustain the same idea, arguing that the data sample must be adjusted for weekends and public holidays, The main reason behind it, that the trading activity in weekdays might be inconsistent with the trading rhythm of the weekdays, thus, the information to be taken would be somehow biased. To test the theory, the same regression was performed using as dependent variable the prices of CDS 7 days. It might be interesting to see the impact on the market in one week from the publication.

In the table below we can observe the results of the

VARIABLES	CDS_7_day					
<b>A1</b>	<b>-29.10</b> (68.79)					<b>-28.01</b> (70.42)
<b>P</b>		<b>-289.5</b> (180.5)				<b>-167.5</b> (213.7)
<b>L</b>			<b>-21.95</b> (24.31)			<b>240.1*</b> (130.7)
<b>D1</b>				<b>-52.61</b> (60.41)		<b>172.8</b> (192.1)
<b>D2</b>					<b>11.46</b> (12.85)	<b>5.408</b> (15.22)
Observations	199	196	243	252	177	142
Number of banknum	8	8	8	8	8	8

Standard errors in parentheses  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 22: Panel Regressions Random effects  
Source: Own elaborations

As we can see, the new results are almost identical to the ones presented in the REM regression using CDS\_1\_day. A1 still has a negative impact, instead of positive, and the only significant is still the Liquidity ratio (L), however we can denote that is significant to a lesser degree and the number is going down, from 253.3bp to 240.1bp.

Running the Fixed Effects Model instead, we get:

VARIABLES	CDS_7_day					
<b>A1</b>	<b>-52.99</b> (77.96)					<b>56.81</b> (95.82)
<b>P</b>		<b>-266.3</b> (186.8)				<b>-86.21</b> (215.3)
<b>L</b>			<b>-42.42</b> (26.92)			<b>824.6***</b> (302.0)
<b>D1</b>				<b>-82.15</b> (63.09)		<b>276.2</b> (234.8)
<b>D2</b>					<b>9.849</b> (13.14)	<b>10.81</b> (15.63)

Observations	199	196	243	252	177	142
R-squared	0.002	0.011	0.010	0.007	0.003	0.071
Number of banknum	8	8	8	8	8	8

Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

*Table 23: Panel Regressions Fixed effects*

*Source: Own elaborations*

Table 23 provides an image of the impact of financial ratios on CDS\_7\_day variable. Comparing with the earlier estimations, the results are mostly in line, but still we notice an increase in the number. The single variable presenting a strong significance, L, reports an increase from 794.2bp to 824.6bp. Again, all other indicators do not present any significance, albeit the sign being in line with the expectations.

The Hausman test, performed for the two models with the CDS\_7\_day variable presents the following results:

VARIABLES	CDS_7_day											
	(1) FE	(2) RE	(3) FE	(4) RE	(5) FE	(6) RE	(7) FE	(8) RE	(9) FE	(10) RE	(11) FE	(12) RE
<b>A1</b>	<b>-52.99</b> (77.96)	<b>-29.10</b> (68.79)									<b>56.81</b> (95.82)	<b>-28.01</b> (70.42)
<b>P</b>			<b>-266.3</b> (186.8)	<b>-289.5</b> (180.5)							<b>-86.21</b> (215.3)	<b>-167.5</b> (213.7)
<b>L</b>					<b>-42.42</b> (26.92)	<b>-21.95</b> (24.31)					<b>824.6***</b> (302.0)	<b>240.1*</b> (130.7)
<b>D1</b>							<b>-82.15</b> (63.09)	<b>-52.61</b> (60.41)			<b>276.2</b> (234.8)	<b>172.8</b> (192.1)
<b>F2</b>									<b>9.849</b> (13.14)	<b>11.46</b> (12.85)	<b>10.81</b> (15.63)	<b>5.408</b> (15.22)
Observations	199	199	196	196	243	243	252	252	177	177	142	142
R-squared	0.002		0.011		0.010		0.007		0.003		0.071	
Number of banknum	8	8	8	8	8	8	8	8	8	8	8	8
Hausman Stat.		0.424		0.233		3.133		2.636		0.350		11.45
Hausman P-Value		0.515		0.630		0.0767		0.104		0.554		0.0431

Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 24: Panel Regressions FE, RE and Hausman Test

Source: Own elaborations

According to the p-value of the Hausman test, the null hypothesis that the two model are aligned and consistent with one another is, again, rejected. The choice would be again mad in favor of FEM.

The results of the FEM though, present an interesting image of the L indicator. If previous impact on the CDS price after 1 day of publishing was estimated to be equal to 794.2bp, now we see that, after one week, the impact of L is around 824.6bp. This means an increase of 30.4bp, in one week. According to this, one might argue that measuring the market efficiency and information richness after one week of publishing might more adequate for getting a more accurate image of the market itself.

Nonetheless, to test yet again the explanatory power of the variables, it was decided to analyze the effect within 15 days after the publication. The purpose of performing the regression with the CDS\_15\_day variable, is to test whether the market has already incorporated the newly arrived information, and whether it will still impact.

Table 25 provided information regarding the REM using the CDS\_15\_day variable:

VARIABLES	CDS_15_day					
<b>A1</b>	<b>-37.52</b> (67.65)					<b>-40.27</b> (71.26)
<b>P</b>		<b>-305.3*</b> (177.9)				<b>-180.9</b> (214.3)
<b>L</b>			<b>-24.35</b> (24.68)			<b>277.5**</b> (131.8)
<b>D1</b>				<b>-70.33</b> (61.71)		<b>148.5</b> (193.6)
<b>D2</b>					<b>10.76</b> (13.01)	<b>4.859</b> (15.27)
Observations	199	196	243	252	177	142
R-squared						
Number of banknum	8	8	8	8	8	8

Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 25: Panel Regressions Random effects  
Source: Own elaborations

This table reports the results of the regression of CDS spread for 15<sup>th</sup> day after publication. The results change for all the indicators, albeit is nothing of significant.

Providing the results under FEM, we get that

VARIABLES	CDS_15_day					
<b>A1</b>	<b>-65.39</b> (76.91)					<b>26.10</b> (96.43)
<b>P</b>		<b>-284.6</b> (184.2)				<b>-103.5</b> (216.7)
<b>L</b>			<b>-49.90*</b> (27.56)			<b>837.4***</b> (303.9)
<b>D1</b>				<b>-107.2*</b> (64.65)		<b>268.2</b> (236.3)
<b>D2</b>					<b>8.936</b> (13.29)	<b>10.28</b> (15.73)
Observations	199	196	243	252	177	142
R-squared	0.004	0.013	0.014	0.011	0.003	0.074
Number of banknum	8	8	8	8	8	8

Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

*Table 26: Panel Regressions Fixed effects*

*Source: Own elaborations*

As we can see the values are more or less in line with the previous results, except A1 indicator. The later shows a lower value, sporting a considerable decrease when comparing to the previous regressions. It decreases from 63.33bp in first day of impact, to 56.81bp to the seventh day, and until the 26.10bp in the 2 weeks since the publication of data. L instead is remaining always relatively in the same range, providing only a change of 13bp, a change that is not significant enough.

VARIABLES	CDS_15_day											
	(1) FE	(2) RE	(3) FE	(4) RE	(5) FE	(6) RE	(7) FE	(8) RE	(9) FE	(10) RE	(11) FE	(12) RE
<b>A1</b>	<b>-65.39</b> (76.91)	<b>-37.52</b> (67.65)									<b>26.10</b> (96.43)	<b>-40.27</b> (71.26)
<b>P</b>			<b>-284.6</b> (184.2)	<b>-305.3*</b> (177.9)							<b>-103.5</b> (216.7)	<b>-180.9</b> (214.3)
<b>L</b>					<b>-49.90*</b> (27.56)	<b>-24.35</b> (24.68)					<b>867.4***</b> (303.9)	<b>277.5**</b> (131.8)
<b>D1</b>							<b>-107.2*</b> (64.65)	<b>-70.33</b> (61.71)			<b>268.2</b> (236.3)	<b>148.5</b> (193.6)
<b>D2</b>									<b>8.936</b> (13.29)	<b>10.76</b> (13.01)	<b>10.28</b> (15.73)	<b>4.859</b> (15.27)
Observations	199	199	196	196	243	243	252	252	177	177	142	142
R-squared	0.004		0.013		0.014		0.011		0.003		0.074	
Number of banknum	8	8	8	8	8	8	8	8	8	8	8	8
Hausman Stat.		0.580		0.186		4.344		3.667		0.442		10.47
Hausman P-Value		0.446		0.667		0.0371		0.0555		0.506		0.0630

Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 27: Panel Regressions FE, RE and Hausman Test  
Source: Own elaborations



It was only reasonable to expect that 15 days after the publication of data, the market would have already incorporated the information in the price. The results after 15 days following the publication of financial information is only in line with the expected results. As we can see, albeit all the indicator having a slight increase, none of it is drastic enough, thus we can affirm the information is already stale. However, for a more in-depth view of the dynamics, one should refer to the appendix part that will include the same regression of Fixed Effect, Random Effect and Hausman test at all the point in time between 1 day and 15 days after the financial information is made public (including the averages).

### 5.3. Discussing the results

This results of this empirical analysis are in line with the opinion of Jacobs, Karagozolu and Peluso (2010) and Meller and Otto (2013), stipulating one week is the more accurate time for measuring the information efficiency on different market and balance sheet variables upon the prices of CDS . According to the presented tables, the CDS\_1\_day regression, albeit showing significant results, is deemed to have little ability to provide an accurate image of the information richness, and predictability power. However, under the CDS\_7\_day the data becomes more accurate, the market already being able to have a reaction to the data, fact that becomes obvious in the values. The indicators show much increase in their value with the week passing by, however for the CDS\_15\_day tables, the indicator's value do not show a drastic dynamics, except for asset quality indicator. All of the other are almost on the same level with CDS\_7\_day values. The lack of dynamics serves as an indicator that 2 weeks taken as a gap for letting the information be incorporated, is too much for measuring the impact of financial data. The market has already reacted to this kind of information, either good or bad, and the initial shock was already passed and incorporated.

Provided the results, can be seen that the regression find only one indicator "L" to have a strong statistical significance, and L stands for a measure of liquidity for the bank. Thus., this indicator proves to have the strongest explanatory power for CDS spread changes. Considering that in increase in this ratio is due to a decrease in the banks ability to remain

solvent (whether through a decrease in the amount of receivables from the clients, thus bank's assets, whether through an increase in the amount of payables to the client, thus bank's debt). Here, a change by 1% in the L ratio would infer an increase of 824.6 basis point in the CDS spread.

This is expected, because the liquidity of the bank is highly tied with the Credit Default Swap. The liquidity ratio is the indicator that is "closest" to a situation of difficulty of a bank.

As such, the incapability of the bank to pay out their debt would be the first step toward its bankruptcy, which is consistent with previous findings that liquidity is a key determinant of the level of credit spreads

However, all other indicators' coefficient appear to have the expected sign, provided by the FTID, in relation to the CDS prices, but in the context of this analysis, they lack the significance. One reason is associated to the fact the Credit Default Swaps market is highly tuned to such indicators as liquidity, meanwhile a profitability ratio, for instance, would not have the same impact upon the CDS prices. Alternatively, rather, the other indicator could be already priced by the market. The market might take for granted bad news about asset quality of the bank, or profitability, thus they may expect such outcomes since the situation on the market is dire for all of the banks, thus is unlikely that any of the market participant would somehow react to such foreseeable news. As well, all other indicators within the model have more of a long-term relevance for the market, in the meantime liquidity having a disruptive effect in the very short term.

## Conclusions

This thesis's main goal is to provide an analysis of the reform of the corporate governance. The need for restructuring the cooperative banking system was acutely actual after the crisis that hit the world in 2008. The banking system, not only Italian, struggles with the aftermath of the crisis now. As its purpose, the reform of cooperative credit is, along with that of the popular banks, a key part of the Italian banking system consolidation strategy. The consolidation was expected, since the cooperative banks operate at local levels, and with time became unsuitable for competing in the ever-changing world of finance. The reform was also called upon to strengthen the ability of the financial sector to contribute to the recovery of the economy. The new Law No. 49/2016 reaffirms and protects the identity and role of the BCCs, territorial banks with a prevalent mutuality. The law specifies, that under specific circumstances, the banks could adhere to banking group, each of which would be led by a parent. With the purpose of transforming and consolidating the banks, the regulation limits the activities to be carried out by adhering groups, reserving them for the parent banks.

It is undoubtedly true that the officials are having high expectations for this reform, as it might give second life to the industry, in the meantime, however, the market participants are more reserved. The fact that banks are to be ruled by the parent company, settles challenges for the parent itself, related to risk governance, and also, control systems. The parent is expected to coordinate and direct the group, which in turn is highly disliked by the adhering bank. Their reservation is enticed with the fact that they are losing control over their own assets and directions. Also, the reform provision settled that the parent is to provide a set of prudential requirements that the banks must comply with, and also ensure their compliance. These prudentials will be settled within the cohesion contract. However, the reform fails to provide a developed framework that the parent might use, instead providing only ambiguous provisions as a guidelines for parent when building its own prudential principles.

As a source of inspiration, in the 3<sup>rd</sup> Chapter, a list of possible frameworks: such as ICAAP, FITD, Rating Agencies and SREP was provided. This frameworks hold financial

principles and thresholds which may be used when building the cohesion contract, as they all related to the procedure: assessing the risk of the bank. My choice has fallen upon the FITD ratios, since they analyze the banks from all the perspective: Asset Quality, Solvency, Liquidity and Profitability. The same aspect will be needed to be assessed by the parent company, for a newly adhering bank, or on continuing basis.

In the second part of the thesis, Chapter 4, I wanted to investigate how the bank riskiness of the bank could be investigated. My choice has fallen on the Credit Default Swaps spread, as it has been argued that the contracts are a good proxy for bank's financial distress.

The analysis was conducted upon a sample of 8 Italian banks that trade in CDS contracts, for the time span between 2008 and 2016. As a independent variable I have chosen the five financial ratios provided by the FITD.

The explanatory power of the ratios under the Random Effect Model has proven to be low. In fact, among the independent variables only Liquidity was proven to be significant, even if o a lesser degree that expected. This has motivated to perform the regression under Fixed Effect Model, running also the Hausman test, to be sure of the choice of the econometric model. The results were better. The relationship between CDS prices Liquidity balance sheet ratios was even stronger this time. However it is worth mentioning that the other balance sheet ratios did have the expected sign with respect to their influence on the CDS spread, but they all resulted insignificant for the model.

This was to be expected, as the Liquidity profile has the closest ties to the events of default. The other ratios related to profitability of the bank, or rather losses, a poor quality of the assets, or the solvency of the bank might be attributed and extended to the market. This is ratio that might influence in the long run, their impacts are not extreme and immediate. They can be attributed to systemic risks, so their effects can not be perceived in the short run. In the meantime, the Liquidity profile of the bank has an immediate effect upon the market, specifically the prices of the CDS. They tend to surge whenever negative data is published. The effect of dire news related to the banks tend to have the effect of the "bomb". Since the

liquidity profile is related exclusively with the management choices of the banks, this indicator is idiosyncratic and would not be discounted by market participants.

On the whole, there is a strong correlation between the price of the CDS and the balance sheet ratio related to liquidity. This means that, as a contract, the dynamics of the CDS contracts in the market could provide accurate insights related to the financial situation of the banks. Thus, the prices of the CDS contracts provide an image of the current situation of the bank, and might be used to foresee signs of a possible crisis in the banking sector, and take measures.

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## Abbreviations list:

**BCC** - Banca di Credito Cooperativo

**BRRD** - Bank Recovery and Resolution Directive

**CR** - Cassa di Risparmio

**EBA** - European Banking Authority

**EMS** - European Monetary System

**FGDCC** - Fondo di Garanzia dei Depositanti del Credito Cooperativo

**FITD** - Interbank Deposit Protection Fund

**SREP** - Supervisory Review and Evaluation Process

**TUB** - Testo Unico Bancario

**BCBS** - Basel Committee on Banking Supervision

**TUCRA** - Testo Unico delle Casse Rurali e Artigiane

**ICAAP** - Internal Capital Adequacy Assessment Process

**NPL** - Non-Performing Loans

**CDS** - Credit-Default Swap

## Appendix

Appex 1: Sign of influence between the Indicators and the explanatory variable.

<i>Indicators</i>	<i>Description</i>	<i>Relationship</i> <sup>36</sup>
<u>Asset Quality Profile</u>		
<b>A1</b>	Bad debts/Supervisory capital (%)	Positive
 <u>Solvency Profile</u>		
<b>P</b>	Supervisory capital – Total capital requirements / RWA (%)	Negative
 <u>Liquidity Profile</u>		
<b>L</b>	Receivables /Payables + Circulating bonds + structured payables from clients and bonds at FV (%)	Positive
 <u>Profitability Profile</u>		
<b>D1</b>	Operating expenses/Gross Income (%)	Positive
<b>D2</b>	Loan Losses /Profit before Tax (%)	Positive

<sup>36</sup> The impact the a change in the indicator brings in the level of riskiness of the bank. Since the riskiness of the issuing bank is tightly related with the prices for CDS contracts, the change in the indicators will bring the expected change in CDS spread.

Table 28: Panel Regressions FEM, REM and Hausman Test

**Note:** Panel Regressions Fixed-Effects, Random Effect, tested with Hausman test. The dependent variable CDS spreads, which measure the probability of default. CDS spread represents the average for 2 days after the publication of financial information. The explanatory variables are 5 balance sheet ratios referring to Asset Quality (A1), Solvency (P), Liquidity (L) and Profitability. (D1, D2). Standard Errors of estimated coefficients are reported in parentheses.

VARIABLES	CDS_2_day_average												
	FE	RE	FE	RE	FE	RE	FE	RE	FE	RE	FE	RE	
<b>A1</b>	<b>-31.23</b> (72.53)	<b>-12.76</b> (64.69)										<b>63.57</b> (90.76)	<b>-18.23</b> (67.79)
<b>P</b>			<b>-259.0</b> (173.5)	<b>-276.8*</b> (168.2)								<b>-83.33</b> (203.9)	<b>-154.5</b> (202.5)
<b>L</b>					<b>-44.22*</b> (24.98)	<b>-24.09</b> (22.77)						<b>788.2*</b> **	<b>252.5*</b> *
<b>D1</b>							<b>-92.83</b> (58.47)	<b>-64.13</b> (56.30)				<b>162.8</b> (222.4)	<b>96.47</b> (183.5)
<b>D2</b>									<b>11.68</b> (12.27)	<b>13.08</b> (12.03)	<b>12.56</b> (14.80)	<b>7.176</b> (14.44)	
Observations	199	199	196	196	243	243	252	252	177	177	142	142	
R-squared	0.001		0.012		0.013		0.010		0.005		0.067		
Number of banknum	8	8	8	8	8	8	8	8	8	8	8	8	
Hausman Stat.		0.317		0.176		3.842		3.296		0.329		11.23	
Hausman P-Value		0.573		0.675		0.0500		0.0694		0.566		0.0470	

Standard errors in parentheses  
 \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 29: Panel Regressions FEM, REM and Hausman Test

**Note:** Panel Regressions Fixed-Effects, Random Effect, tested with Hausman test. The dependent variable CDS spreads, which measure the probability of default. CDS spread represents the price at 4 days after the publication of financial information. The explanatory variables are 5 balance sheet ratios referring to Asset Quality (A1), Solvency (P), Liquidity (L) and Profitability. (D1, D2). Standard Errors of estimated coefficients are reported in parentheses.

VARIABLES	CDS_4_day											
	FE	RE	FE	RE	FE	RE	FE	RE	FE	RE	FE	RE
<b>A1</b>	<b>-34.91</b> (74.73)	<b>-14.81</b> (66.55)									<b>65.38</b> (92.33)	<b>-14.32</b> (69.38)
<b>P</b>			<b>-251.6</b> (178.9)	<b>-272.4</b> (173.4)							<b>-78.51</b> (207.5)	<b>-152.8</b> (206.1)
<b>L</b>					<b>-44.10*</b> (25.82)	<b>-23.94</b> (23.50)					<b>804.3***</b> (291.0)	<b>249.7*</b> (127.9)
<b>D1</b>							<b>-89.51</b> (60.47)	<b>-60.55</b> (58.15)			<b>197.2</b> (226.2)	<b>119.4</b> (187.3)
<b>D2</b>									<b>10.99</b> (12.54)	<b>12.51</b> (12.29)	<b>11.62</b> (15.06)	<b>6.537</b> (14.70)
Observations	199	199	196	196	243	243	252	252	177	177	142	142
R-squared	0.001		0.010		0.012		0.009		0.005		0.068	
Number of banknum	8	8	8	8	8	8	8	8	8	8	8	8
Hausman Stat.		0.349		0.221		3.563		3.049		0.367		11.23
Hausman P-Value		0.554		0.638		0.0591		0.0808		0.544		0.0470

Standard errors in parentheses  
 \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 30: Panel Regressions FEM, REM and Hausman Test

**Note:** Panel Regressions Fixed-Effects, Random Effect, tested with Hausman test. The dependent variable CDS spreads, which measure the probability of default. CDS spread represents the average of 5 days after the publication of financial information. The explanatory variables are 5 balance sheet ratios referring to Asset Quality (A1), Solvency (P), Liquidity (L) and Profitability. (D1, D2). Standard Errors of estimated coefficients are reported in parentheses.

VARIABLES	CDS_5_day_average												
	FE	RE	FE	RE	FE	RE	FE	RE	FE	RE	FE	RE	
<b>A1</b>	<b>-33.40</b> (73.86)	<b>-14.17</b> (65.80)										<b>64.36</b> (91.71)	<b>-17.18</b> (68.65)
<b>P</b>			<b>-256.4</b> (176.7)	<b>-275.6</b> (171.3)								<b>-81.95</b> (206.1)	<b>-154.7</b> (204.7)
<b>L</b>					<b>-43.79*</b> (25.51)	<b>-23.71</b> (23.23)						<b>793.7***</b> (289.0)	<b>248.9**</b> (126.7)
<b>D1</b>							<b>-89.76</b> (59.74)	<b>-61.04</b> (57.46)				<b>188.1</b> (224.7)	<b>112.8</b> (185.7)
<b>D2</b>									<b>11.38</b> (12.47)	<b>12.85</b> (12.22)	<b>12.33</b> (14.96)	<b>7.113</b> (14.59)	
Observations	199	199	196	196	243	243	252	252	177	177	142	142	
R-squared	0.001		0.011		0.012		0.009		0.005		0.068		
Number of banknum	8	8	8	8	8	8	8	8	8	8	8	8	
Hausman Stat.		0.328		0.195		3.628		3.096		0.347		11.22	
Hausman P-Value		0.567		0.659		0.0568		0.0785		0.556		0.0472	

Standard errors in parentheses  
 \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 31: Panel Regressions FEM, REM and Hausman Test

**Note:** Panel Regressions Fixed-Effects, Random Effect, tested with Hausman test. The dependent variable CDS spreads, which measure the probability of default. CDS spread represents the average of 7 days after the publication of financial information. The explanatory variables are 5 balance sheet ratios referring to Asset Quality (A1), Solvency (P), Liquidity (L) and Profitability. (D1, D2). Standard Errors of estimated coefficients are reported in parentheses.

VARIABLES	CDS_7_day_average												
	FE	RE	FE	RE	FE	RE	FE	RE	FE	RE	FE	RE	
<b>A1</b>	<b>-38.10</b> (74.82)	<b>-17.85</b> (66.50)										<b>62.37</b> (92.65)	<b>-20.19</b> (69.02)
<b>P</b>			<b>-259.8</b> (179.1)	<b>-279.8</b> (173.4)								<b>-83.33</b> (208.2)	<b>-157.9</b> (206.7)
<b>L</b>					<b>-43.53*</b> (25.82)	<b>-23.40</b> (23.47)						<b>802.8***</b> (292.0)	<b>247.9*</b> (127.5)
<b>D1</b>							<b>-87.97</b> (60.48)	<b>-59.15</b> (58.12)				<b>210.1</b> (227.0)	<b>126.7</b> (187.1)
<b>D2</b>									<b>11.11</b> (12.62)	<b>12.61</b> (12.36)	<b>12.07</b> (15.11)	<b>6.787</b> (14.73)	
Observations	199	199	196	196	243	243	252	252	177	177	142	142	
R-squared	0.001		0.011		0.012		0.009		0.005		0.069		
Number of banknum	8	8	8	8	8	8	8	8	8	8	8	8	
Hausman Stat.		0.349		0.202		3.498		2.966		0.346		11.30	
Hausman P-Value		0.555		0.653		0.0614		0.0850		0.556		0.0458	

Standard errors in parentheses  
 \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 32: Panel Regressions FEM, REM and Hausman Test

**Note:** Panel Regressions Fixed-Effects, Random Effect, tested with Hausman test. The dependent variable CDS spreads, which measure the probability of default. CDS spread represents the price on 8th day after the publication of financial information. The explanatory variables are 5 balance sheet ratios referring to Asset Quality (A1), Solvency (P), Liquidity (L) and Profitability. (D1, D2). Standard Errors of estimated coefficients are reported in parentheses.

VARIABLES	CDS_8_day												
	FE	RE	FE	RE	FE	RE	FE	RE	FE	RE	FE	RE	
<b>A1</b>	<b>-59.16</b> (78.85)	<b>-33.24</b> (69.48)										<b>49.50</b> (96.26)	<b>-29.25</b> (71.24)
<b>P</b>			<b>-270.5</b> (188.9)	<b>-294.3</b> (182.5)								<b>-88.21</b> (216.3)	<b>-167.1</b> (214.3)
<b>L</b>					<b>-42.69</b> (27.18)	<b>-22.10</b> (24.53)						<b>823.5***</b> (303.4)	<b>244.9*</b> (131.8)
<b>D1</b>							<b>-82.60</b> (63.70)	<b>-52.84</b> (60.97)				<b>279.6</b> (235.9)	<b>172.4</b> (193.5)
<b>D2</b>									<b>9.733</b> (13.20)	<b>11.45</b> (12.91)	<b>10.96</b> (15.70)	<b>5.826</b> (15.27)	
Observations	199	199	196	196	243	243	252	252	177	177	142	142	
R-squared	0.003		0.011		0.010		0.007		0.003		0.070		
Number of banknum	8	8	8	8	8	8	8	8	8	8	8	8	
Hausman Stat.		0.483		0.238		3.090		2.599		0.392		10.86	
Hausman P-Value		0.487		0.626		0.0788		0.107		0.531		0.0543	

Standard errors in parentheses  
 \*\*\* p<0.01, \*\* p<0.05, \* p<0.1



Table 33: Panel Regressions FEM, REM and Hausman Test

**Note:** Panel Regressions Fixed-Effects, Random Effect, tested with Hausman test. The dependent variable CDS spreads, which measure the probability of default. CDS spread represents the average of 9 days after the publication of financial information. The explanatory variables are 5 balance sheet ratios referring to Asset Quality (A1), Solvency (P), Liquidity (L) and Profitability. (D1, D2). Standard Errors of estimated coefficients are reported in parentheses.

VARIABLES	CDS_9_day_average												
	FE	RE	FE	RE	FE	RE	FE	RE	FE	RE	FE	RE	
<b>A1</b>	<b>-42.23</b> (75.63)	<b>-20.96</b> (67.11)										<b>59.82</b> (93.33)	<b>-21.52</b> (69.63)
<b>P</b>			<b>-262.6</b> (181.0)	<b>-283.4</b> (175.3)								<b>-85.08</b> (209.7)	<b>-159.5</b> (208.2)
<b>L</b>					<b>-43.30*</b> (26.10)	<b>-23.13</b> (23.69)						<b>807.5***</b> (294.1)	<b>247.8*</b> (128.6)
<b>D1</b>							<b>-86.83</b> (61.15)	<b>-57.87</b> (58.72)				<b>226.6</b> (228.7)	<b>137.5</b> (188.6)
<b>D2</b>									<b>10.76</b> (12.74)	<b>12.31</b> (12.48)	<b>11.81</b> (15.22)	<b>6.592</b> (14.84)	
Observations	199	199	196	196	243	243	252	252	177	177	142	142	
R-squared	0.002		0.011		0.012		0.008		0.004		0.069		
Number of banknum	8	8	8	8	8	8	8	8	8	8	8	8	
Hausman Stat.		0.372		0.209		3.394		2.877		0.358		11.15	
Hausman P-Value		0.542		0.647		0.0654		0.0899		0.549		0.0486	

Standard errors in parentheses  
 \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 34: Panel Regressions FEM, REM and Hausman Test

**Note:** Panel Regressions Fixed-Effects, Random Effect, tested with Hausman test. The dependent variable CDS spreads, which measure the probability of default. CDS spread represents price at 11 days after the publication of financial information. The explanatory variables are 5 balance sheet ratios referring to Asset Quality (A1), Solvency (P), Liquidity (L) and Profitability. (D1, D2). Standard Errors of estimated coefficients are reported in parentheses.

VARIABLES	CDS_11_day												
	FE	RE	FE	RE	FE	RE	FE	RE	FE	RE	FE	RE	
<b>A1</b>	<b>-59.24</b> (78.26)	<b>-33.35</b> (68.86)										<b>44.00</b> (98.05)	<b>-33.38</b> (73.07)
<b>P</b>			<b>-281.6</b> (187.4)	<b>-305.7*</b> (180.9)								<b>-90.54</b> (220.3)	<b>-168.7</b> (218.4)
<b>L</b>					<b>-42.04</b> (27.16)	<b>-21.43</b> (24.47)						<b>855.9***</b> (309.0)	<b>255.8*</b> (134.9)
<b>D1</b>							<b>-81.58</b> (63.70)	<b>-51.53</b> (60.91)				<b>301.9</b> (240.2)	<b>179.8</b> (197.9)
<b>D2</b>									<b>9.502</b> (13.52)	<b>11.34</b> (13.23)	<b>11.05</b> (15.99)	<b>5.977</b> (15.57)	
Observations	199	199	196	196	243	243	252	252	177	177	142	142	
R-squared	0.003		0.012		0.010		0.007		0.003		0.073		
Number of banknum	8	8	8	8	8	8	8	8	8	8	8	8	
Hausman Stat.		0.484		0.243		3.069		2.601		0.433		10.78	
Hausman P-Value		0.486		0.622		0.0798		0.107		0.511		0.0560	

Standard errors in parentheses  
 \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 35: Panel Regressions FEM, REM and Hausman Test

**Note:** Panel Regressions Fixed-Effects, Random Effect, tested with Hausman test. The dependent variable CDS spreads, which measure the probability of default. CDS spread represents average of 13 days after the publication of financial information. The explanatory variables are 5 balance sheet ratios referring to Asset Quality (A1), Solvency (P), Liquidity (L) and Profitability. (D1, D2). Standard Errors of estimated coefficients are reported in parentheses.

VARIABLES	CDS_13_day_average												
	FE	RE	FE	RE	FE	RE	FE	RE	FE	RE	FE	RE	
<b>A1</b>	<b>-77.24</b> (78.46)	<b>-46.29</b> (69.10)										<b>11.42</b> (98.25)	<b>-49.52</b> (71.81)
<b>P</b>			<b>-306.7</b> (187.9)	<b>-324.9*</b> (181.5)								<b>-99.88</b> (220.7)	<b>-185.3</b> (217.5)
<b>L</b>					<b>-48.63*</b> (27.56)	<b>-24.76</b> (24.80)						<b>815.4***</b> (309.6)	<b>295.2**</b> (133.2)
<b>D1</b>							<b>-100.6</b> (64.64)	<b>-65.98</b> (61.81)				<b>257.6</b> (240.7)	<b>134.7</b> (195.8)
<b>D2</b>									<b>7.481</b> (13.55)	<b>9.572</b> (13.28)		<b>8.858</b> (16.02)	<b>3.985</b> (15.49)
Observations	199	199	196	196	243	243	252	252	177	177	142	142	
R-squared	0.005		0.014		0.013		0.010		0.002		0.064		
Number of banknum	8	8	8	8	8	8	8	8	8	8	8	8	
Hausman Stat.		0.694		0.140		3.940		3.343		0.591		9.624	
Hausman P-Value		0.405		0.708		0.0471		0.0675		0.442		0.0866	

Standard errors in parentheses  
 \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 36: Panel Regressions FEM, REM and Hausman Test

**Note:** Panel Regressions Fixed-Effects, Random Effect, tested with Hausman test. The dependent variable CDS spreads, which measure the probability of default. CDS spread represents price at 14 days after the publication of financial information. The explanatory variables are 5 balance sheet ratios referring to Asset Quality (A1), Solvency (P), Liquidity (L) and Profitability. (D1, D2). Standard Errors of estimated coefficients are reported in parentheses.

VARIABLES	CDS_14_day												
	FE	RE	FE	RE	FE	RE	FE	RE	FE	RE	FE	RE	
<b>A1</b>	<b>-69.45</b> (77.26)	<b>-40.05</b> (68.04)										<b>22.73</b> (96.37)	<b>-39.36</b> (71.52)
<b>P</b>			<b>-278.5</b> (185.2)	<b>-298.8*</b> (178.9)								<b>-92.52</b> (216.5)	<b>-170.7</b> (213.8)
<b>L</b>					<b>-49.40*</b> (27.55)	<b>-24.64</b> (24.73)						<b>828.2***</b> (303.7)	<b>276.3**</b> (132.1)
<b>D1</b>							<b>-104.9</b> (64.61)	<b>-68.94</b> (61.72)				<b>252.7</b> (236.1)	<b>140.0</b> (193.7)
<b>D2</b>									<b>7.975</b> (13.32)	<b>9.902</b> (13.04)	<b>9.510</b> (15.72)	<b>4.542</b> (15.24)	
Observations	199	199	196	196	243	243	252	252	177	177	142	142	
R-squared	0.004		0.012		0.014		0.011		0.002		0.067		
Number of banknum	8	8	8	8	8	8	8	8	8	8	8	8	
Hausman Stat.		0.645		0.180		4.163		3.540		0.498		9.864	
Hausman P-Value		0.422		0.671		0.0413		0.0599		0.480		0.0792	

Standard errors in parentheses  
 \*\*\* p<0.01, \*\* p<0.05, \* p<0.1