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Non Performing Loans
General Overview and Portfolio Evaluation

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Introduction

The financial systems of many countries have been imperiled in recent years by the presence of large amounts of so called “bad” or “non-performing” loans, a term used for debts for which, broadly speaking, there are “good reasons to doubt that payment will be made in full” (United Nations System of National Accounts, 2008). This is clearly a vague definition and, as I shall discuss in the first part of my dissertation, the creation of a common standard for defining and recognizing NPL or NPLs (the acronyms used for “non performing loans”) is perhaps the first important issue faced by the key agents in the financial markets.

My dissertation is articulated in three chapters but, basically, has two specific goals. First, I try to present the many aspects of the NPL problem, or NPL “crisis”, in a *general overview*, from the issues raised by the search for appropriate definitions and accounting standards to a description of the current situation and the reasons for the many difficulties faced by governments and agencies trying to address the problem. Second, I try a sample NPL *portfolio evaluation*, working directly on a large and real debt portfolio, formed by a total of 5.555 credit positions, to which I had access through the courtesy of Deloitte Consulting Group (Milan).

The work on this portfolio was done with the aim of having a “first hand experience” of such an activity, which is becoming more and more relevant. Indeed, I think that this part of my dissertation gave me the opportunity to understand much better the real issues behind NPL portfolio treatment.

A difficulty I had is due to the fact that standard methods for NPL portfolio evaluation do not seem to be so well documented, since their knowledge and use might give a significant competitive advantage. Thus, while NPL issues are discussed in many books,

articles and technical reports to which I referred and from which I borrowed data, comments and ideas, for my work on the NPL portfolio I could only rely on the kind help of collaborators from Deloitte. However, I also had the opportunity to take part in a meeting at Università Bocconi (Milano), where this topic was discussed, which I found very helpful and was suggested to me by my supervisor, Prof. Giancarlo Giudici.

In the first part of Chapter 1, Section 1.1, I summarize the problems related with the task of giving a common definition for NPL, valid and recognized both at the national and international level, and I try to discuss the reasons for which this is so important.

Recognition and management of NPL is, of course, part of the wider issue related with "credit risk", handled by creditors with appropriate analytical tools and concepts (such as Default Probability, Loss Given Default, Exposure at Default, Risk Weighted Asset and related), which I present together with a comparison among three different approaches (Standardized, Internal Rating Based Foundation, Internal Rating Based Advanced). I also introduce some simple numerical examples, in order to underline the differences and the workings of such approaches.

Next, in Section 1.2 of Chapter 1, I present an overview of the two most significant and recognized "accounting standards" dealing with NPL: IAS 39 and the more recent IFRS 9. In Subsection 1.2.5 I tried to summarize the main differences between them and the key reasons for which IAS 39 was at some point deemed to be unsatisfactory and the innovations introduced by IFRS 9. This part contains a description of the working methodology which, in principle, should be followed by an Institution adapting to IFRS 9.

At the end of Chapter 1 I wrote a short overview of some investigations on the so called "determinants" of NPLs. What is usually meant by this term is the search for both the structural and the occasional *causes* of the NPL problem. From what I understood, this is usually done through econometric models based on regression analysis techniques. The Literature on this topic is large and the macroeconomic variables considered are: the GDP (Gross Domestic Product), domestic and foreign demand, foreign currency debts, exchange rate levels and the development level of financial markets. Bank-specific determinants are also considered, in relation to the banks' management behaviour. Analysis about NPL determinants give results which are country-specific because they are produced for sets of debtors and creditors from different geographical

areas.

In Section 1.4, I summarize the implications of high NPL ratios, for which many studies find that, as should be expected, there are strong relations between higher NPLs and a weaker credit and GDP growth, with a two ways causality.

In Chapter 2, I present an overview of the current NPL situation for Europe and, in more detail, for Italy, through a number of graphs, which I could reconstruct from the Literature produced by International Institutions (EBA, IMF, Bank of Italy). The main indicators used for this analysis are the "NPL ratio" and the "NPL coverage ratio", and a number of tables are produced, where also banks' size and counterparts' typology are considered. NPL ratio (but not the cover ratio) turns out to be higher for smaller banks.

The Italian situation seems to have reached its worst in 2015 and to have slightly improved since then, due to a diminishing amount of *new* bad loans. Subsection 2.1.4 is devoted to a description of the situation of the top 9 Italian banks, which show quite different levels of seriousness for their NPL problems.

The NPL management strategies chosen by banks can be basically described through three categories (external servicers, direct sale to investors, internal management), which I discuss in some detail.

The government initiatives set up in Italy (mainly GACS and Fondo Atlante) are then summarized, with the advantages and disadvantages of each one.

The creation of a viable debt market is recommended by many Authorities (IMF, EBA) but many obstacles still slow down this needed development, among them the problem of the so called bid-ask spread and the difficulty of properly evaluating a portfolio of NPLs.

This is the topic on which Chapter 3 is focused. In Section 3.1 I present the workflow used for management of NPL portfolios by a specialized structure, planned for achieving maximum performance through an interaction among different internal operators, such as: loan management team; legal network; agent network. Additional components might be needed in case of bad loans with specific types of collaterals.

The key aspect for the creation of a NPL market, however, is the capability of properly evaluating a given NPL portfolio. This can be considered the more applied part of my work for this dissertation.

Through the courtesy of Deloitte I was given access to a real portfolio of a significant magnitude and of varied composition which, as I describe in Section 3.2, covers a set of 3.516 debtors spread all over Italy, with a reference to 5.555 credit positions for a total amount of €260.567.948 (Gross Book Value).

I tried to produce an analysis of the portfolio composition, based on type of loans (secured, unsecured) and the situation of each position with respect to the type of collateral present, if any. A geographical analysis is also provided, which was made possible by the detailed information present in the portfolio data bout the location of each debtor.

The classification of debtors by nature (individual, corporate) is important because of the quite different judicial actions that can be taken during the credit recovery activity, according to Law.

I found particularly interesting the so called "vintage portfolio analysis", which is derived from the classification of positions based on the counterparty year of default and related GBV amount, and makes possible to highlight the impact of the 2008 financial crisis.

In order to perform a portfolio evaluation it is necessary to make methodological and quantitative assumptions and estimates, which I explicitly state in Section 3.3. They might be related, for instance, with servicer's fees, duration of legal procedures and Internal Rate of Return (IRR) searched by the investor. In the same section I tried to illustrate the methodology I followed for deriving an estimate of the portfolio on which I worked.

Finally, in Section 3.4, I present and comment on the results I obtained after extensive work on the portfolio spreadsheet and, in Subsection 3.4.1 I conclude discussing the effects of variation of some of the assumptions on the evaluation results.

Chapter 1

An overview on NPL definitions and issues

In the years following the beginning of the financial crisis in 2007, the quality of bank assets in Europe deteriorated sharply; the deteriorated exposures increased, with respect to the total of the balance sheet exposures, and coverage ratios fell, though with different times and intensity in the various European countries. An international comparison of the resilience of different national banking systems was difficult, and in some cases distorted, because of the use of different concepts for deteriorated financial assets. In particular, the analysis based on the main credit quality indicators such as the ratio of gross impaired loans to total loans (NPL ratio) and the coverage ratio of the deteriorated credits (known simply as "coverage ratio") did not allow for an assessment of the actual bank risk assets. The impossibility of making robust international comparisons created uncertainty in the markets, penalizing the European banking sector and, specifically, systems with more stringent definitions of deteriorated assets.

1.1 NPL definition and main characteristics

An essential activity for a bank's solidity is "asset quality". However, the absence of a common, cross-border scheme to classify assets makes asset quality difficult for banking regulators and investors. Currently there is no standard applied universally to classify loans,

that are the most sizable asset on many banks' balance sheets. Therefore, no common definition of non-performing loans (NPLs) exists. This section underlines divergences in the definition of NPLs across countries, accounting regimes, firms and data sources. Thanks to work promoted by the Basel Committee on Banking Supervision and started with the Basel I agreement in 1988, in the last few decades the definition of regulatory banking capital has been subject to a substantial degree of harmonisation. Recently, while there has been progress towards a common international understanding of liabilities making them more comparable internationally, much less effort has been made on standardising the asset side of the balance sheet, especially with respect to loan classification and the definition of non-performing loans. In fact, there are material divergences in NPL definitions across jurisdictions.

Two researches conducted by Barisitz in 2011 and 2013 show what are the main factors that affect these differences. He noticed that the majority of countries classify loans as non-performing when principal or interest is 90 days or more past due and/or there is "well defined weakness of loan or borrower" (Barisitz 2011). There are two main problems that occur. Firstly, it is not defined within and across jurisdictions when there is a well-defined weakness. In fact, data used to estimate debtor's ability to repay are different among companies and regulators because of their different interpretations that lead to different decisions regarding whether a position is deteriorated or not. Secondly some jurisdictions consider as important factors not only the time from the last repayment but also other dimensions. Among them we can list: (1) if collaterals, guarantees or other security forms are considered during the credit classification process; (2) if the total outstanding value or only a part of a loan is considered non-performing; (3) the treatment of restructured loans. Sometimes qualitative factors are also considered. A borrower can be defined in default only because he does not respect a contractual covenant, like for example the excess of a maximum leverage threshold defined in the contract. Another difference that characterizes Central, Eastern and Southeastern Europe (CESEE) countries concerns the "product" or "customer" view when assessing if loans are performing or not. For example, we can consider a debtor that has two or more loans from the same bank and he stops repaying one of them while he goes on in repaying the others. There is debate about whether the performing loan should also be classified as non-performing

or not. According to customer view, insolvency on one loan implies that debtor's overall financial state has deteriorated.

The United Nations System of National Accounts (2008) defined a global statistical definition of NPLs, followed by all countries which take part in IMF or adhere to the European reporting standards: "a loan is non-performing when payments of interest or principal are past due by 90 days or more, or interest payments equal to 90 days or more have been capitalized, refinanced, or delayed by agreement, or payments are less than 90 days overdue, but there are other good reasons (such as a debtor filing for bankruptcy) to doubt that payments will be made in full". Loan quality classification varies from three to nine categories in some jurisdictions. Like UN definition that must be considered flexibly the different impaired loans definitions in the world leave scope for firm discretion because the meaning of phrases like "objective evidence of impairment" are not always precisely defined. We can find differences within jurisdictions across time, and again between jurisdictions in terms of the intensity of prudential enforcement of NPL standards. The Institute of International Finance (IIF) have established different categories (Table 1.1, p. 14), which do not define thresholds when loans should fall into one of them but simply proposes a universal classification. In some cases, NPLs correspond to the last three categories, in other only to the last two or only to the last one.

Other definitions for NPL exist: CCR (Capital Requirements Regulation (EU) No. 575/2013) defines non-performing exposures and IAS 39 (International Accounting Standard, version 39) identifies impaired exposures. As we shall see later IAS 39 identifies some loss events that by their nature require to be specified by the individual bank within their internal risk management policies, thus leaving some margins of discretion to the bank itself. For example, the criteria of overdue over 90 days, although widely used in the practice of many banks, is not specified in IAS 39. It is also not clear whether the definition of impaired is focused on the debtor's figure or on the individual transaction. The definition of impaired financial assets used for prudential purposes is, however, contained in Article 178 of "Capital Requirements Regulation (EU) No. 575/2013" (CRR) about prudential requirements for credit institutions and investment firms. According to this definition, there is a default when at least one of the following events occurs:

Loan Category	Definition
Standard	Credit is sound and all principal and interest payments are current. Repayment difficulties are not foreseen under current circumstances and full repayment is expected.
Watch	Asset subject to conditions that, if left uncorrected, could raise concerns about full repayment. These require more than normal attention by credit officers.
Substandard	Full repayment is in doubt due to inadequate protection and /or interest or principal or both are more than 90 days overdue. These assets show underlying well-defined weaknesses that could lead tom probable loss if not corrected and risk becoming impaired assets.
Doubtful	Assets for which collection/liquidity in full is determined by bank management to be improbable due to current conditions and/or interest or principal or both are overdue more than 180 days. Assets in this category are considered impaired, but are not yet considered total losses because some pending factors may strengthen the asset' quality (merger, new financing, or capital injection).
Loss	An asset is downgraded to loss when management considers the facility to be virtually uncollectible and/or principal or interest or both are overdue more than one year.

Table 1.1: Loans classification according to IIF

- The bank considers unlikely that the debtor will fulfil all his bank obligations without the use of any kind of actions such as guarantee examination (indications of unlikely to pay);
- The debtor has significant claims that are past due for more than 90 days.

The comparison between the prudential default definition and the accounting definition of impairment shows a substantial coincidence with reference to the loss events provided by IAS 39 and the indicators of dubious obligations repayment (unlikely to pay signals) provided by prudential regulation. However, while prudential regulation explicitly excludes that the existence of collateral or guarantee may affect the classification of a credit as impaired, accounting legislation is ambiguous on this point. In particular, it is not specified whether a credit should be classified as impaired in the financial statement only if losses are not expected for the only effect of collateral or guarantee existence.

In accounting regulation, differently from the prudential one:

- It is not clear whether the definition of impaired is focused on debtor's figure or on the single transaction;
- There are no explicit quantitative thresholds in terms of expired days (e.g. 90 days), although the presence of insolvency is one of the factors to be considered to qualify a financial asset as impaired;
- In addition, the different classification criteria of credits in the balance sheet are mainly attributable to the use of different accounting systems. In fact, in the European countries, the IAS / IFRS and the local GAAP coexist, and it is often the case that, even within the same country, the accounting rules may differ depending on the characteristics of the intermediary (for example, a listed bank vs. unlisted bank, banking group vs individual bank etc.).

The commonly used term "non-performing loans" (NPL) is based on different definitions across Europe and, to overcome problems, EBA (European Banking Authority) issued a common definition of non-performing exposures (NPE) which is used for supervisory reporting purposes.

In Italy, financial institutions are strongly encouraged to use the NPE definition also in their internal risk management and public financial reporting as well as in several relevant supervisory exercises such as Asset Quality Review (AQR), EBA stress test and transparency exercises.

The definition of NPLs is provided by the Bank of Italy Circular no. 272 of 30 July 2008 concerning the banking and financial supervision legislation but it was updated in 2015 by applying the new definitions provided by EBA (European Banking Authority).

The new classification is the following:

- Bad loans ("Sofferenze"): exposures to an insolvent counterparty (even if insolvency is not legally ascertained) or in equivalent situations, regardless of any loss estimate made by the bank and irrespective of any possible collateral or guarantee.
- Unlikely to pay ("Inadempienze probabili"): credit exposures for which the bank considers unlikely that, without recourse to actions such as realizing security, the debtor complies in full (principal and/or interest) to its credit obligations.

- Past due ("esposizioni scadute e/o sconfinanti deteriorate"): exposures other than those classified as bad loans, substandard or restructured exposure that are past due for more than 90 days on a continuous basis.

For each definition, it also introduced the new sub category of "forborne non-performing exposures", that are non-performing loans for which there are concessions (forbearance) from the bank. The forbearance measures are changes to the original contractual terms of the credit line that the bank grants the customer. For example, the bank can give a reduction in the loan interest rate or may have a prolonged duration of the loan. Such forbearance measures could include performing customers in financial difficulties (forborne performing exposures) or customers classified in a state of deterioration (non-performing exposures with forbearance measures).

1.2 Credit risk and loan accounting treatment

1.2.1 Credit risk

Credit risk concerns the fact that, at the deadlines defined by a credit agreement, the customer does not fulfil, even partially, his obligations to repay the principal and/or to pay interests accrued. Note that, regardless of the impact on the income statement, non-payment of capital and/or interest reduces an expected cash inflow and thus constitutes an element of financial risk with ex ante unknown duration and size. Credit risk occurs whenever a bank establishes a debt relationship: when it grants credit in one of the various technical forms to a physical or legal entity, which consequently assumes the role of debtor in the relationship with the bank. Dealing with the issue of credit risk, legislation often refers to the concept of "default". In fact, as defined by Basel II, the default occurs when there is at least one of the following hypotheses:

(a) The bank considers reasonably unlikely that the debtor will pay his debt in full, irrespective of any recovery actions that the bank may implement.

(b) The debtor is in arrears for more than 90 days on any exposure (in Italy, for a transitional period of five years from when the legislation entered effect, this limit was

considered to be 180 days because of the fact that our commercial receivables have an average collect time greater than the European average).

Coming back to the concept of credit risk, we have already mentioned how it is related to the possibility that the bank will suffer a loss following a debtor bankruptcy (it would be better to use the word "default" for the reasons mentioned above). By anticipating what will be shown in the next section, this loss is defined as Loss in the Event of Default or Loss Given Default (LGD). To be thorough, however, it should be said that credit risk occurs also when a bank faces a loss due to the deterioration of the counterparty creditworthiness. Here is referred to the concept of downgrading in the most common sense assigned by rating companies. In this case, the bank's risk is to suffer a loss on the value of its assets (credits, by the way) due to the downgrading of the debtor. In fact, following the deterioration of the credit standing of the counterparty, debt incorporates a higher risk. In analytical terms, this means that the interest rate to be used to discount the future cash flows related to the exposure must necessarily increase compared to the original rate set in the contract, and, therefore, it will inevitably lead to a decrease of the exposure's Net Present Value (NPV). The new discount rate will be in line with the level of interest rate the debtor would pay if he was interested in requesting a new bank loan. Note that the loss resulting from the credit impairment process is a presumed and non-definitive loss (it has not yet been realized), which should be deducted, as current regulation says, from the carrying amount on the balance sheet. This loss, called the "expected loss" for the reasons discussed above, is included in the income statement as "write-downs".

In summary, a generic banking institution is subject to credit risk both because of its counterparty's default and because of a downgrade of its debtor's creditworthiness. The loss resulting from one of the two scenarios is defined as LGD. We can say that, within the range of risks managed by credit intermediaries, credit risk is the most important risk quantitatively and strategically as it is related to the characteristic activity of commercial banks.

Regarding the measurement of credit risk, sovereign supervisory authorities have imposed the choice of one of the following options on banks:

(a) "*Standardized Approach*": it provides for a regulatory capital fund of at least 8% of risk-weighted assets. The peculiarity of the standard approach is in the fact that the weighting factors of the individual exposure classes are considered as inputs to the measurement system (therefore, they do not require any internal processing) as they are derived externally from the indications of the rating agencies authorized by the Supervisory Body (for example, Moody's and Standard & Poor). Table 1.2 on p. 19 shows an array of such weighting coefficients, such as the intersection between the counterparty's nature (sovereign states, banks, retail, etc.) and its creditworthiness.

(b) "*Internal Rating Based Foundation*": It allows banks to use their analytical tools (duly approved by the supervisory authority) to calculate the weighting factor for each asset item. Specifically, they can only calculate the Default Probability (PD).

(c) "*Internal Rating Based Advanced*": Like the basic version, the advanced model allows banks (authorized by the Supervisory body) to calculate the risk of their exposures with internal instruments. In addition to the basic version, however, banks are also allowed to calculate Loss Given Default (LGD) and Exposure at Default (EAD).

Given that the use of the Internal Rating Based Approach (IRB) needs to be approved by the Supervisor body based on quantitative considerations (structure of rating systems, parameters quantification, etc.) and qualitative (corporate governance, internal validation, use, etc.), Table 1.3 on p. 19 compares the internal model with the external one (foundation or advanced) according to the main dimensions of interest.

Risk Weighted Asset (RWA), whether it is the result of internal or external models, contributes to determine the minimum regulatory capital that a bank must hold for the execution of its commercial activities, to ensure the protection of account holders and, given the current interconnections of the financial system, to safeguard the overall system. Banally, because of the New Basel II Accord, a greater assets risk implicates a greater capital requirement.

This mechanism was defined after the failure of the first Regulatory approach (Basel I) in the regulatory capital measurement area. The latter was determined from the total

	AAA/AA-	A+/A-	BBB+/BBB-	BB+/BB-	B+/B-	Less than B-	No rating	Due
Sovereign states	0%	20%	50%	100%		150%	100%	150%
Banks, SIM	20%	50%		100%		150%	50%	150%
Banks, SIM depending on country	20%	50%	100%			150%	100%	150%
Companies and other subjects	20%	50%	100%		150%		100%	150%
OICR	20%	50%	100%		150%		100%	150%
Retail	75%							150%
Residential mortgage loans	35%							100%
Non-residential mortgage loans	50% on the exposure; 50% less than market value; 100% on the residual							100%

Table 1.2: The weighting coefficient matrix: standardized approach

Method	Cost	Complexity	Risks awareness
Standardized approach	No development or implementation costs. Marginal costs related to procurement of external rating models.	Minimum. It's linked mainly to the size of the bank in the early adoption phase.	Medium-low. The absence of internal models can compromise risk's detection and quantification.
Advanced approach	Medium-low. The absence of internal models can compromise risk's detection and quantification.	High. A multi-layer organizational structure is required and dedicated to quantitative model development and control analysis. It's also necessary an effort to spread the risk management culture inside the bank.	High. It's related to risk's mapping and quantification and strong acceptance of responsibility by top management.

Table 1.3: A comparison between standardized and advanced approach

assets not risk-weighted and it pushed less prudent banks to carry out regulatory arbitrage operations, exaggerating risk exposure without increasing adequately regulatory capital, ultimately undermining the stability of the whole financial system. Basel II has therefore acted in the direction of harmonizing the measurement criteria of the minimum regulatory requirements adopted by the supervisory authorities with those used by banks to openly fight the possible use of these regulatory arbitrage operations.

In this regard, the legislation contains an explicit invitation to develop internal rating models for credit risk measurement of bank exposures. The logic is, on the one hand, to commensurate capital with risk taken (based on individual exposures), on the other hand, to stimulate lenders to develop increasingly accurate and effective analytical risk measurement models. The incentive offered to banks in the adoption of internal models is linked to the possibility of "saving" own capital (or, alternatively, using it to extend new credit to the economy rather than as "protective buffer" of outstanding debt).

In general terms, within any credit institution (specifically, bank management), lending policy is a macro activity that covers all aspects of loan portfolio management, which represents all the borrowers' positions assumed by the institute itself. Specifically, it refers to the size of the portfolio (total of positions) both in the static (analysis as is) and dynamic approach (analysis to be), the composition of the portfolio itself and the criteria for assessing individual loans. Before talking about the analytical analysis of these criteria, it is better to introduce some general concepts regarding loans portfolio.

First, it is recalled that the objective of any rational intermediary is to maximize profit under a tolerable maximum risk level (in both economic and regulatory terms). In this sense, it is evident that a particularly aggressive portfolio policy (for example a massive quantity of credits to the economic system greater than credit demand) conflicts with this fundamental objective, as the growth need of the intermediary physiologically pushes itself to accept ever greater risk levels.

Being equal the size of the portfolio, the ability of credit institutions to properly diversify individual positions is also relevant. This means, for example, to extend credit in a balanced way between customer segments, geo-political segments, between positions amount segments and, finally, the technical-contractual arrangements provided by law. Diversification, splitting and technical composition of the portfolio allow for a reduction

in the overall credit risk (for information purposes, it should be noted that a negative correlation between two positions taken by the bank allows to properly mitigate the overall risk of the two positions: in technical terms, we say that the intermediary has built a situation of matching positions).

Again, the decisions to grant new credit or to close a position before its natural maturity implicate the adoption of evaluation and selection criteria that are vital for the proper functioning of the credit institution. Given that opening of new positions represents a physiological aspect for the bank in the life cycle of its loan portfolio (on the other hand, it is natural that the credit is repayable within a certain time horizon), capacity in the selection and customer's creditworthiness ex-ante evaluation is inversely proportional to credit risk assumed. In fact, greater is the efficiency in choosing a customer to open a position, less likely is that bank will have to act ex-post for the extraordinary management of the risk itself, when it is shifted from a physiological manifestation to a pathological one.

Finally, always within the lending policy, the pricing of credit has a strategic importance. It should be noted that price corresponds to the interest rate applied to the credit granted. In this sense, it must be such as to be able to remunerate appropriately bank's shareholders (the economic purpose of a credit institution is profit maximization, like any other company), obviously after covering the whole cost structure of the company (staff costs, ICT costs, etc.).

After this, it is necessary to understand how credit risk is ultimately linked to the health of the customers to whom the credit belongs. Within the bank's customer portfolio, customers can be placed within one of the following categories (Giudici & Marchetto 2013):

(a) Customers with regular payments (so called performing credits);

(b) Customers who reported the first payment irregularities (so called irregular customers or watches);

(c) Customers with long-lasting payment irregularities (so called impaired or non-performing customers).

Performing credits can be analysed in a multiplicity of ways. Here I consider Expected Loss (EL), which is determined *ex-ante* from the estimate of three different risks:

- Probability of Default (PD): represents the probability of counterparty default in a typically annual time horizon (and in any case expressed by maturity M) and it takes a discrete value in a rating scale ranging from 0% to 100%. In the light of Table 1.3 or depending on the application of an internal rating model (both foundation and advanced), it is possible to assign a PD value corresponding to the risk class to which the considered exposure refers.

- Loss Given Default (LGD): Represents the percentage of credit that is reasonably expected to be lost because of the counterpart's default event (as defined by regulation). The presence of any collateral, whether real or personal, that covers credit, contributes to reducing this risk.

- Exposure at Default (EAD): Represents the consistency of exposure at the time of insolvency.

Therefore, with reference to a specific customer company belonging to a specific risk class, the potential loss (obviously *ex-ante*) is determined as follows:

$$EL = PD * LGD * EAD \tag{1.1}$$

It is useful to provide a numerical example, with reference to the expected potential loss calculation, to have a practical understanding of what is stated by (1.1). Thus, consider the following:

- The bank has assumed a position with a company by using a contractual technical form that limits the potential loss to 30% (LGD = 30%). This hypothesis is likely in the case of a guarantee (the value of which is equal to 70% of the loan granted) placed in custody of the exposure.

- To customer is assigned a probability of insolvency (PD) of 5% using as reference the appropriate risk class.

- The bank has an Exposure at Default (EAD) of 100 000 Eur.

With the above data, formula (1.1) yields that:

$$EL = 0{,}05 * 0{,}3 * 100\,000 = 1500 \tag{1.2}$$

In other words, the exposure considered has an average loss expected of 1500 € (1,5%). It is important to remember, however, that the expected average loss, unlike the unexpected one, is not a risk factor for banking activity, as this loss is incorporated into the interest rate during the pricing activity of the credit.

Irregular debts are those belonging to customers who have manifested the first "symptoms" of possible future default. These alerts may concern the first payment irregularities (anyway within the range of delays outside the domain of regulatory classification), the change in financial and cash management habits or greater ever-closer credit requirements (Giudici & Marchetto 2013). Every bank is free to choose which criteria to adopt for the detection of these "warning" signals. Usually, to identify clients at risk, we use algorithms based on historic defaults, split into different customer segments. Regardless of the pathology found in the client, the goal of any credit institution at this stage is to undertake extraordinary actions aimed at the gradual recovery of exposure.

For our analysis, the most relevant category is certainly the impaired loans (or NPLs), whose detection specifications are defined by the Bank of Italy in a unique way for our banking system.

The "Assets" section includes the total of existing investments and receivables. Unlike most traditional companies (e.g. industrial companies), for which the starting point of the analytical analysis is linked to the first line of the income statement ("sales revenues"), banking sector analysis refers to the consistency of assets as a bank's size proxy.

Assets represent the terminal point of the process of transferring financial resources from surplus units (typically households, and more generally saving centres) to units in deficit (typically firms and public administration, and by extension all investment decision centres). In fact, each asset shows, at the end of each accounting period, the various forms of use of the financial resources available to the bank. In this regard, the various items are presented "by nature" in the balance sheet (e.g. credits, fixed income investments, equity investments, etc.) and, for the most important amounts, also by "counterparty category" (e.g. loans to banks, loans to customers, etc.). Within the assets structure,

loans to customers represent the most typical core business of commercial banks: they are the main component of assets and contribute significantly to the bank's profitability thanks to the interest margin. Conversely, loans incorporate a significant amount of so-called credit risk due to the probability of default (PD) of the counterparty to whom the loan was disbursed. In the light of this, loan portfolio monitoring takes on a strategic importance that many times leads, or at least should lead, bank management policies.

It is useful to anticipate now that, regarding composition and quality of loans, banks regularly conduct asset analysis, otherwise called asset quality, both in a *static* and *dynamic* way. Ultimately, the objective of this analytical exercise is to trace the implications for the profit and loss account and capital adequacy (which are the most important aspects discussed in the next sections). Before closing the parenthesis about balance sheet assets, we should remember a last important aspect of value adjustments. Under current legislation, asset items don't have provisions for value adjustments. Consequently, assets subject to amortization are always record in the balance sheet at their net value. In line with the intentions of this dissertation work, I want to go deeper on bank's accounting credit valuation in the next section.

1.2.2 Accounting standard IAS 39

The loans accounting valuation is a very critical activity in the preparation of the financial statements due to the importance of this item both in terms of assets management and income.

Provisioning plays a crucial role in ensuring the safety and strength of banking systems and hence is a key focus of bank supervisors. Supervisory initiatives such as asset quality reviews (AQRs) and stress tests (STs) have further highlighted the need for consistent provisioning methodology and adequate provisioning levels across banks.

I find useful to present a short abstract of IAS 39 as can be found on IFRS website (http://www.ifrs.org/):

> "IAS 39 establishes principles for recognizing and measuring financial assets, financial liabilities and some contracts to buy or sell non-financial items. It also prescribes principles for derecognizing financial instruments

and for hedge accounting. The presentation and the disclosure of financial instruments are the subjects of IAS 32 and IFRS 7 respectively.

Recognition and derecognition

A financial instrument is recognized in the financial statements when the entity becomes a party to the financial instrument contract. An entity removes a financial liability from its statement of financial position when its obligation is extinguished. An entity removes a financial asset from its statement of financial position when its contractual rights to the asset's cash flows expire; when it has transferred the asset and substantially all the risks and rewards of ownership; or when it has transferred the asset, and has retained some substantial risks and rewards of ownership, but the other party may sell the asset. The risks and rewards retained are recognized as an asset.

Measurement

A financial asset or financial liability is measured initially at fair value. Subsequent measurement depends on the category of financial instrument. Some categories are measured at amortized cost, and some at fair value. In limited circumstances other measurement bases apply, for example, certain financial guarantee contracts.

The following are measured at amortized cost:

- held to maturity investments-non-derivative financial assets that the entity has the positive intention and ability to hold to maturity;
- loans and receivables-non-derivative financial assets with fixed or determinable payments that are not quoted in an active market;
- financial liabilities that are not carried at fair value through profit or loss or otherwise required to be measured in accordance with another measurement basis.

The following are measured at fair value:

- financial assets and financial liabilities held for trading—this category includes derivatives not designated as hedging instruments and financial assets and financial liabilities that the entity has designated for measurement at fair value. All changes in fair value are reported in profit or loss;
- available for sale financial assets—all financial assets that do not fall within one of the other categories. These are measured at fair value. Unrealized changes in fair value are reported in other comprehensive income. Realized changes in fair value (from sale or impairment) are reported in profit or loss at the time of realization.

IAS 39 sets out the conditions where special hedge accounting is permitted, and the procedures for doing hedge accounting."

IAS 39 outlines the requirements for the recognition and measurement of financial assets, financial liabilities, and some contracts to buy or sell non-financial items. It requires an entity to recognize a financial asset or liability on its balance sheet only when it becomes a party to the contractual provisions of the instrument and financial instruments are classified into various categories depending upon the type of instrument, which then determines the subsequent measurement of the instrument (typically amortized cost or fair value). Special rules apply to embedded derivatives and hedging instruments.

According to IAS 39 there are four categories of financial assets:

- Financial assets at fair value through profit or loss.
- Loans and receivables (in which NPL are included).
- Held-to-maturity investments.
- Available-for-sale financial assets.

Initially, financial assets and liabilities should be measured at fair value (including transaction costs, for assets and liabilities not measured at fair value through profit or loss).

Fair value is defined as the price that would be attributed to the sale of an asset in a normal transaction between market participants, at the valuation date. This classification is important because it determines the subsequent measurement of the asset. Table 1.4 on p. 28 summarises such principles.

Consistent with IAS 39, the classification of a financial asset is determined at initial recognition. However, if certain conditions are met, an asset may subsequently need to be reclassified.

Before the financial crisis, both the IFRS and the US GAAP accounting standards operated under a model known as "incurred loss" This meant that impairment was only recognised when a loss event had occurred. Within IFRS, the standard IAS 39 is specific that "losses expected because of future events, no matter how likely, are not recognised."

The impairment test, done by the bank with internal or external methodologies, consists in assessing the individual impaired credit exposures for which there is a non-fulfilment by the borrower in interest and/or capital repayment. IAS 39 makes a list of several situations in which the bank must consider a credit impaired. By way of example, below there are some of the plausible scenarios:

- Debtor's financial difficulties.
- Failure to respect contractual maturities with reference to capital or interests' repayment of an outstanding debt.
- Whether a bankruptcy procedure or a financial restructuring plan is possible.

If the bank, during asset quality process, verifies the existence of at least one of the points above, then it should suddenly proceed to the individual impaired exposures evaluation to determine their accounting net value.

According to this accounting standard, exposures which are individually significant should be subject to individual assessment of impairment, while for exposures that are not individually significant the impairment assessment and loss allowance estimation can be performed either on an individual or collective basis. For loans that are individually significant but are not individually impaired, a collective assessment should be performed.

Financial Assets	Measurement	Changes in carrying amount	Impairment test
Financial assets at fair value	Fair value	Income statement	No
Loans and receivables	Amortised costs	Income statement	Yes
Held-to-maturity investments	Amortised costs	Income statement	Yes
Available-for-sale financial assets	Fair value	Equity	Yes

Table 1.4: Classification principles according to IAS39

For individual estimations, the expected future cash flows will depend on the type of approach that banks apply: a *going concern* approach or a *gone concern* approach.

These are the two main possible scenarios:

- **"going concern" scenario**: the operating cash flows of the debtor, or the guarantor, continue and can be used to repay the financial debt to all creditors;
- **"gone concern" scenario**: the collateral is exercised and the operating cash flows of the debtor cease.

For collective estimations of impairment, the critical aspects to be considered by the banks are related with:

1. Grouping the NPLs in homogenous groups (based on similar credit risk characteristics);
2. Calculation of the historical loss experience for the identified group, i.e. how to reliably determine the risk parameters (i.e. LGD, cure rate, etc.);
3. How to calibrate the impairment estimation according to the principles established by IAS 39.

A loan classified as NPL is an impairment trigger that should be tested for impairment either individually or collectively.

It is important to evaluate a loss allowance, which should be computed as the difference between the given asset's carrying amount and an estimation of the future cash flows, which should be discounted at the original interest rate of the asset itself. If the future cash flows are estimated to be lower than the book value then this difference should be charged as a value adjustment.

Under the current incurred loss approach, provisions for impaired cash flows are made once a loss event has occurred. So, provisions reflect "realised" losses only.

The method for estimating the recoverable amount should adapt to the following guidelines: discount the present value of estimated cash flows at the asset original interest rate; estimation of the recoverable amount of an exposure with collateral should be based on the cash flow which would result from the liquidation of the collateral.

Future cash flows can be estimated as both the result of active actions and/or sale of the collateral, or a sale of the loan itself to a specialised agency, and in this case the amount of cash flow would be linked to a realisable market price. Of course, the costs associated with the sale of the collateral should be included in the evaluation process.

When an individual estimation is not possible, a group of exposures are collectively evaluated with the help of historical loss experience for credit risks with characteristics similar to those in the group. Of course, in such a situation, the group should have a sufficient number of shared characteristics to make an estimation reasonable.

An appropriate methodology for creating such homogeneous groups of exposures should take into consideration: type of products; market segments; type of collateral; status of debt situation and other relevant indicators.

It is also important that a re-evaluation be performed with appropriate timing, to decide if a given asset should be singled out from the group for some specific reason (typically, because its performance as a risk is masked by the rest of the group).

1.2.3 Economic impact of credit risk

In this section I want to discuss the impact, both in economic and income terms, of the credit risk on a generic loan portfolio. To do this, I will begin from the asset quality activity that characterizes the ordinary administration of asset management.

"Asset quality" is an activity carried out by banks and other lenders that requires to consider, for each category of credit, both the gross value and write-down value. The latter is set aside in the form of a Loan Loss Provision (LLP) for either of the following reasons:

- Expected loss on performing exposures: we have already mentioned that such cost component is not a source of concern for lenders, precisely because of its "expected" nature and therefore incorporated ex-ante into the active interest rate applied to the customer;

- Value adjustments on impaired loans: this is an "extraordinary" cost item that contributes to reduce *ex-post* the net result of the income statement and it is unforeseen in the credit pricing phase.

In parallel with the income statement, we will see further how the credit risk also affects bank's capital bases through regulatory capital absorption, to the extent imposed by regulation. Now we see more in detail the impact that accounting impairment process has on the income statement. The cost of credit components expressed by the provisions are valued, in line with current legislation, according to particular methodologies. Specifically, expected losses provisions on performing loan portfolio require the lending institution to estimate the loss based on a statistical calculation by using the parameters that we have already discussed (PD, LGD, EAD) and the specific rating class of the considered credit category.

In view of its importance, it is worth to comment again on formula (1.1) on p. 22, which synthesizes the statistical methodology. It is important to point out that the expected loss is the result of a statistical analysis carried out at credits aggregate level (a homogeneous cluster is made in terms of probability of default and technical form of financing) and not at a single exposure level referred to a specific customer. The same reasoning can not be applied to impaired loans portfolio, for which the cost estimate method is, of course, sui generis. For non-performing loans, a valuation analytical methodology is used to determine the recoverable percentage that can be assumed at each individual exposure level.

With reference to a generic impaired loans portfolio, the ratio between total reserves associated with the single asset category and its gross value is defined as coverage ratio. The value adjustment is the difference between the carrying value of a loan (the value to which it was originally recorded in the balance sheet) and the future estimated cash flow (or rather, more general, of the total credit portfolio). We make the assumption, as in (Giudici & Marchetto 2013) that a bank has issued a credit of 40 € (gross value), then defaulted (at this stage the technical and legal form is not relevant). Following an impairment process, the bank devalued loan for 15 € of the total amount (by adding this amount to the "write-downs" item in income statement), so that the credit net value (that is what is actually written in the balance sheet) is 25 € (see Figure 1.1). Given the current set of information, the loss on this credit (€ 15) is no longer a cause for concern for the future unless the customer credit risk changes over time.

In the example just reported, the coverage ratio is 37,5% (15/40). This ratio varies

according to the credit recovery estimate (in the case of the example is € 25 on 40) and is subject to credit risk, which may have both a positive and negative impact. In other words, if the recovery estimates is correct, the bank will not suffer any further losses in the future as a "prudential" loss has already been sustained during the credit impairment; if the estimate is distorted downwards (negative risk impact), the bank will sustain a further loss in the future (i.e. when the loss on credit becomes real); in case of positive impact (the real loss is less than value adjustment), the bank will benefit from a recovery that will be recorded in income statement. After this, it seems evident that an increase in the default rate should correspond to, everything else being equal, an increase in the coverage ratio.

Nonetheless, and the next real example is a tangible demonstration, when NPLs increase, we often observe decreasing coverage ratios (Giudici & Marchetto 2013). When this happens, the financial community perception is that the institution considered may have a deficit (see Figure 1.1): the provisions made (in the form of credit value adjustments) are not sufficient to cover future losses and,therefore, the bank will be forced to use any future profits (or equity) to cover a loss that is only potential at the moment but it will become real when the coverage ratios will be adjusted to loans expected loss. Although it should be remembered that lower coverage ratios are not necessarily an indicator of low provisions (there may be a loans transformation from non-performing to performing), the following is generally true. Generic portfolio status (and therefore riskiness) being equal, a bank with a higher coverage ratio is considered to be more conservative compared to another with a smaller one because it anticipates future losses (in line, by the way, with prudential regulatory objective) and ensures a good solidity level of balance sheet's assets side.

With reference to the numeric example above, Figure 1.1 shows how, at present, the coverage ratio of impaired loans is 37,5% (15/40): the expected loss of € 15 has already been expensed in the income statement (therefore transferred from balance sheet) and it is no longer a fear for the future. What is worrying, however, is a possible divergence between bank and market estimates. If the latter expects losses to be equal to 55% of the nominal value (so € 22) of the considered impaired portfolio, the bank would face a shortfall of € 7 (22 € - 15 €) according to market analysts. Given the structure of the

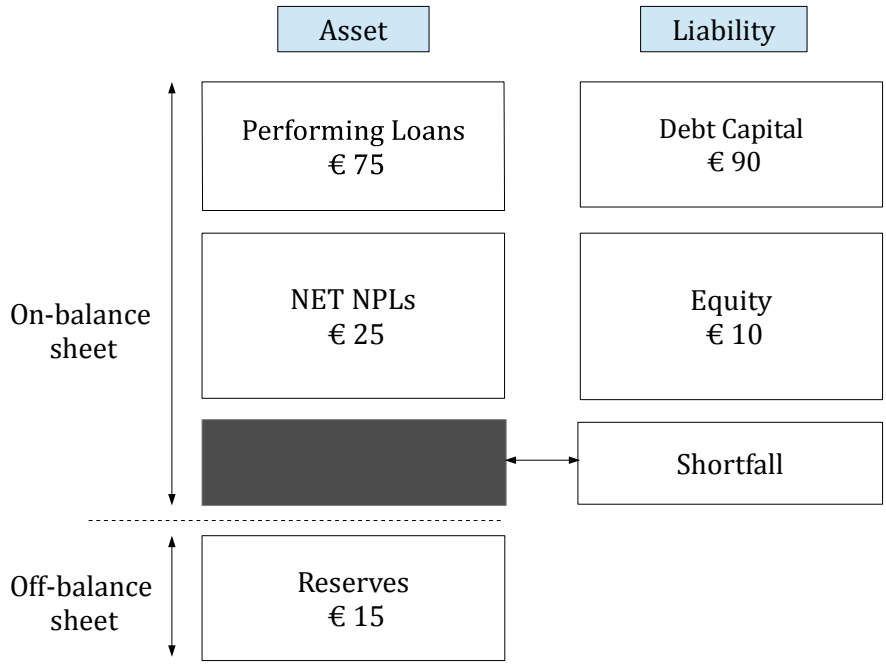

Figure 1.1: A simplified "asset and liability scheme"

bank's liabilities, it is evident that a slight variation in the loss estimates on a generalized impaired portfolio could compromise the bank's solidity through equity erosion needed to cover the shortfall. In the present case, due to the above liability structure, the shortfall would call into question 70% of equity (under the conservative assumption of no profit for the considered accounting year). The shortfall of the Italian banking system acts as a brake in the deconsolidation assets process of banks in our country, preventing in fact the cleaning of balance sheets from deteriorated loans as well as giving credit to the real economy.

1.2.4 Regulatory impact of credit risk

We have just seen how the income statement is significantly affected by deterioration in asset quality, through the increase in value adjustments. In a similar way, such worsening affects the absorption of regulatory capital by means of risk weighted assets (RWA) mechanism. In general, the regulatory capital requirement is first calculated by weighting the different credit categories for the associated risk, and then taking 8% of the weighted

assets as the minimum capital level. It should be noted that an increase in credit risk inevitably leads to an increase in the weighting factor, and therefore a greater regulatory capital absorption. With reference to the standard approach, different credits are weighted for a factor that is determined by rating agencies based on the counterparty creditworthiness, as well as of its nature (Corporate, Sovereign States, Banks, Retail, etc).

Banks that adopt an Internal Rating (IRB) approach use different weighting factors based on their credit parameter estimates (counterparty default rate, recovery rate, residual credit life, etc). In the standard approach, performing loans are weighted gross of value adjustments, while for non-performing loans net value is considered. The post-weighting values, thus obtained, contribute to determining the regulatory capital to be held in the balance sheet.

Alternatively, if the Advanced Internal Rating Based (AIRB) is adopted, the capital absorption mechanism follows a different way from analytical point of view, albeit similar conceptually. The difference with the standard approach mainly concerns the impaired credit component: the weighting of NPLs is deleted (0%), but regulatory capital to control the related credit risk is affected by a differential factor (the shortfall) that contributes to determining (with negative sign) the regulatory capital. This mechanism (which can be seen in relations (1) and (2) below) impacts both Core Tier1 and Total Capital ratios.

As opposed to the degree of freedom the banks have in adopting an Internal Rating Based (IRB) approach, the Bank of Italy imposes an alignment on losses distribution between accounting principles (IFRS) and regulatory view, as shown in the graph of Figure 1.2 on p. 35, with the probable assumption that the expected loss (EL) is not fully covered by the value adjustments fund (LLP).

The misalignment between expected loss (EL) and value adjustments (LLPs) emerges when banks decide to “account” in the income statement a portion below the expected average loss on the portfolio as defined by regulatory view. Consequently, if there is a perfect coincidence between the level of provisions (value adjustments) and expected loss, both regulatory and accounting views would be overlapping and therefore the shortfall would be null. Conversely, if the first is lower than the second one (hypothesis under which the graph above was constructed), the shortfall (again defined as the difference between EL and LLP) should be deducted from regulatory capital to the extent reported

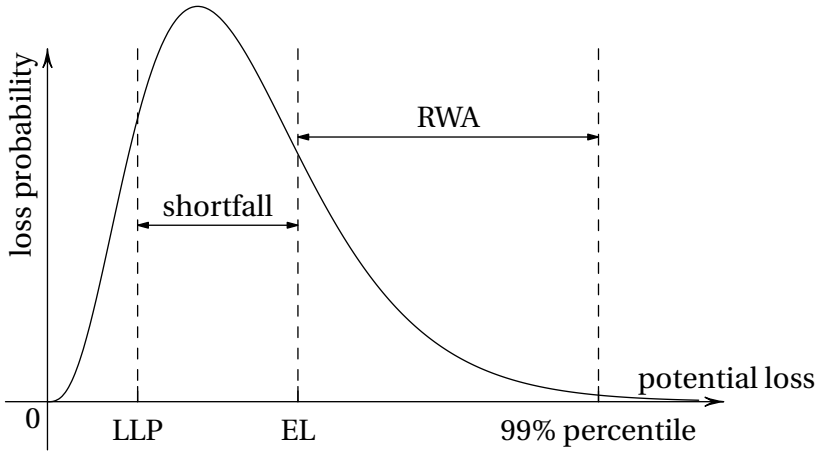

Figure 1.2: Graph of "loss probability" vs "potential loss"

in (1) and (2):

1. Core Tier 1 Ratio (CT1%) = Core equity capital - (50% Shortfall) / RWA
2. Total Capital Ratio (TC%) = (Core equity capital + supplementary capital) - (50% Shortfall) /RWA

or the sake of completeness, it is to be noted that the above formulas are valid for the regulation purposes imposed by Basel 2. The new Basel 3 regulatory framework provides that in case of adoption of an internal rating model (IRB), the shortfall is deducted 100% from Common Equity Tier 1 (CET1). To sum up, once a loans portfolio credit risk was measured, the bank must “set up” a minimum equity level to safeguard the exposure, either through direct channel of income statement or indirect control of the regulatory capital. In this sense, shortfall can be seen in its essence as a lever used by banks to "transfer" losses from the income statement to the balance sheet (Giudici & Marchetto, 2013). Finally, refer to Figure 1.2 again: expected losses (ELs) are covered by LLPs and possibly by regulatory capital (through the shortfall discussed above), while unexpected losses (included between EL and the 99th percentile) are “guaranteed”, with a 99% confidence interval, by regulatory capital through asset weighing mechanism (RWA). The probability of "uncovered" losses greater than unexpected one is equal to 1% (we are in the right queue of probability distribution). Against them bank has not set up any capital buffers.

1.2.5 A new accounting principle: IFRS 9

The reform of financial instruments accounting was one of the main points identified in the Norwalk Agreement of 2002 between the IASB (International Accounting Standard Board) and FASB (US Financial Accounting Standards Board), on the basis of which a number of projects were defined aiming to eliminate many differences between IFRS (International Financial Reporting Standards) and the US GAAP (Generally Accepted Accounting Principles).

The limits of IAS 39

The financial crisis in 2008, the process of identifying its causes and the solutions adopted against it, are the starting point for the replacement of IAS 39 (International Accounting Standards, version 39). The process of reviewing the principle has challenged some of the key points of the accounting standard, both regarding the instruments classification and the impairment model.

The review process has been necessary, primarily because of interpretative and implementing difficulties of the principle, resulting in a different application and interpretation on the basis of the different regulatory context. Such complexities arise mainly from the current classification of financial instruments, which leaves excessive discretion in choosing the instrument's initial instrument category. This can implicate difficulties in comparing the balance sheets of different companies or within the same company. In fact, two identical financial instruments may be recorded differently with consequences on recognition of gains and losses in relation to the management mode but it does not consider the business model.

The complexity of IAS 39, which uses multiple impairment models for financial instruments, was also identified as a problem.

One of the key aspects of the proposed change in classification and methodology from IAS 39 to IFRS 9 is the substitution of an *incurred loss based* model with an *expected loss based model*.

Indeed, during the financial crisis, the delayed recognition of credit losses on loans (and other financial instruments) was identified as a weakness in existing accounting

standards.

I briefly summarize the defects attributed to the *incurred loss based model*.

- Incurred loss model provides for the detection of losses only when the event has already occurred; thus, the principle is accused of not recognizing timely value losses associated with loans in portfolio and being overly linked to the economic cycle by expanding the movements both in positive and negative situations.

- It doesn't recognize credit losses until there is evidence of a trigger event. This was done to restrict an entity's ability to create hidden reserves that can be used to flatter earnings during bad times. Financial crisis showed that the incurred loss model lead to different kind of earnings management, namely to postpone losses.

- The accounting principle does not establish a precise definition of trigger event at which proceed with credit's write-down, but only provides an extensive, but not exhaustive, list of events. This leaves excessive discretion to balance sheet preparers, which could lead to a delay in recording a loss if the event is considered not relevant for devaluation purpose.

For such reasons, the incurred loss-based approach has not been popular with the supervisory community because it has been accused of recognizing impairment losses "too little and too late". As a result, after the global financial crisis, and at the urging of the FSB (Financial Stability Board), G-20, and the BCBS (Basel Committee on Banking Supervision), a project was started to replace the *incurred loss based model* with an *expected loss based model*. As we will see the result of this process was definition of IFRS 9 (International Financial Reporting Standard, version 9).

There are conceptual and operational differences between the two approaches:

- *incurred loss based*, under IAS 39;

- *expected loss based*, under Basel II (the second of the Basel Accords, now extended and partially superseded by Basel III), which contains recommendations on banking laws and regulations issued by BCBS (Basel Committee on Banking Supervision)

A bank is expected to measure impairment losses based on an assessment of loss events occurrences as defined by IAS 39. In contrast, under Basel II, in addition to specific provisions, recognition of credit losses is based on expected loss concept and requires assessing economic and financial conditions as well as the borrower's ability to pay. The different terminologies "impairment loss" recognition (accounting view) and "credit loss provisioning" (prudential view), are indicative of the underlying differences.

The objective of impairment loss recognition for financial reporting purposes is to ensure that Balance Sheets and Income Statements are reasonably stated for the measurement period.

The objective of prudential provisioning requirements under Basel Regime is to align banks' risk taking with adequate capitalization to ensure their safety and soundness. For this reason, banking supervisors evaluate the effectiveness of bank's policies and practices for assessing credit risk and control if bank's loan loss provisions are produced in an adequate and timely manner. Risk consideration is at the centre of the capital framework, which focuses on banks' liquidity and solvency issues. Basel Regime promotes a forward-looking approach that anticipates and estimates risks and losses that have not yet happened but have a high degree of probability to occur. In this perspective, as we have seen, Basel II's IRB approach explicitly includes the concept of expected losses together with computing methodologies. Because of the differences between the two approaches the prudential loan loss provisioning approach tends to generate provisions that are higher than those allowed under IAS 39. This fact can be explained by several factors including the different ranges of information allowed under the two approaches and different judgments used by banks in applying IAS 39.

Innovations introduced with IFRS 9

In view of the limitations presented and discussed in the previous sections, IASB published the final version of IFRS 9, which will replace IAS 39. This principle should enter into force on 1 January 2018 but, for better comparability of the financial statements, it was expected that the beginning of 2017 would be used as the start of a period of parallel running (i.e. calculation of provisions in parallel, using both IAS 39 and IFRS 9 methods).

I find useful to report here a copy of the introduction to IFRS9 as can be found on the website (http://www.ifrs.org/):

> "IFRS 9 specifies how an entity should classify and measure financial assets, financial liabilities, and some contracts to buy or sell non-financial items.
>
> IFRS 9 requires an entity to recognize a financial asset or a financial liability in its statement of financial position when it becomes party to the contractual provisions of the instrument. At initial recognition, an entity measures a financial asset or a financial liability at its fair value plus or minus, in the case of a financial asset or a financial liability not at fair value through profit or loss, transaction costs that are directly attributable to the acquisition or issue of the financial asset or the financial liability.
>
> **Financial assets**
>
> When an entity first recognizes a financial asset, it classifies it based on the entity's business model for managing the asset and the asset's contractual cash flow characteristics, as follows:
>
> - *Amortized cost*: a financial asset is measured at amortized cost if both of the following conditions are met:
>
> 1. the asset is held within a business model whose objective is to hold assets in order to collect contractual cash flows;
> 2. the contractual terms of the financial asset give rise on specified dates to cash flows that are solely payments of principal and interest on the principal amount outstanding.
>
> - *Fair value through other comprehensive income*: financial assets are classified and measured at fair value through other comprehensive income if they are held in a business model whose objective is achieved by both collecting contractual cash flows and selling financial assets.

- *Fair value through profit or loss*: any financial assets that are not held in one of the two business models mentioned are measured at fair value through profit or loss.

When, and only when, an entity changes its business model for managing financial assets it must reclassify all affected financial assets.

All financial liabilities are measured at amortized cost, except for financial liabilities at fair value through profit or loss. Such liabilities include derivatives (other than derivatives that are financial guarantee contracts or are designated and effective hedging instruments), other liabilities held for trading, and liabilities that an entity designates to be measured at fair value through profit or loss (see "fair value option" below).

After initial recognition, an entity cannot reclassify any financial liability.

Fair value option

An entity may, at initial recognition, irrevocably designate a financial asset or liability that would otherwise have to be measured at amortized cost or fair value through other comprehensive income to be measured at fair value through profit or loss if doing so would eliminate or significantly reduce a measurement or recognition inconsistency (sometimes referred to as an "accounting mismatch") or otherwise results in more relevant information.

Impairment

Impairment of financial assets is recognized in stages:

- Stage 1—as soon as a financial instrument is originated or purchased, 12-month expected credit losses are recognized in profit or loss and a loss allowance is established. This serves as a proxy for the initial expectations of credit losses. For financial assets, interest revenue is calculated on the gross carrying amount (i.e. without deduction for expected credit losses).

- Stage 2—if the credit risk increases significantly and is not considered low, full lifetime expected credit losses are recognized in profit or loss. The calculation of interest revenue is the same as for Stage 1.
- Stage 3—if the credit risk of a financial asset increases to the point that it is considered credit-impaired, interest revenue is calculated based on the amortized cost (i.e. the gross carrying amount less the loss allowance). Financial assets in this stage will generally be assessed individually. Lifetime expected credit losses are recognized on these financial assets.

Hedge accounting

The objective of hedge accounting is to represent, in the financial statements, the effect of an entity's risk management activities that use financial instruments to manage exposures arising from particular risks that could affect profit or loss or other comprehensive income.

Hedge accounting is optional. An entity applying hedge accounting designates a hedging relationship between a hedging instrument and a hedged item. For hedging relationships that meet the qualifying criteria in IFRS 9, an entity accounts for the gain or loss on the hedging instrument and the hedged item in accordance with the special hedge accounting provisions of IFRS 9.

IFRS 9 identifies three types of hedging relationships and prescribes special accounting provisions for each:

- fair value hedge: a hedge of the exposure to changes in fair value of a recognized asset or liability or an unrecognized firm commitment, or a component of any such item, that is attributable to a particular risk and could affect profit or loss.
- cash flow hedge: a hedge of the exposure to variability in cash flows that is attributable to a particular risk associated with all, or a component

of, a recognised asset or liability (such as all or some future interest payments on variable-rate debt) or a highly probable forecast transaction, and could affect profit or loss.

- hedge of a net investment in a foreign operation as defined in IAS 21.

When an entity first applies IFRS 9, it may choose to continue to apply the hedge accounting requirements of IAS 39, instead of the requirements in IFRS 9, to all of its hedging relationships."

The main innovations concern three fundamental aspects:

1. *Classification and evaluation of financial instruments*, which determines how financial assets are accounted for in financial statements and how they are measured along time. IASB decided to replace the existing classification and measurement categories for financial assets to improve the ability of financial statements users to better understand the information about the amounts, timing and uncertainty of future cash flows. The number of categories in which assets are classified has been reduced, and the assessment now relies on the business model adopted by management and cash flows of the financial instrument, contractually defined. The objective is to make measurement based on a more rational and objective criterion.

2. *A new and single impairment model*: as I wrote above, multiple impairment models for financial instruments, were also identified as a concern of IAS 39. The objective is to reduce the number of methodologies for calculating the provisions related to different financial instruments and use a single devaluation method based on a forward-looking logic. In this way, the new principle will allow for timely detection of losses that are calculated and imputed when there is a significant worsening of the credit status compared to credit origination. This means that the adjusted amounts are recognized for all financial products subject to impairment due to a single accounting classification.

3. *New hedge accounting policies*: In this section, IASB has aligned hedge accounting with risk management activities, especially when those activities have a significant

impact on the income statement and other comprehensive income. However, the macro hedging area was entrusted to another accounting standard, different from IFRS.

IFRS 9: Classification

As I wrote in the previous section, the new accounting principle mandates a reduction of the number of categories in which financial assets should be classified. The division in 4 categories provided by IAS 39, which I list as

- Held to maturity;
- Available for sales;
- Loans and Receivables;
- Held for trading;

have been *eliminated*, and the new IFRS 9 proposal is based on a classification into two alternative so-called business models:

- **Business model test**: The financial asset is held within a business model whose objective is to keep financial assets in order to collect their contractual cash flows (rather than to sell the assets prior to their contractual maturity to realise changes in fair value).
- **Cash flow characteristics test**: The contractual terms of the financial asset give rise, on specific dates, to cash flows that are uniquely payments principal and interest on the outstanding principal amount.

After an initial recognition along the above lines, each asset is measured as:

- HTC (Hold To Collect): financial asset at amortized cost. The Standard establishes that an entity is required to classify a financial asset at amortized cost if both the following characteristics are true:

  - The instrument must have the essential characteristics of a loan, i.e. it must be characterized by cash flows only related to capital and interest repayment at fixed maturities. This is done through the application of the SPPI test (solely payment of principal and interest test);
  - The instrument must be managed based on a business model that aims to hold the instrument up to maturity in order to collect the financial instruments generated by the asset.

- HCS (Held to Collect and Sales): financial assets measured at fair value through other comprehensive income. Asset is held in a business model whose objective is achieved either by collecting contractual cash flows or by selling it. This business model should usually be characterized by greater sales activity, both in terms of frequency and volumes.

- FVTPL (Financial assets designated at Fair Value Through Profit and Loss). This represents a residual category, when the activity cannot be classified in any of the previous categories.

It is possible to use the fair value option accounted through profit and loss if this option reduces or eliminates the accounting mismatch that would occur if financial asset is valuated with different methods.

Finally, it might be of some importance to notice that, according to IFRS 9, a reclassification of financial assets should occur only when there is a change in the asset's business model, which can be considered an exceptional event.

IFRS 9: Impairment

I now move on with this short analysis of the new model suggested by IFRS 9. Its goal is to provide an higher quantity and more useful information on expected losses recognized during the valuation of financial assets. In contrast with IAS 39, every bank must recognize, from the outset and regardless of the presence or absence of a trigger event, the expected future losses on its financial assets and will have to continuously adjust the estimate depending on the counterparty's credit risk. To fulfil that estimate, manage-

ment will resort not only to past and present data but also to information about future events. This forward-looking approach will reduce the impact of losses and allow credit value adjustments to be made in advance proportionally to risks' increase.

The second key aspects of IFRS 9 is focused on a new model of impairment. IFRS 9, to standardize the methodology and facilitate the comparison of the values, provides for a single method for calculating impairment losses on all financial instruments not recognized at fair value through profit and loss. Financial instruments are therefore classified into three levels ("stage"), depending on the deterioration in credit quality compared to initial recognition. There is a different level of provision for each stage among three, as described in the presentation of IFRS 9.

- **Stage 1**: Includes financial instruments not subject to a significant increase in credit risk compared to the initial origination date, or financial instruments that have a low credit risk at the reporting date. For these instruments, the expected loss is calculated over a 12-month time horizon and it represents credits value adjustments with an impact on the income statement. When a financial instrument is originated, or perhaps purchased, such 12-month credit losses are recognised for establishing an appropriate loss allowance. This allowance is used as an initial expectation of credit losses. Interest revenue, when dealing with financial assets, is to be calculated without adjustment for expected credit losses.

- **Stage 2**: If credit risk increases significantly and is not considered low, full lifetime expected credit losses are recognized in profit or loss. The calculation of interest revenue is the same as for Stage 1. Lifetime expected credit losses are only recognised if the credit risk increases significantly from when the entity originates or purchases the financial instrument. This stage includes financial instruments that after the first subscription have suffered a significant deterioration in creditworthiness and are classified "underperforming". In this case, all losses expected to be sustained throughout the lifetime of the asset (lifetime expected loss, LEL) must be recorded. There is therefore a shift from estimating the expected loss over a 12-month time horizon to an estimate that considers the entire remaining life of the loan. In addition, the new accounting principle also requires forward-looking

estimates for the calculation of lifetime expected loss, and therefore it considers the forecast scenarios of macroeconomic variables (e.g. GDP, unemployment rate, inflation, etc.). Through a macroeconomic statistical model, they can estimate the projections throughout the remaining duration of the loan. For positions within Stage 2, it is not possible to identify similar forecasts within IAS 39. For this reason, it is reasonable to expect that major impacts on value adjustments, following the introduction of the new IFRS 9 model, must be brought back to this stage; therefore, credits value adjustments calculated in accordance with IFRS 9 will be significantly higher than those of IAS 39.

- **Stage 3**: It includes financial instruments whose credit risk has deteriorated significantly from the initial valuation, and therefore the instrument is considered impaired. For credits classified in this level, the expected loss is detected with a lifetime perspective but, unlike Stage 2, the expected lifetime loss calculation is analytical. Increases in provisions are expected limited following the adoption of forward-looking estimates on default positions. At this Stage, financial assets will generally be individually assessed and calculation of interest revenue should be based on the gross carrying amount adjusted for the loss allowance. Lifetime expected credit losses are still recognised on these financial assets.

In the light of this classification, it emerges that with respect to IAS 39, the new principle will have a greater impact on the recognition of provisions, especially in Stage 2, and to a lesser extent for positions classified in Stage 3.

IFRS 9: A working methodology

I wish to outline here below a working methodology which, at least in principle, would be followed by an institution adapting to IFRS 9.

As the starting point, a credit institution must check whether the financial asset, acquired or originated, has objective evidence of impairment since the moment of initial recognition, to decide if it is an impaired financial asset or not. If asset is written off at initial recognition, no impairment is recognized. In this case, it is assumed that the expected losses are already included in cash flows estimate to calculate the effective in-

terest rate at which the credit expected loss over the residual life is discounted. In subsequent years, any variation, favourable or unfavourable, compared with expected losses calculated at initial recognition is recognized directly in the income statement.

If, on the other hand, there is no objective evidence of impairment at initial recognition, IFRS 9 provides for two types of valuation based on the credit quality of financial instruments:

- for assets that did not experience a significant increase in credit risk compared with those recorded at initial recognition or have a low credit risk at reference date, banks measure provision for an amount equal to the expected credit losses in the 12 months following the reference date;
- for assets that have experienced a significant increase in credit risk and that risk is not low, banks should recognize a provision equal to expected losses over the residual live of such financial assets, discounted at the effective interest rate.

Within the forward-looking model, valuation of loans and other financial instruments is closely linked to the determination of Expected Credit Losses (ECL). The latter is defined by IASB as an estimate of the present value of all debtor's defaults throughout the life of the instrument. In general, this estimate considers three risk parameters:

- PD: default probability;
- LGD: percentage of loss in case of insolvency;
- EAD: the estimate of credit exposure at insolvency occurrence.

It is very important to remark that this model also requires considering forecast scenarios and historical relationships between macroeconomic variables (inflation, unemployment, GDP variation, interest rate) with a consequent *reduction in choices subjectivity*.

Considering the time extension in the calculation of the loss that characterizes the transition from Stage 1 to Stage 2, for each position we must determine two types of expected credit losses:

- **12-Months Expected Credit Loss**: represents the portion of lifetime loss that is possible within the 12 months after the reporting date and results from the weighting of the present value of the expected loss in case of default, estimated on the residual life of the instrument, multiplied by probability of default within the year

$$\mathrm{EL}_{12} = \mathrm{PD}_{12} * \mathrm{LGD} \tag{1.3}$$

  and it is the effect of the entire credit loss on an asset weighted by the probability that this loss will occur in the next 12 months.

- **Lifetime Expected Credit Loss**: is an estimate of the present value of any losses that may arise during the period between valuation date and maturity date of the instrument due to any defaults of the debtor. Such losses are weighed for their probability of occurrence:

$$\mathrm{EL}_{LT} = \mathrm{PD}_{LT} * \mathrm{LGD} \tag{1.4}$$

  Thus, this is an expected present value of losses due to a borrower's default through the entire life of the financial asset.

In general, the creditor should evaluate the following quantities, when measuring credit losses:

(a) the probability-weighted outcome: expected credit losses should not represent a best or worst-case scenario but, reflect the possibility that a credit loss occurs or does not occur;

(b) the discounted value of money, up to the reporting date;

(c) any information which is reasonably available, without excessive cost or effort.

It is important to remark that IFRS 9 will not prescribe specific measurements methods and no one is required to be able to forecast the future, but only to use any piece of information which is available at that given time. It is to be expected that, with an increase of the time horizon, only less specific information will be used, typically in the form of historical loss rates perhaps adjusted for the current conditions.

Even if the most relevant aspect of this model is the property of being forward-looking, historical information (if properly adjusted) is always important as a base for modelling future expected credit losses.

IFRS 9 mandates that expected credit losses be regularly updated according to new information and expectation changes, even in absence of a credit risk increase. It is impossible to overstate the importance of such updating, on a scheduled basis.

The real indicator of a true economic loss is given by the amount of the difference between the current expected credit loss and the initial expectation. Thus, it is the increase in credit risk which should be monitored, through different methods and approaches, none of them precisely prescribed or mandated by IRFS 9. A significant increase of credit risk is assumed to take place before a financial asset becomes credit-impaired. We should remember that credit risk analysis is a multifaceted problem and the weight of each factor depends on the type of product, financial instrument and borrower.

A very important part of the methodology is based on the idea of grouping different assets into coherent and homogeneous subsets. This is of the uppermost importance since an increase in credit risk might be observable earlier at a group level rather than for an individual asset (a typical situation is the one in which a geographical region is affected by adverse economic conditions).

It is considered a standard presumption that credit risk has increased on a given asset the fact that contractual payments are more than 30 days overdue. This, of course, is usually considered the latest time at which a significant increase in credit risk should be finally recognised.

1.3 Determinants of NPLs

The literature on NPLs determinants mainly deals with the analysis of how macroeconomic variables impact on NPLs growth (Saba et al., 2012, Jakubík and Reininger 2013, Beck et al., 2013), then these combined with some institutional variables (Tanaskovic and Jandric 2015) as well as macro variables combined with some bank-specific (Louzis et al. 2010, Klein 2013, Messai and Jonini 2013, Makri et al., 2014). With regard to studies on macroeconomic variables alone, Saba et al. (2012) analyze, in US banking context, how

macro indicators affect NPLs performance. Specifically, they use a 25-year time horizon (1984-2010) to perform an OLS (Ordinary Least Squares) regression and analyse the existing relationship between NPLs ratio and two key macro variables (real GDP per capita, interbank rate), together with total loans. What emerges is that, when banks define the conditions for granting loans, they should consider essentially the expected trend of GDP per capita. The study conducted by Beck et al. (2013) focuses on a particularly large panel of countries (75) , to take into account the differences between the impaired loans characteristics in different contexts. In addition, they also study the changes over time of this variable (between 2000 and 2010). Their analysis focuses on a set of macroeconomic determinants with the aim of considering the impact of a variety of elements: trend of economic activity, interest rates on loans (standard determinants of NPLs), possible existence of currency mismatch and stock market performance of that country. They first use a static panel analysis model and then a dynamical one to capture the persistence of NPL growth. The results show that the growth rate of real GDP is the most important determinant for NPLs performance. For countries with specific vulnerabilities, exchange rate depreciation can also cause a substantial increase in NPLs, especially where there is a high amount of foreign currency liabilities. Regarding stock prices, however, the negative impact on asset quality is greater for advanced economies and particularly with large financial markets.

Finally, Jakubíc and Reininger's (2013) study is an expansion of the previous study, using quarterly data and more detailed information that were previously unavailable. Unlike Beck et al. (2013), Jakubíc and Reininger (2013) consider a shorter time horizon (2004-2012) and a smaller number of countries (nine states in Central, Eastern and Southeast Europe, CESEE), chosen because they have comparable data and represent a large share of Austrian banks' credit exposures in CESEE region. Wider the set of variables used: as general economic activity proxies, it considers real exports and real domestic demand, VIX (Chicago Board Options Exchange (CBOE) Volatility Risk) and finally, the emerging markets bond index global (EMBIG). To quantify aggregate credit, however, they include loans in foreign currency and relate them to total gross domestic product. The results confirm once again the main role played by GDP, but also the contribution of significant determinants such as domestic and foreign demand, as well

as the relationship between private credit and GDP, which has a significant impact. The work of Tanaskovic and Jandrić (2015) adds also some institutional variables to determinants analysis, together with macro and financial variables. The analysis is carried out on a selection of countries in CEEC and SEE regions from 2006 to 2013. The results show once again the importance of GDP and therefore the economy performance, together with the share of foreign currency debts and exchange rate level, and they highlight how NPLs are subject to more sustained growth in countries where foreign currency debts are contracted. The addition of inflation rate, however, appears statistically insignificant, although it could be expected that if inflation rises, with the decrease of debt real value, it would be easier for customers to fulfil their obligations towards bank. Finally, among the institutional variables added to the model (quality of auditing, financial market development and banking system validity), the only one that appears to have a statistically significant impact on NPLs growth is the development level of financial market and, in fact, its increase implicate NPLs decrease thanks to the possibility of resorting to alternative sources of funding.

Finally, with reference to studies looking at macro and bank-specific determinants, the first in chronological order is Louzis et al. (2010) that analyses the Greek case, using a dynamic panel data model. This study distinguishes the determinants of NPLs according to three types of existing loans: consumption, businesses and housing loans. In general, the most important determinants are GDP, unemployment rate and interest rates on loans, as macro variables determinants, and quality of management (measured by performance and efficiency indicators) as bank specific determinant. The impact, however, varies depending on the type of loan: non-performing housing loans appear to react less to changes of macroeconomic conditions. The next study by Messai and Jouini (2013) investigates the case of Italy, Spain and Greece that are the countries experiencing particularly profound financial problems following the US subprime mortgage crisis in 2008.

Along with the "classic" macroeconomic variables, bank-specific determinants are ROA and loans and provisions variation in relation to total loans. In addition to GDP, the profitability of bank assets and the ratio between provisions and total loans have a significant impact on NPLs performance. Klein's (2013) study also focuses on a similar anal-

ysis, but conducted for countries in CESEE area. This work also shows the importance of macro and bank specific variables, although the latter have less explanatory power. However, what appears most interesting among the results emerging from its study is a one-to-one relationship between banking system and real economy: not only macroeconomic behaviours result in an NPLs increase and therefore in a greater fragility of the banking system, but also the latter implicates a more difficult real economy recovery. Finally, the study of Makri et al. (2014) considers Eurosystem's banking system for the period 2000-2008 (just before the beginning of recession) and allows us to understand what are the structural, not subject to cycle, NPLs determinants. Again, using a dynamic panel model, the relationship between macro and bank specific variables and NPLs appears significant. This study considers capital ratio and ROE of the banking sector, in aggregate, and both variables have negative and statistically significant coefficients. With reference to the Italian case, the analysis of the macroeconomic determinants of banking assets quality, considering new bad debt rate as a measure and distinguishing between companies and households, showed a limited number of explanatory variables, mainly related to general conditions of the economy, cost of loans and indebtedness level (Bofondi and Ropele 2011). The results of work conducted by Bofondi and Ropele on data from the first quarter of 1990 to the second year 2010 show that household new bad debt rate moves in an inverse relationship with GDP growth rate and real estate prices, and in direct relationship with unemployment rate and short-term interest rate. In the case of firms, decay rate increases with the rise in unemployment rate and the ratio between interest charges and gross operating income, while it decreases with the increase in durable consumer, but they have a limited contribution. A recent study of Bonaccorsi by Patti et. al. (2015), based on a large sample of micro enterprise data, highlights the role of corporate financial structure in expanding macroeconomic shocks. Not only high leveraged companies have higher default rates but also their vulnerability to a sales drop is higher than low leveraged companies, meaning that the first one has higher probability of getting into bad debt.

Berger and DeYoung (1997) studied bank specific determinants and focused on the existing links between three variables: loan quality (and, by extension, deterioration rate), efficiency in bank management costs and equity level. In this work, the two au-

thors analysed a statistically significant sample of US commercial banks over the period 1985 to 1994, to test the following four hypotheses regarding the causal relationships between the above variables:

- *Bad luck*. This hypothesis posits that exogenous events (such as sudden economic slowdowns) may cause an increase in non-performing loans, and over time extra costs, caused by this increase, are reflected in lower costs efficiency.

- *Bad management*. Low cost efficiency is linked to low-profile managerial practices. This results in an inability to evaluate timely and effectively the outstanding credits, collaterals and potential customers. The future effect of a bad current management is an increase in the number of NPLs, a result which seems to be confirmed in the Literature on this topic.

- *Skimping*. It's alternative to the previous one and argues that there is a positive correlation between high cost efficiency and the level of non-performing loans. According to this hypothesis, low costs would be obtained through inadequate resources allocation to monitor credit risk. This would cause a future increase in NPLs.

- *Moral hazard*. Banks with a low level of capitalization (or equity) are driven by moral hazard incentives to increase the risk of their loan portfolio (for example, by lending to more risky clients than competitors). This increased risk translates into an increasing number of NPLs, albeit with some time lag. Salas and Saurina (2002) also found this positive relationship among the same variables.

The data examined by Berger and DeYoung (1997) confirm the first hypothesis; regarding skimping and bad management hypotheses, they support the validity of the second. In fact, empirical evidence shows that, because of a reduction in cost efficiency, in most cases, there is an increase in the number of NPLs. This is proof that poor management practices do not only result in extra costs, but also in credit granting and monitoring policies that can lead to abnormal NPLs growth. Concerning the fourth hypothesis, Berger and DeYoung (1997) noted that a reduction in capital ratios in banks with low

capital base was followed by an increase in NPLs held by the banks themselves. This evidence supports the validity of the hypothesis called moral hazard.

Another variable that has been considered is the diversification carried out by bank. A greater diversification should correspond to a smaller number of NPLs, because diversification is the most effective lever to decrease (or rather mitigate) credit risk. In some research projects, the size of the bank was used as a proxy of bank diversification level. In particular, Salas and Saurina (2002) found statistical significance that larger banks correspond, in proportion, to a smaller number of NPLs. According to these scholars, the size of the bank offers greater diversification opportunities. Bank income (different from interest margin) in relation to total income was used as another type of variable that approximates bank diversification opportunities. If the income that does not derive from active lending rates is high, then this could be an indicator of the fact that the bank is able to generate revenues in different ways.

1.4 Implications of high NPLs

In the previous Section I wrote an overview of the literature on the determinants of non-performing loans, where it is confirmed that the amount of NPL stock is linked to the overall performance of economy as well as, with less pronounced evidence, to the management style of the loan portfolio and of the banking institution more generally. We now want to observe the effects that an excessive weight of impaired debts generates both at the level of a single bank and at the level of the financial system. A massive presence of non-performing loans (greater than what was expected at the beginning of the credit granting process) can trigger, in the absence of appropriate countermeasures, a deadly vicious circle: a fall in depositor confidence, running at counters, bankruptcy of "too big to fail" institutes (therefore systematically relevant), credit crunch, to name but a few.

More specifically, the presence of non-performing loans on banks' balance sheets influence their ability to lend to the real economy through essentially three interrelated channels: profitability, capital, and funding.

- **Bank profitability** decreases because high NPLs require banks to raise provisions, which lowers net operating income. Unlike performing assets NPLs carried on

banks' balance sheets do not usually generate income streams. In addition, profits are further reduced by the increased amount of human resources needed to monitor and manage high NPL stock; it causes a management weighting by increasing structure costs in a low-profit context.

- **Capital**: NPLs are risky assets and, net of provisions, may also require substantial amounts of capital due to higher risk weights on impaired assets than performing loans. It reduces new credit; according to IMF calculations, given the level of impaired assets in 2014, a timely resolution could have released as much as € 42 billion (or 0,5% of selected countries 2014 GDP) of additional capital, which could have unlocked new lending of more than 5% of GDP. Both the profitability and capital effect activate a negative economic-financial spiral on bank's balance sheet (less profitability, undercapitalization, etc).

- **Funding costs**: A deteriorating balance sheet raises bank's funding costs because of lower expected revenue streams and so, increases risk perceptions on the part of investors. Investors and other banks are less willing to lend to banks with high NPLs levels and, therefore, this leads to higher funding costs for these banks and a negative impact on their capacity to generate profits.

Systemic impact

All these channels mutually reinforce each other and ultimately result in a decrease of the credit supply. High NPL reduce profitability, increase funding costs and tie up bank capital and all these factors together result in some combination of higher lending rates, reduced lending volumes, and increased risk aversion. If we consider data for euro area banks over the past five years, they confirm that banks with higher NPLs tend to be less profitable, have relatively weaker capital buffers, and face higher funding costs. There is a loans slowdown (when the phenomenon is widespread at systemic level it's called credit crunch).

According to an IMF Staff Discussion Note (published in September 2015), NPL slow down economic activity, especially for countries that rely mainly on bank financing, as is the case in the euro area. According to this IMF report, there is a low credit growth in

countries where banks report a high level of impaired assets and insolvency procedures are weak. Euro Area banks with higher NPLs ratios in 2012-2013 lent less than banks with average asset quality operating in the same country under the same demand conditions.

Using different country samples, there are many recent studies that find that higher NPLs tend to reduce the credit-to-GDP ratio and GDP growth, while increasing unemployment. This is confirmed by data for Euro Area banks over the last five years.

There is also an empirical analysis (Klein, 2013) that using a panel regression approach generates similar findings for a sample of CESEE banks. It studies local macroeconomic conditions. As we have seen there is a growing literature on the macro-financial effects of NPLs and, particularly, many studies find a strong relation between higher NPLs and weaker credit and GDP growth, with causality going both ways.

Banks' reduced lending capacity decreases the growth of viable firms, and it is also likely to disproportionately affect Small and Medium Enterprises that are more dependent on bank financing. This is a big problem because in many European countries with high NPL ratios, SMEs account for significant shares of total output and employment. In general, since bank lending represents one of the most used source of financing in Europe, high NPLs also compromises monetary transmission. In fact, credit supply remains heavily influenced by the lending behaviour of banks.

For the considerations above, reducing NPLs is therefore crucial to support credit growth:

- It is crucial for SMEs that are more reliant on bank financing;
- It should stimulate corporate restructuring and overall reduce the excess of private sector debt; NPL resolution would allow to restructure the debt of viable firms;
- It may enhance monetary policy transmission. Since nowadays banks are concerned about capital adequacy and rising loan loss provisions, they are less responsive to changes in the policy rate.

Chapter 2

NPL analysis: situation, strategy and managing tools

2.1 European and Italian situation

In this section, I present a broad overview of the current situation about NPL, particularly in Europe and with a stronger focus on Italy. I have been able to access some useful documentation produced by international institutions, such as the World Bank, the International Monetary Fund and the European Bank Authority, which devoted significant efforts to discuss and understand the main issues raised by NPL, with the goal of providing banks and governments with conceptual, technical and accounting tools useful for managing the so called "NPL crisis".

2.1.1 European analysis

Data from the World Bank on the ratio of gross non-performing loans as a percentage of gross total loans (NPL ratio) in various countries is presented in Table 2.1, p. 59. It should be remembered that, for many reasons discussed in the previous chapter, data on NPLs must be treated with caution because different countries report these figures using different methodologies and definitions, which also change over time. The data nevertheless indicate a growing divergence in NPLs across countries which in part explains differences in these economies' recent performances, although, interestingly, causality

runs both ways. Indeed, as it is to be expected, a worsening of the economic scenario might relate to a higher ratio of NPL and, on the opposite, an NPL crisis will lead to difficulties for banks and firms.

Initially, in 2007-09, having US banks devoted about three quarters of their total loan portfolios to *real estate* lending (peaking in 2008), the largest percentage of NPLs came from this category of loans. Large US bank holding companies with greater than $500 billion of assets reported a larger NPL ratio than other, smaller lending institutions. Their asset portfolio deteriorated through direct holdings of real estate loans, and through exposure to Residential Mortgage Backed Securities (RMBS), and credit derivatives based on them. These assets also provided the channels for cross-border contagion and, over the course of the crisis, Western European banks suffered large losses from impaired US RMBS.

In this respect, the current crisis is different from those faced by the Western world in the recent past which had external triggers, manifesting when balance of payment problems in developing countries resulted in non-performing loans on the balance sheets of big American and European banks. While those American and Western European banks with exposure to US RMBS experienced considerable asset quality deterioration in the initial phases of the global financial crisis, NPL figures are now trending downward. By contrast, countries on the periphery of the Eurozone, and Central, Eastern and Southeastern European countries are still experiencing very high levels of NPLs which have continued to increase in 2014/2015 (Klein, 2013). From Table 2.1 we see that, for example, in Greece, the ratio of NPLs to total loans is estimated to have risen from 6,3% in 2005 to 34,3% in 2014. In Italy, it has been estimated that the NPL ratio in 2014 was 17% of all loans totaling €160 billion (Jaussad and Kang 2015). In Romania and Serbia, the NPL figure has been quoted to be as high as 22%, and it is estimated to be 15% in Croatia. In sum, NPLs percantage is still in double digits on the periphery of the Eurozone, where the financial crisis changed into a sovereign debt crisis and, at the same time, the economies have experienced prolonged recession and austerity. In contrast, many have claimed that measures taken by authorities in the US, UK, and the core of the Eurozone have helped to hasten GDP recovery and curtail NPLs.

In the EU, the average rate of non-performing loans is slowly decreasing, from 6,4%

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Central Europe and the Baltics	9.5	7.0	3.9	3.7	2.6	2.3	2.5	2.3	2.8	6.4	10.0	12.3	13.8	11.6	8.2
Cyprus									3.6	4.5	5.8	10.0	18.4	38.6	45.4
Denmark	0.5	0.7	1.7	0.8	0.7	0.2	0.3	0.6	1.2	3.3	4.1	3.7	6.0	4.6	4.5
Euro area	3.7	2.9	3.0	2.5	2.3	1.8	1.3	1.8	2.8	4.8	5.4	6.0	7.5	7.9	8.3
European Union	4.6	3.3	2.9	2.6	2.3	2.0	1.8	2.2	2.8	4.7	5.4	5.8	6.7	6.4	8.2
EuroZone Periphery	4.9	3.3	3.7	3.6	4.1	3.2	2.9	2.9	3.8	6.6	8.0	11.0	16.3	22.1	22.6
Finland	0.6	0.6	0.5	0.5	0.4	0.3	0.2	0.3	0.4	0.6	0.6	0.5	0.5		
France	5.0	4.1	5.0	4.8	4.2	3.5	3.0	2.7	2.8	4.0	3.8	4.3	4.3	4.5	
Germany	4.7	4.6	5.0	5.2	4.9	4.1	3.4	2.7	2.9	3.3	3.2	3.0	2.9	2.7	
Greece	12.3	5.6	7.4	7.0	7.0	6.3	5.4	4.6	4.7	7.0	9.1	14.4	23.3	31.9	34.3
Iceland	1.5	1.2	2.6	2.1	0.9	1.1	0.8			14.1	18.3	11.6	6.3	4.3	
Ireland	1.0	1.0	1.0	0.9		0.5	0.5	0.6	1.9	9.8	13.0	16.1	25.0	25.7	18.7
Italy	7.8	6.7	6.5	6.7	6.6	7.0	6.6	5.8	6.3	9.4	10.0	11.7	13.7	16.5	17.3
Luxembourg	0.5	0.4	0.4	0.5	0.3	0.2	0.1	0.4	0.6	0.7	0.2	0.4	0.1	0.2	
Netherlands	1.8	2.3	2.4	2.0	1.5	1.2	0.8		1.7	3.2	2.8	2.7	3.1	3.2	3.1
Norway	1.2	1.3	2.0	1.6	1.0	0.7	0.6	0.5	0.7	1.3	1.5	1.7	1.5	1.3	1.3
OECD members	2.8	2.6	2.4	2.6	2.0	1.5	1.3	1.4	1.9	3.3	3.3	3.4	3.2	3.1	3.1
Portugal	2.2	2.2	2.3	2.4	2.0	1.5	1.3	2.8	3.6	4.8	5.2	7.5	9.8	10.6	11.2
Spain	1.2	1.2	1.1	1.0	0.8	0.8	0.7	0.9	2.8	4.1	4.7	6.0	7.5	9.4	8.5
Sweden	1.6	1.5	1.4	1.9	1.1	0.8	0.1	0.1	0.5	0.8	0.8	0.7	0.7	0.6	0.6
Switzerland	4.1	2.3	1.8	1.3	0.9	0.5	0.3	0.3	0.9	1.0	0.9	0.8	0.8	0.8	
United Kingdom	2.5	2.6	2.6	2.5	1.9	1.0	0.9	0.9	1.6	3.5	4.0	4.0	3.6	3.1	2.7
United States	1.1	1.3	1.4	1.1	0.8	0.7	0.8	1.4	3.0	5.0	4.4	3.8	3.3	2.5	2.0
US BHS >$500bn#	1.2	1.4	2.0	1.9	1.4	1.3	1.0	1.0	3.0	7.2	6.7	5.5	5.3	4.5	

Table 2.1: NPL ratios in the world economies (source: World Bank)

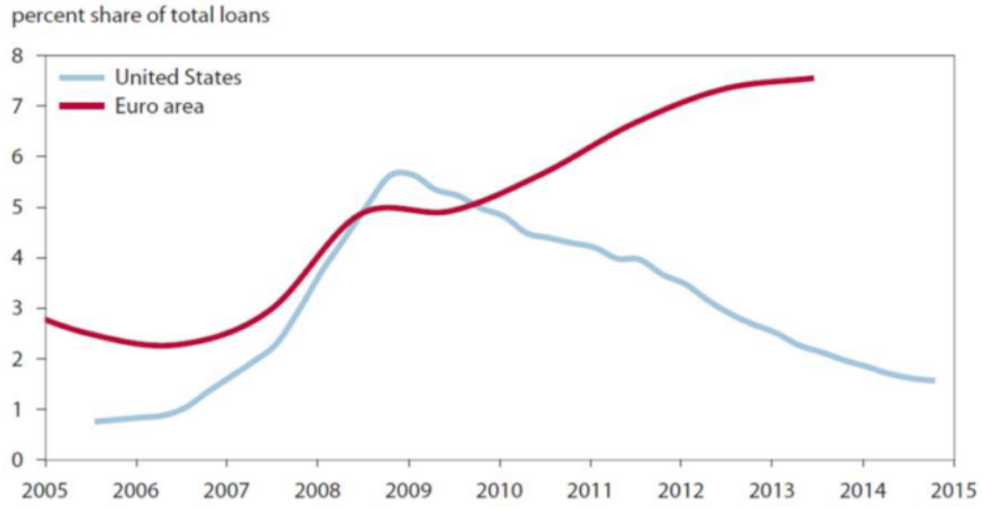

Figure 2.1: Evolution of NPL ratios in the US and the Euro area (Source: PHE 2016)

in December 2014 to 5,9% at the end of September 2015. However, this level remains higher than in other major developed countries. As comparison, the World Bank reported NPL ratios of less than 2% for the United States and Japan at the end of 2015. Figure 2.1 presents the evolution of NPL ratios in the United States and in the euro area from 2006 to 2014. While NPL ratios rapidly increased in both areas in both areas from 2007 to 2009, the trends diverged radically from 2010 to 2014, with a rapid resolution of NPLs in the United States while Euro area banks continued piling up bad debts (an overview of the European situation is displayed in Figure 2.2 and Figure 2.3).

This part focuses on the analysis in the major European countries of the distribution of impaired loans, the amount of gross (and therefore nominal) consistencies in relation to the credit volumes and finally the same values calculated net of provisions.

Net exposures are the portion of the exposure that is not covered by the loss prediction. Indeed, a lot of credit lines, particularly those whose default is more likely (if not certain), have already been devalued by the banks, and therefore the net amount is a particularly sensitive indicator. For greater clarity, the coverage indicator, known as NPL coverage ratio, is as follows:

$$\text{NPL coverage ratio} = \text{provisions} / \text{nominal credit value} \tag{2.1}$$

It follows that the absolute value of the NPLs covered, and consequently of the net NPLs,

is determined by:

$$\text{NPLs covered} = \text{nominal NPLs} \times \text{NPL coverage ratio} \tag{2.2}$$

$$\text{NPLs net} = \text{nominal NPL} - \text{NPLs covered} \tag{2.3}$$

The NPLs market is worth € 1,203 billion in the reference countries. Considering only the major European economies (Italy, France, Spain, England and Germany) it reaches 70% of the market. Italy contributes with the largest market share (28%), which accounts for 22,2% of its GDP. France follows with 14,3% of the total, but with a much lower impact on GDP (8,3%). Distance from Germany is abysmal: 69,7 billion of deteriorated credits with a 2,4% on GDP. The value of impaired loans is also measured by the so-called NPL ratio, e.g. the incidence of nominal NPLs in relation to the amount of credit granted, and it shows that almost one fifth of the loans granted by the Italian banking system are considered to be highly risk-backed. Our European competitors show much lower percentages and below the 6% threshold. In fact, the European average of the NPL ratio in December 2015 is equal to 5,6%, almost 3 times the NPL ratio recorded in 2008 (1,96%). The peak (6,5%) is in 2014. In absolute terms, with a compound annual growth rate of almost 17%, the amount of impaired loans in the European system (withholding the amount of credit granted) has almost tripled in the period considered. The difficult economic environment is not enough to explain a trend that is so problematic. Not alien to responsibility, albeit often in good faith, is in fact the credit policy implemented by banks in the pre-crisis period in favor of subjects with such creditworthy credit that a general increase in the insolvency rate was obviously a foreseeable consequence. Before the novelties about the classification of NPLs introduced by the EBA it was almost impracticable to compare the deteriorated loans in different countries and analyze the implications of this phenomenon in an international benchmarking perspective. This analysis is still very difficult today.

Regarding provisions, in 2015, most international banking systems are in the range of 35% to 45%. Particularly high is the provision applied by French banks, which is over 50%, while Italy and Spain are around 45-46%, in line with 44% registered in the European system. Total provisions amounted to € 531 billion with net NPLs of € 672 billion.

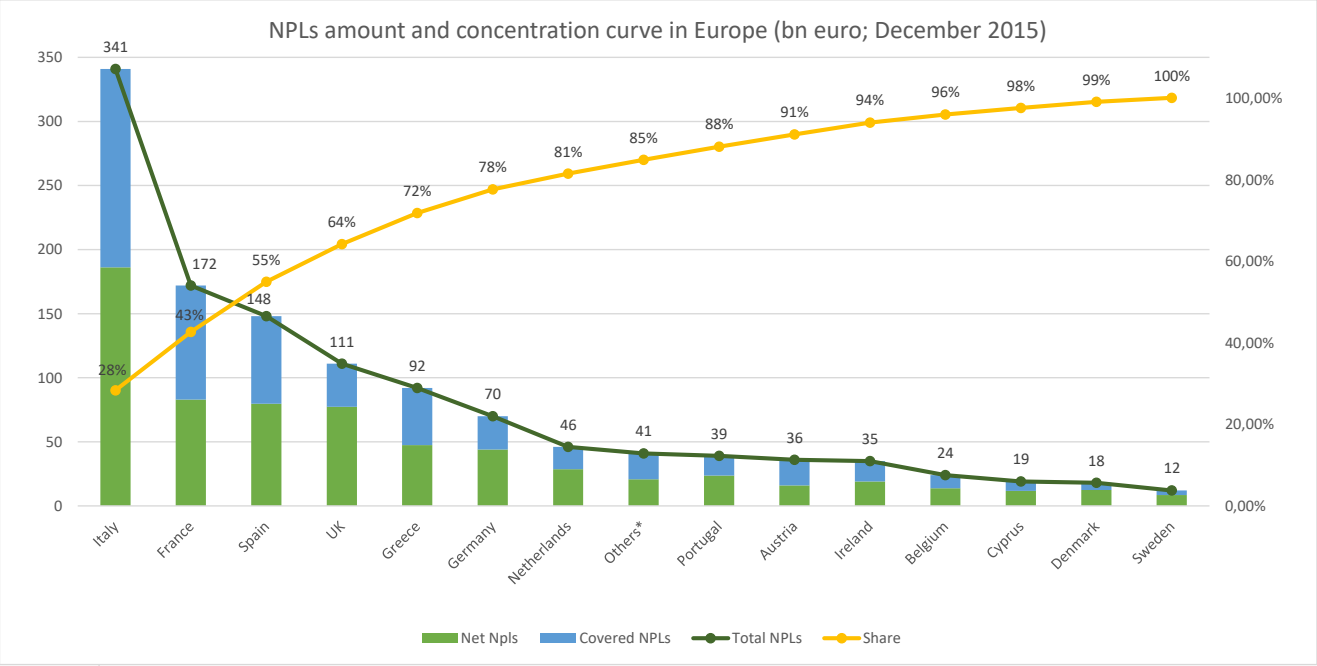

Figure 2.2: NPLs amount and concentration curve in Europe (Source: EBA & Bank of Italy)

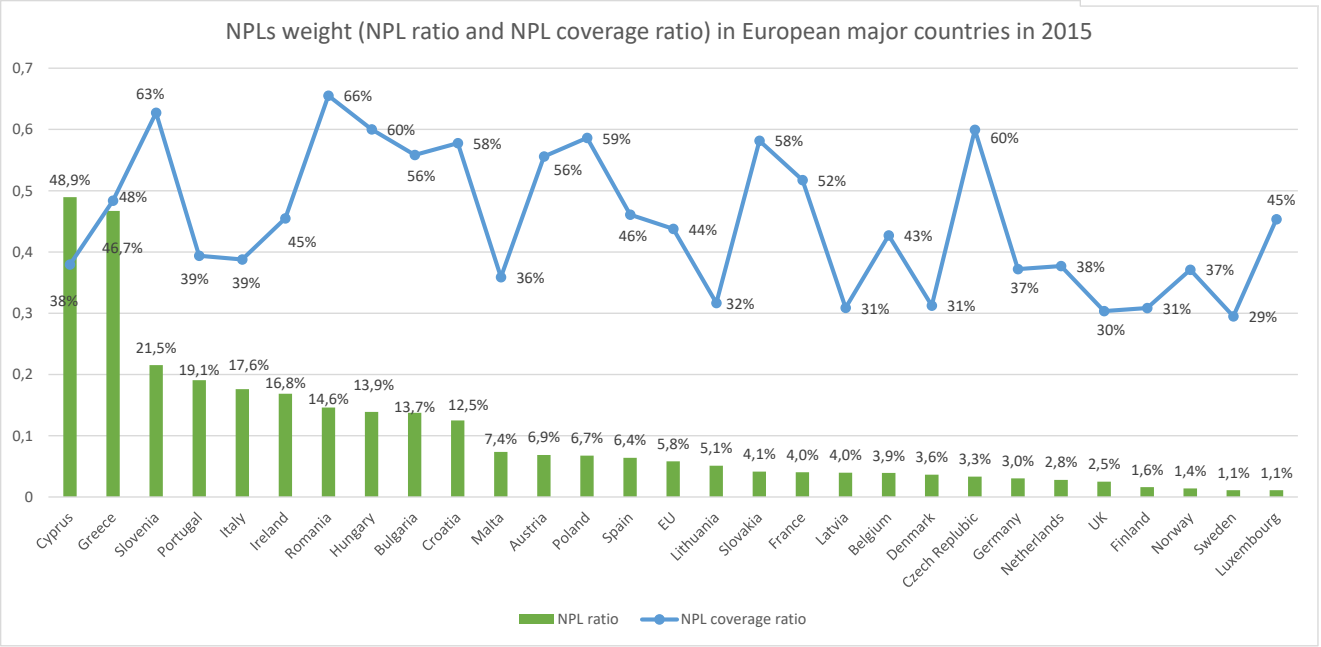

Figure 2.3: NPLs weight (NPL ratio and NPL coverage ratio) in major EU countries (Source: EBA & Bank of Italy)

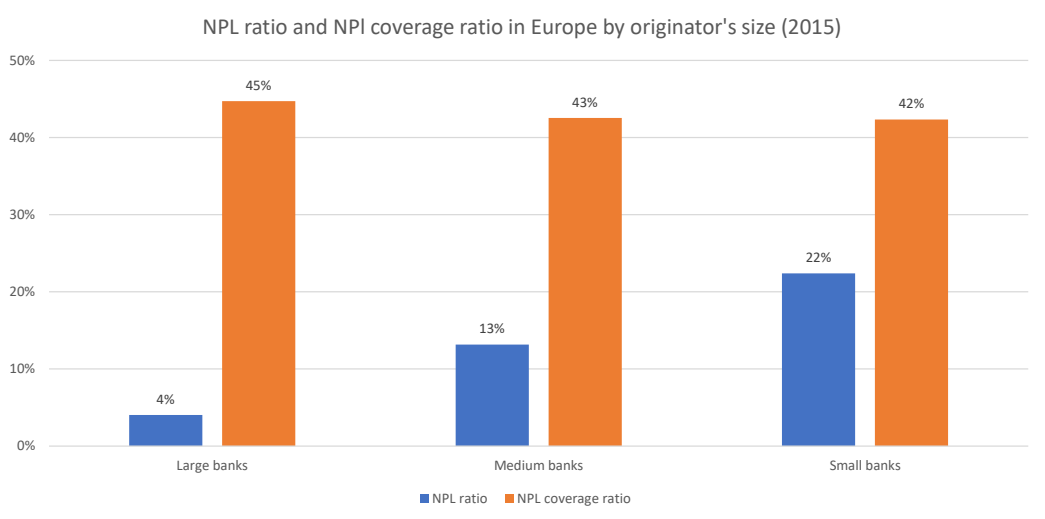

Figure 2.4: NPL ratio and NPL coverage ratio in Europe by originator's size (2015). Source: EBA Report (June 2015)

The data I have discussed so far can be further detailed to understand the interconnections between the value of the NPLs, the dimensional class of the issuing institution and the legal nature of the counterparty. The data in Figure 2.4 clearly shows that:

- The NPL ratio varies a lot, with a dangerous drift for smaller banks which in relative terms have a value 5,5 times higher than those of major banks;
- There is no significant difference in the level of provisions, despite the different capital capacity due to business size.

Once again, it is evident the need to improve control structures especially in smaller banks, where the most direct relationship with the customer should facilitate an appropriate risk management. The problem is even more critical within the Italian banking system, not only characterized by many lenders, especially small in size, but also by the fact that the bank financing is the source most used by our businesses.

A subsequent useful analysis concerns the legal nature of the counterparty. The parameters analyzed refer to three different counterparties:

- The non-financial corporations (NFCs), where counterparties are typically industrial and commercial companies;

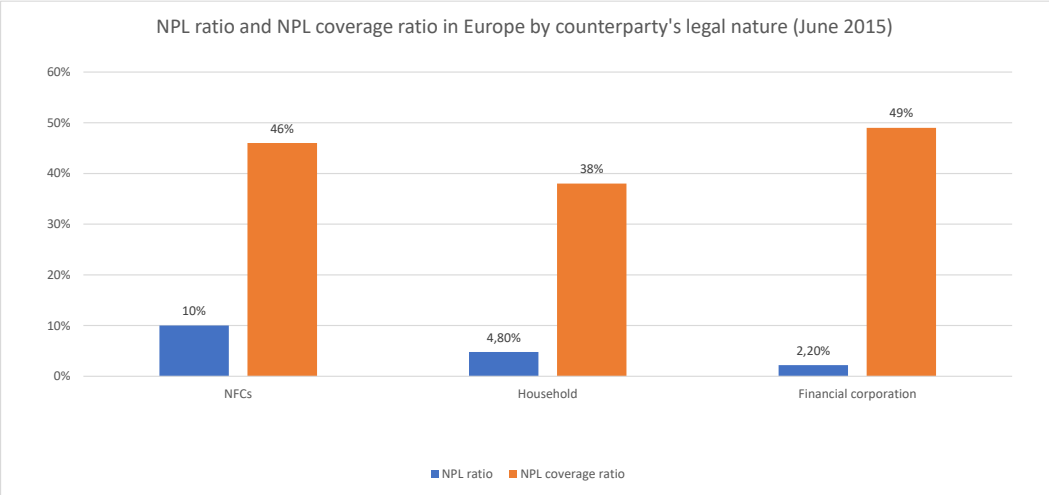

Figure 2.5: NPL ratio and NPL coverage ratio in Europe by counterparty's nature (2015). Source: EBA Report (June 2015)

- The retail segment, called household, where counterparties are individual or families;
- The segment of financial corporations.

(Figure 2.5, p. 65)

This analysis highlights how the financial crisis has touched the deepest roots of the European economic system, e.g. households, whose historically safer solvency has become closer to the riskiest values of business cluster, as we can see from the NPL coverage ratio. It is interesting to note that the risk of deteriorating for corporate exposure is more than double compared to household's value, although this ratio has dropped by 6,5% compared to the previous year, while the reduction for families is more or less 4%.

Households, on the other hand, with an NPL ratio of 4,8%, seem to be considerably stronger than the enterprise, even though the business risk propensity is generally much higher. In addition, even if the deterioration level is about half of that recorded in companies, the provisions for family loans is 38%, not far from other clusters. Regarding financial intermediaries, with the exception of lending institutions, although the NPL ratio is growing (+ 4,7% compared to 2014), there is not a particular worrying situation considering that only 2,2% of the total outstanding loans to this counterparty are reclassified among the impaired exposures.

2.1.2 Italian analysis: focus on bad loans

In Italy, almost one-fifth of bank loans show a high risk of repayment, and it is now estimated that impaired loans amount to approximately 341 billion euros. From 2008 until today, bad debts are those that have had the biggest impact on banks' balance sheet and they have always represented more than 50% of the total NPLs. In June 2016, they reached 59,8% of the 333 billion registered. Figure 2.6, on p. 67, shows that, with a NPLs growth rate of 22.4% per annum between 2008 and 2015, bad debts and unlikely to pay categories had the greatest impact: the first ones grew by 25,4%, while the second by 21,4%. The third category of NPL in existence, the so-called past due, has decreased its percentage share on total impaired loans from 11,2% in 2008 to 3,5% in the first half of the year 2016, with an absolute growth of only 5,8% per annum. The phenomenon itself must not be read in a positive sense because part of the credits expired has gone to the category with higher risk.

The NPL ratio does not show an optimistic value, since impaired loans grew by 22,4% (CAGR 2008-15) but with a loans growth of only 2,1%. This explains the fact that if in 2008 the NPL ratio was 5.2%, in line with the current European average, now stands at 18%. It means that in Italy there is 1 euro of NPL every 5,5 euro of loan granted and this is a value very far from the 17,8 euro of the European average. Despite with different rates of change, since 2008 bad debts and unlikely to pay has been steadily growing and in particular the first ones have increased by 5 times, the second by 4. The worst year was 2009, which saw a bad debts growth of 43%, and even by 71% for unlikely to pay. Year 2016, however, showed encouraging signals: bad debts and unlikely to pay recorded negative growth rates for the first time (first ones by a modest 0,5%, the second one by 1,3%), little improvement from a systemic point of view, but representative of a trend reversal on which begin a recovery plan for the Italian credit system. In terms of credit risk coverage, Italian banks have mainly intervened only in recent years.

The strongest contribution was the 2009 crisis, which also had a strong impact on banks' capital adequacy; in fact, banks have been charged 50 billion of deteriorated credit more than in the previous year, and the coverage ratio of NPLs, which at the end of 2008 was 44,4%, dropped by 55 basis points. Perhaps it would have been better to main-

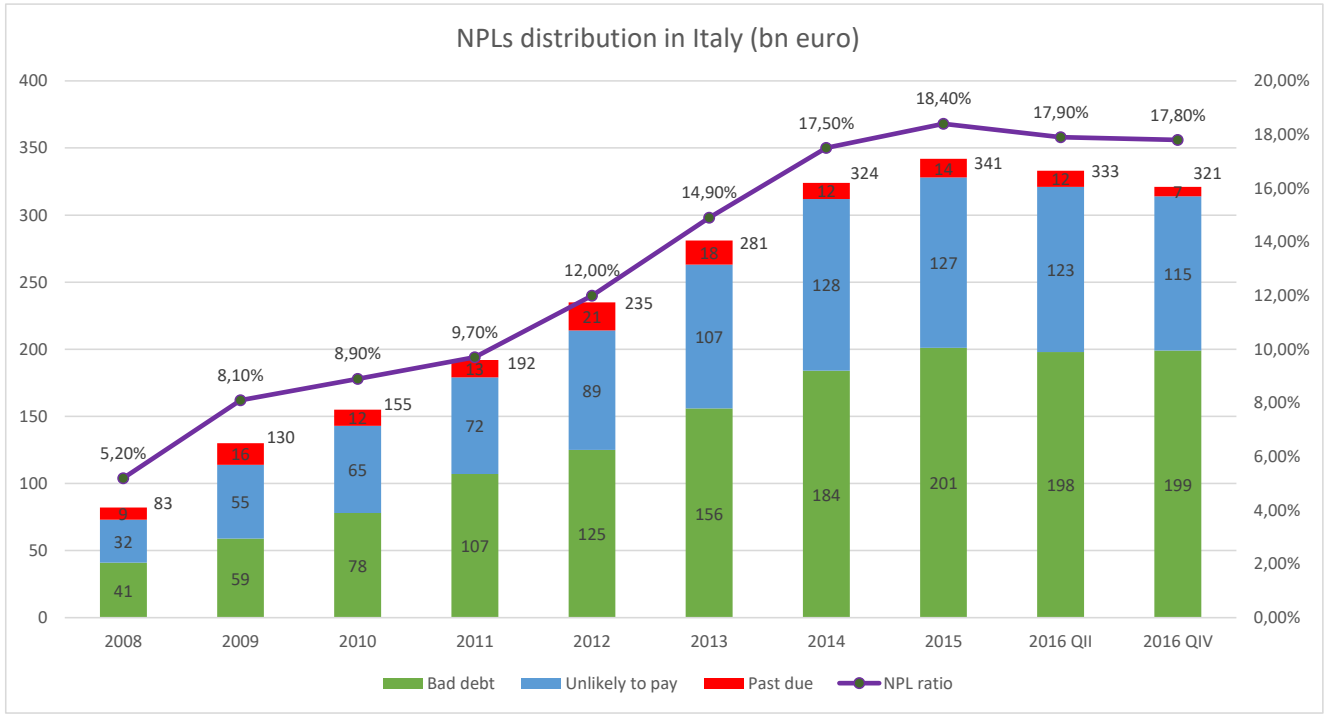

Figure 2.6: NPL distribution in Italy (Source: Statistical Bulletin, Bank of Italy)

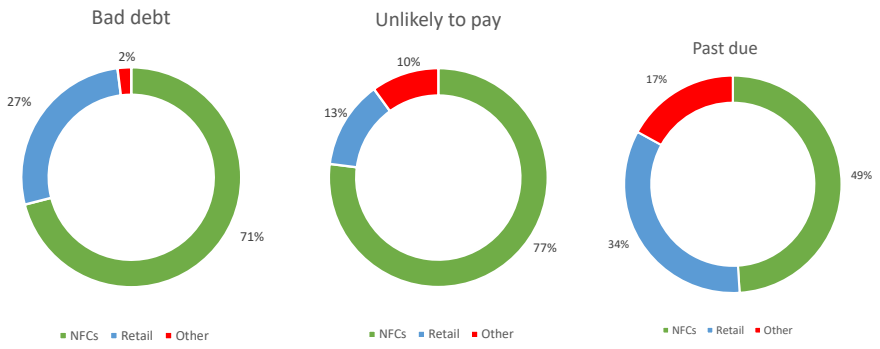

Figure 2.7: NPLs counterparties (Source: Supplement to the statistical bulletin 2015, Bank of Italy)

tain a policy of hedging insolvency risk similar to that of the previous year, which would have led to more provisions for at least 21 billion euros, while the additional capital to cover the NPLs was only 13,7 billion.

The persistence of the crisis did not open up the possibility of more aggressive interventions, particularly after the economic recession in 2011 and 2012 and until those years NPL ratio remained practically unchanged. In 2013, however, there was a significant change, driven both by the awareness of a structural phenomenon and by the greater attention given by the European authorities. It is no coincidence that the changes about NPLs classification arise from the publication of the ITS by EBA in 2013. While the amount of impaired loans did not seem to fall (+25%), coverage ratios increased from 38,9% in 2012 to 41,65%, which was not enough to hold the risk of repayment of non-performing exposures, but useful in defining the turning point for a phenomenon so far undervalued. At the end of 2015, NPLs in Italy recorded a coverage ratio of 45,3%.

With 62,5 billion euros of additional capital to cover non-performing exposures compared to 2012, it is estimated that, at the same coverage ratio, 40,5 billion has been allocated only to deal with the NPLs increase (a growth of approximately 104,5 billion over the period), while the remaining 22 billion euros relate to the lending institutions' commitment to increase coverage on the riskiest bad debts.

Considering the counterpart, the number of Italian households, which represented 22% of non-performing loans in December 2015, shows a downward trend on total NPLs since 2008 (6,8% year-on-year decrease, 13,2% for unlikely to pay). On the contrary, com-

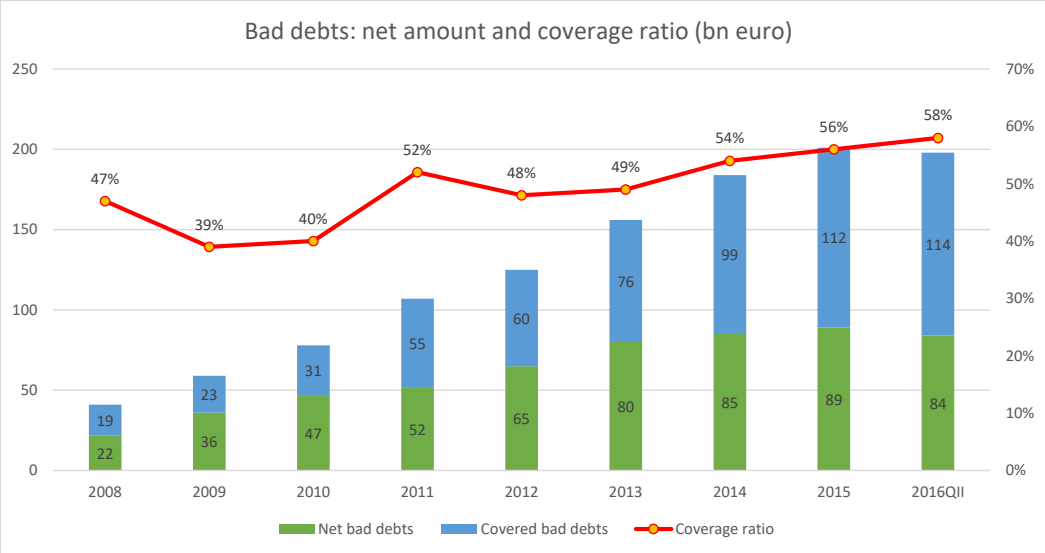

Figure 2.8: Bad debts: net amount and coverage ratio (Source: Supplement to the statistical bulletin, Bank of Italy)

panies show a diametrically opposite trend: while in 2008 the corporate counterpart represented 63% of NPLs, in the first half of 2016 the weight rose to 72% (Figure 2.7, p 68).

Lastly, the past due distribution by counterpart is very different, with the 49% of financial intermediaries and government entities (denoted as "Other" in Figure 2.7, p. 68) which is predominant compared to industrial, commercial companies, and retail. Despite a significant increase (CAGR 45%), the low value in absolute terms is not worrying: the number of impaired loans reclassified between households and NFCs debtors amounted to 19,5 billion of euro at the end of 2015, and moreover almost completely distributed between unlikely to pay and past due.

Compared to the more general category of impaired loans, which has a coverage ratio of 40-45%, the asset absorption that characterizes bad debts is much higher. The data of the average coverage rates shown below facilitates the comparison between the various types of NPLs:

- Past due with 23,5%
- Unlikely to pay with 28%
- Bad debts with 56%

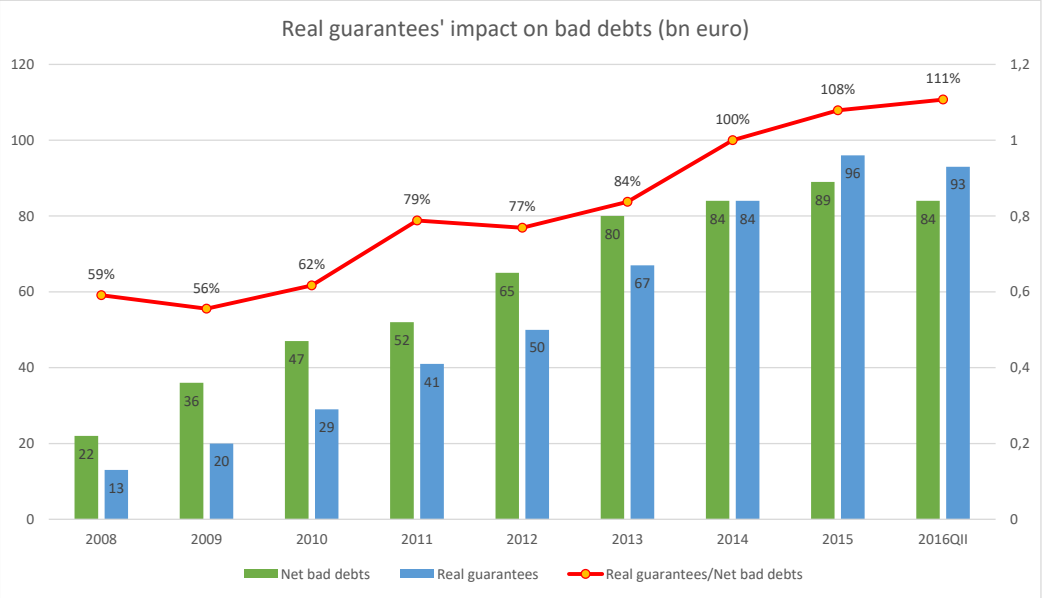

Figure 2.9: Real guarantees' impact on bad debts (Source: Supplement to the statistical bulletin, Bank of Italy)

- The coverage ratio, which reaches the peak of 58% in June 2016, continues to increase from 2012; compared to total loans, gross bad debts account for 10,7%, while net bad debts dropped to 4,5%.

The provisioning policy highlighted by the trend in the coverage ratio cannot disregard the amount of collateral granted in favor of the issuer institution, as shown in Figure 2.9. The data is very important, since if the value of the net bad debts were attested by real collateral based on up-to-date estimates, it would be reasonable to hypothesize the approach of the net book value to the actual market value. An even better situation would obviously arise in cases where the real guarantee would surpass the net bad debt value, thus facilitating the meeting between supply and demand. This is what appears from 2014 onwards, where the guarantees/net bad debts ratio showed a strong trend reversal exceeding abundantly 100%. In any case, it should not be forgotten that these are always estimates of real guarantees' value that may not reflect market parameters.

Instead, referring to the gross values of bad debts, it is possible to identify the portion of secured positions and, consequently, the unsecured positions, for which the expected recovery rate for the institution is close to zero. In December 2015, 47,8% of gross bad

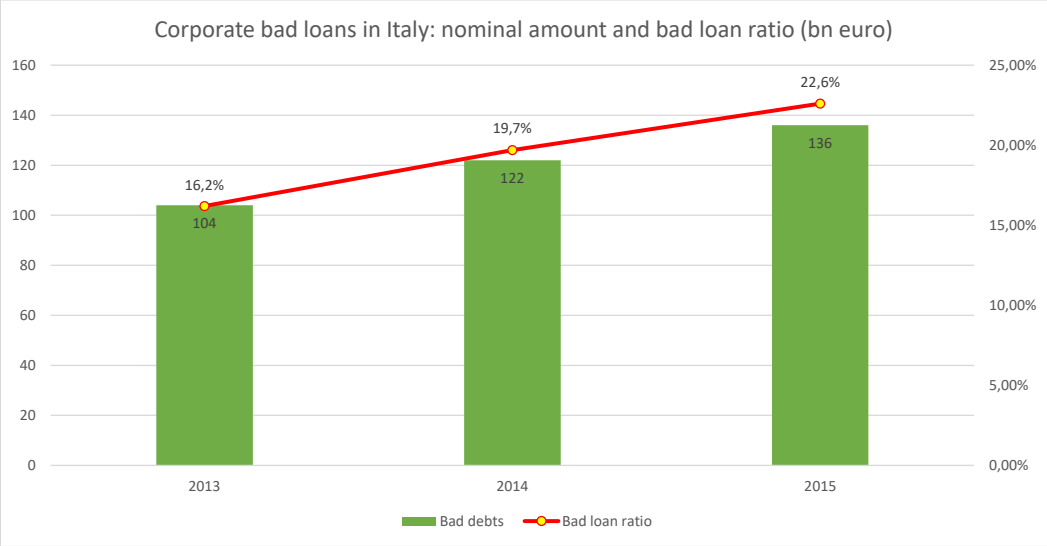

Figure 2.10: Corporate bad loans in Italy: nominal amount and bad loan ratio (Source: Supplement to the statistical bulletin, Bank of Italy)

debt (201 billion) shows a real guarantee as collateral. Based on the gross exposure shown in Figure 2.8, the unsecured component decreased from 69% in 2008 to 52% in 2015.

If we go deeper in the analysis, at a geographic level the Italian regions with the highest level of secured loans are those of the northwest (49,6%) and north-east (51,1%), while the lowest levels are recorded in the south, with secured loans percentage of 43% (45% for Centre and Islands).

Considering the counterpart, the situation is very irregular. The retail segment (typically the consumer family) records the highest level of collateral in support of its bad debts with an average of 57% secured loans. Consumer households are the debtors segment which is required to provide the highest level of collateral (equal to 60,1%), much higher than that required for producer households (individual companies), equal to 50,4%. Businesses (NFCs) have a discrete heterogeneity that expresses the level of risk perceived in relation to the affiliate sector. With an average of 44,1%, companies operating in the manufacturing industry account only 30% of bad debts covered by collateral. A higher percentage is recorded in the building industry (56,3%).

The previous analysis of the counterparts clearly shows the preponderance of NPLs at the corporate level. I therefore decided to focus attention on this asset class, which

in December 2015 accounted for 72% of Italian impaired loans for a total of 245 billion. To identify the factors that have an impact on credit risk, the analysis only considers the type of exposures with higher risk of default, i.e. the absolute value trend and the value compared to the total loans (bad loan ratio). Excluding the NFCs' exposures to financial companies and other entities (reported to Bank of Italy's Central Credit Register), the balances sheets of Italian banks in December 2015 were burdened by 136,5 billion of bad loans, referring to 238.142 subjects entrusted a multitude of granular exposures typical of the Italian industrial system. Despite the long-term focus on problem solving, corporate bad debt grew by 14,4% between 2013 and 2015, clearly higher than retail counterpart (8,4%) and this trend is even more worrying if compared with the credit contraction of about 3% per annum (Figure 2.10). The counter trend of these two elements has increased the corporate bad loan ratio by more than 6 percentage points between 2013 and 2015, year in which it stood at 22,6%.

$$\text{Corporate bad loan ratio} = \text{corporate bad debts/loans to NFCs} \tag{2.4}$$

This means that there is 1 euro of bad debts for every 4,5 euro of credit disbursed.

2.1.3 Encouraging signals in 2016

The most recent data from the Bank of Italy show that the flow of impaired loans is decreasing. In fact, the deterioration rate (ratio between the total of new bad debts, unlikely to pay and past due on outstanding loans) has reached 2,6% in September 2016, one point lower than the previous year (3,5%) and less than half of the maximum, reached at the end of 2013 (6%). New bad loan rate also decreases, but at lower pace: in September 2016, the ratio between new bad debts and total loans reached 2,3%, two tenths of a per cent less than the same period in 2015 (2,5 %) and seven tenths less than the maximum of 2013 (3%) (Figure 2.11 and Figure 2.12).

Business loan data reflect these improvements, although the incidence of bad debts remains at historically high levels, higher than those of the overall counterparts. Between January and June 2016, banks suffered bad loans to non-financial corporations of about 12 billion euros, lower than the same period in 2015 (15 billion) and with a year-on-year decline equal to 18%. The reduction is 38% compared to the peak in 2013. The number of

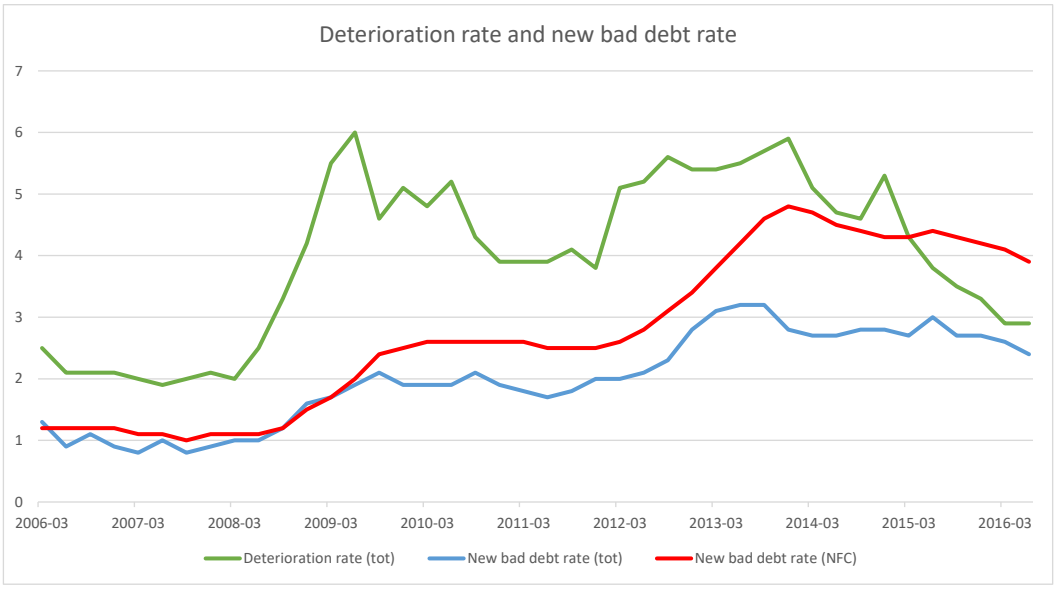

Figure 2.11: Source: ABI-Cerved on data by Bank of Italy

loans granted to financial corporations that became bad debts remains stable: just under 14.000, 1,8% more than the first half of 2015. It is therefore decreasing the bad debts size, but the number of companies in default is still high.

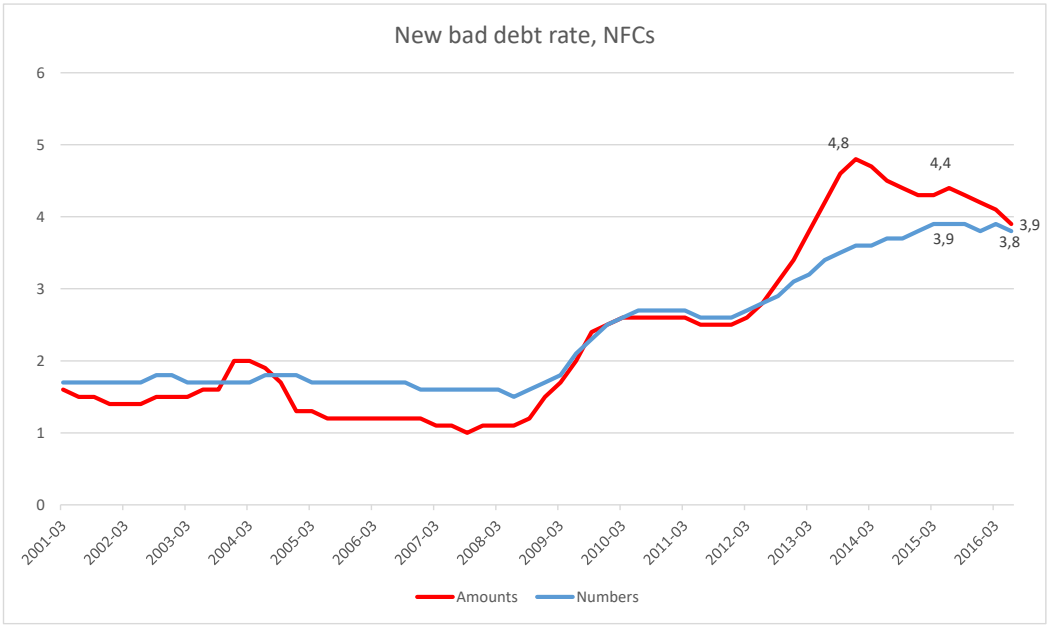

Figure 2.12: Source: ABI-Cerved on data by Bank of Italy

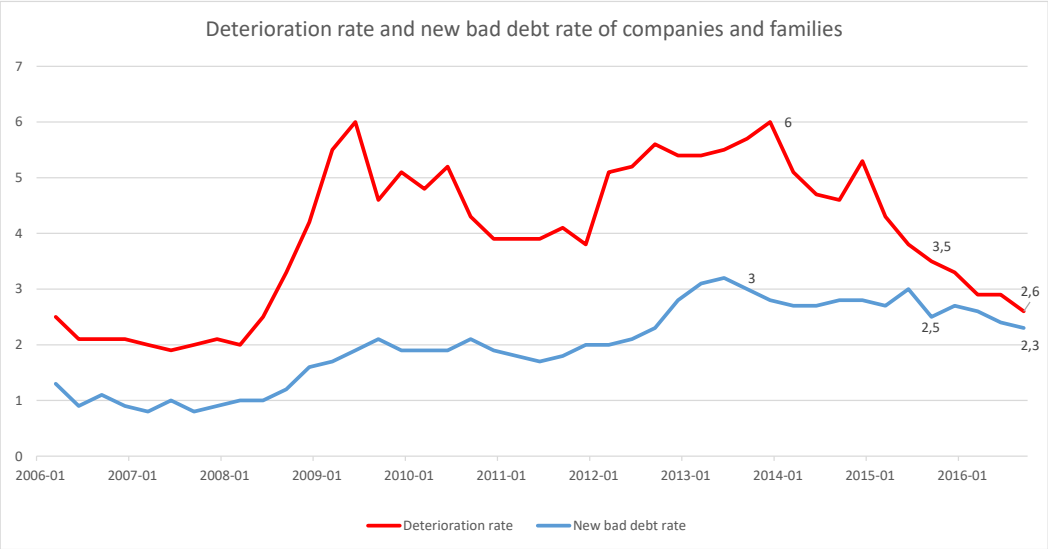

Figure 2.13: Source: ABI-Cerved on Bank of Italy Data

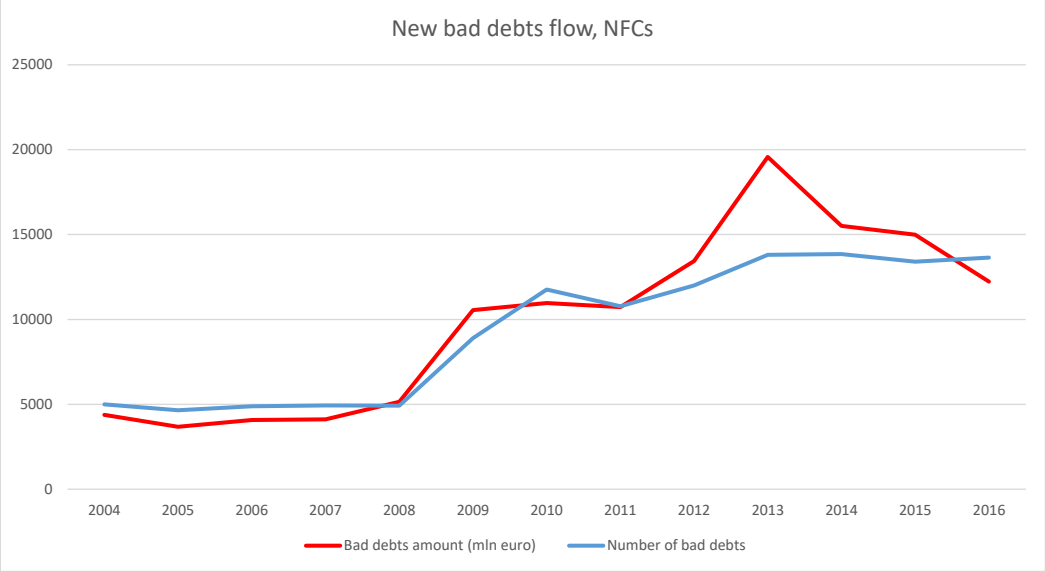

Figure 2.14: Source: ABI-Cerved on Bank of Italy Data

In terms of amounts, the new bad debt rate stood at 3,9% in June 2016, significantly lower than previous year (4,4%) and the peak at the end of 2013 (4,8%). In terms of numbers, the rate stands at 3,8%, down to a tenth of a point on an annual basis. On a longer-term horizon, however, the default flow remains at historically high levels, much higher than pre-crisis rates. The new bad debt rate is more than twice compared to the end of 2008, whether it is calculated on the number of loans (3,8% vs. 1.7%) or on the amounts (3,9% versus 1,5%).

Official data provides details on new bad debt rate trends by geographical area, business sector, and credit size, but there are no statistics by company dimension. Abi and Cerved have estimated these indicators based on individual risk scores that Cerved processes for Italian companies. In all considered size ranges, the bad debts frequency is more than twice the pre-crisis levels, with a greater gap for smaller companies, especially for micro-enterprises.

2.1.4 Italian banks analysis

Italian banks continue to face significant challenges. Share capital is fully absorbed by NPLs and the traditional banking model is affected by poor profitability. The legacy branch networks result in high fixed costs.

Unicredit is disposing €18 bn Bad Loans portfolio and has planned a €13bn capital increase that should be launched in February 2017.

MPS is looking to restore its capital position via a €5 bn capital increase and is proceeding with the sale of a €27 bn Bad Loans portfolio.

Banco BPM SpA - Banco Popolare and BPM shareholders approved a merger plan, with registered office in Milan and administrative headquarters in Verona.

In June 2016, Banco Popolare completed a € 1 bn capital increase. Veneto Banca and Banca Popolare di Vicenza are considering a merger and the disposal of their Bad Loans portfolios.

The sale of the four local troubled banks (Banca Marche, CariChieti, CariFerrara and Banca Etruria) rescued by the Government is still ongoing. UBI is among the preferred bidders for Banca Marche, Banca Etruria and CariChieti and got the ECB (European Central Bank) authorization for the acquisition.

Other banks such as Carige and Credito Valtellinese are considering the disposal of their Bad Loans portfolios for a GBV of €1,9 bn and €1,5 bn respectively.

Figure 2.16 illustrates the Top 9 Italian banks' positioning in terms of NPL ratio (average 18,08%) and coverage ratio (average 43,17%). As shown, a material variance among the Top 9 banks exists; in terms of Gross NPL ratio, MPS is the highest extreme (34,9%) and Credem the lowest one (6,7%). If we consider NPL coverage ratio, Unicredit is at 52,41% while Banco Popolare stands at 33%.

However, it's important to underline that the coverage ratio is not directly comparable as it is influenced by several factors which vary among the different banks (such as policies on write-offs, level of collateralization of the loans, vintage of the portfolio).

Figure 2.17 provides a snapshot of the Top 9 Italian banks' Bad Loans ratio and coverage, which once again provides a fairly diversified picture with similar trends compared to those described above. Average Bad Loans ratio stands at 10,66%, while the Bad Loans coverage ratio is equal to 55,81%.

Figure 2.18 illustrates Unlikely to Pay ratio and coverage for the Top 9 Italian banks, with averages equal to 6,99% and 24,57% respectively.

Unicredit shows a coverage ratio 1,41 times higher than the average, and Credem 0.64x lower than the average. Banco Popolare and MPS register a greater incidence of Unlikely to Pay ratio than other banks. Comparisons among banks need to consider the

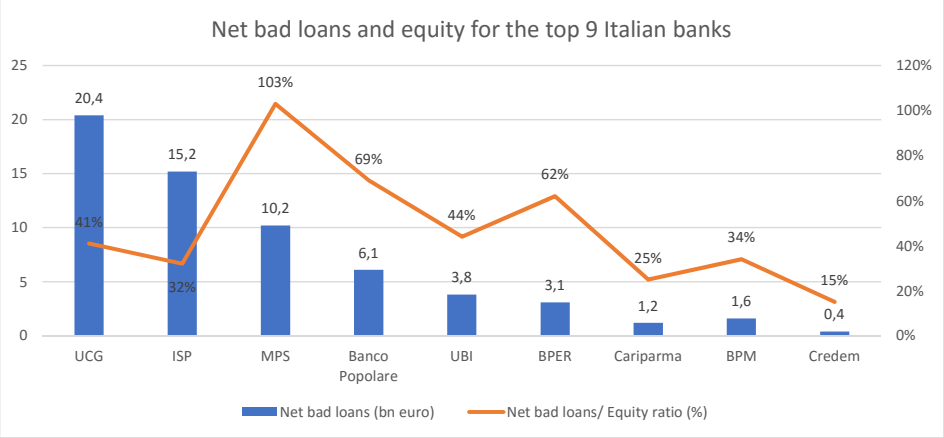

Figure 2.15: Source: Financial Statements as of H1-2016. Data affected by different wright-off policies

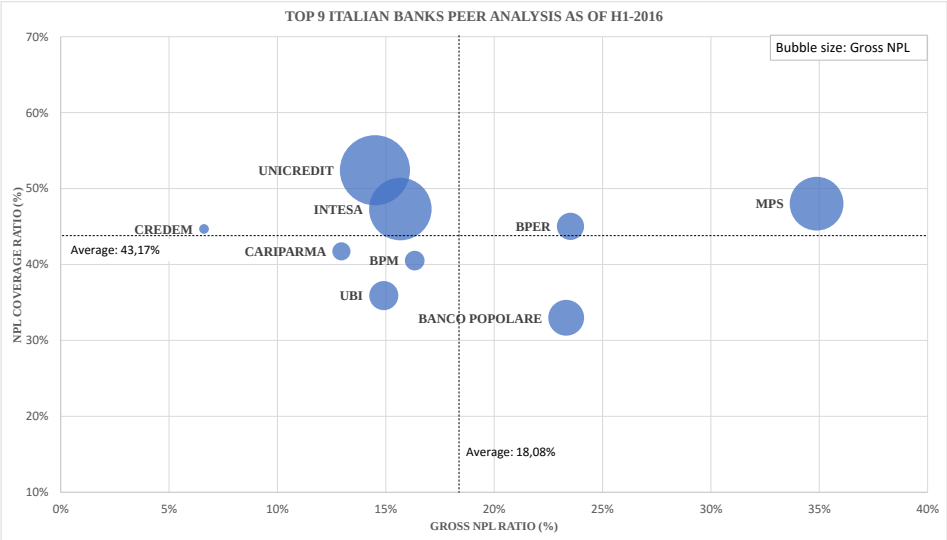

Figure 2.16: NPL values from Financial Statements as of H1-2016

underlying type of borrower, probability of default estimate and rating of the borrower as well as criteria/policy used to grant a restructuring and the type of restructuring.

Figure 2.19 provides a snapshot of the Top 9 Italian banks' Past Due ratio and coverage (average 0,41% and 14,84% respectively). Little variance exists among the banks, except for MPS which records the highest gross Past Due Ratio compared to its competitors (1,61%). Adjusted average (without MPS) would be 0,26% and 14% for ratio and coverage respectively.

An additional analysis concerns the bad loans movements between 2015 and 2016. For some banks, I used data from financial statements as of 2016, while for the other banks I obtained data from financial statements as of H1-2016 since 2016 reports were not yet available.

Compared to YE-2015, the 2016 snapshot indicates that UBI (+17%) and Banco Popolare (+7%) have both increased their Bad Loans coverage level whereas MPS's gross Bad Loans ratio worsened compared to YE-2015 (+6,1%). Unicredit has decreased significantly its bad loans ratio (-33%) and has increased the coverage ratio (+7,5%). There are not relevant changes for other banks (Figure 2.20, p. 79).

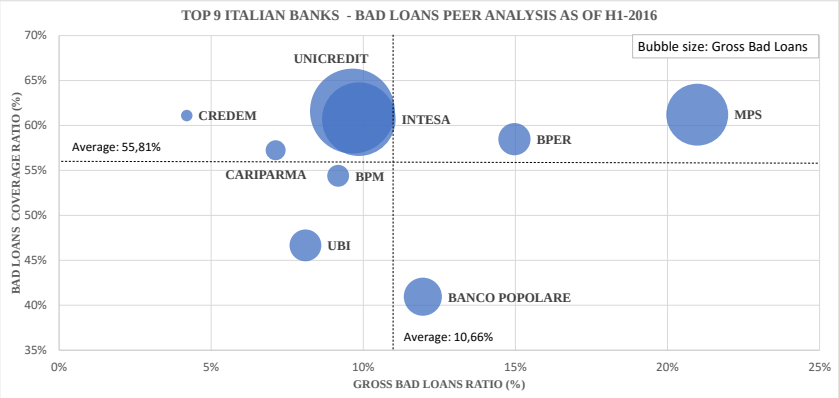

Figure 2.17: Bad loans values from Financial Statements as of H1-2016

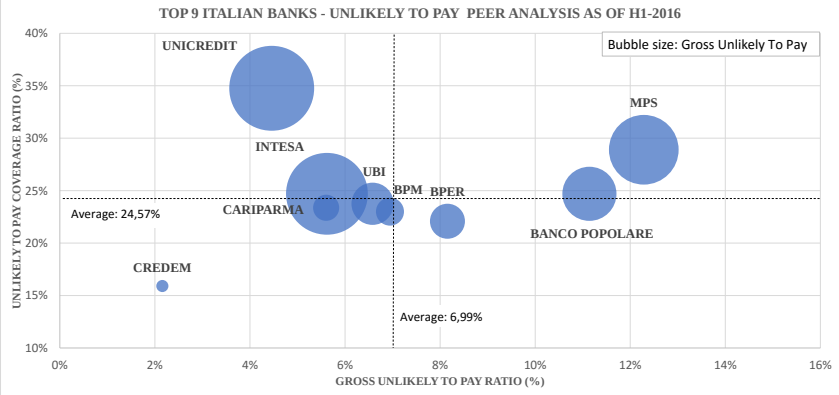

Figure 2.18: Unlikely to pay values from Financial Statements as of H1-2016

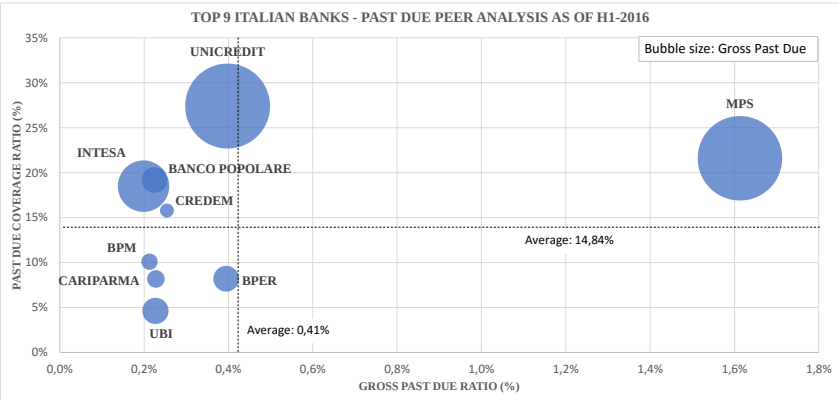

Figure 2.19: Past due values from Financial Statements as of H1-2016

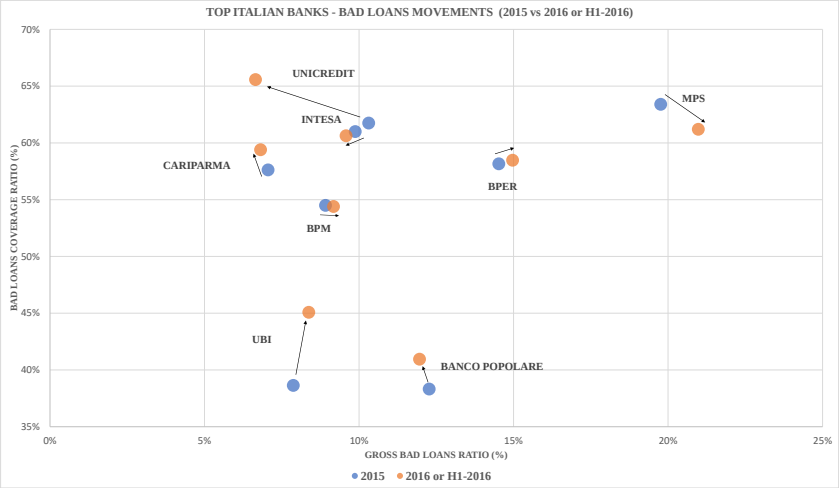

Figure 2.20: Bad loans movements from Financial Statements as of H1-2016/2016 and 2015

2.2 Management of NPL by banks: issues and strategies

A bank has a range of options to reduce the level of bad loans on its books. One possibility is renegotiating the terms of its loan contracts with borrowers. This could mean, for example, giving borrowers more time to repay. This could enable someone who has lost his or her job or a business with temporary financial problems to survive financially and, ultimately, pay back the loan. A bank can also decide to sell its bad loans to investors, who will typically ask for a discount on the value. The bank might make a loss in such a transaction, but a complete write-off would typically produce an even greater loss. If none of the attempts to find a solution are successful, e.g. because the borrower is insolvent, banks can follow a legal route to try to recover at least part of their money.

A range of possible responses to address large-scale NPL stocks is available, often complementing one another within the same jurisdiction. Internal workout by the bank originally holding the impaired asset marks one end of the spectrum of options and should always feature highly in any broader resolution scheme. Banks may require specialist third-party support to be effective in this regard. The direct sale of the impaired assets to an outside investor marks the opposite end, and while this is the most rapid option from a bank's perspective, it depends upon provisioning levels relative to market prices and the presence of liquid NPL markets. In between, there is a range of options

such as asset protection schemes (APSs), securitisation and synthetic securitisation and the creation of asset management companies (AMCs). Each of these options has different requirements, costs and benefits, as presented in the list below.

1. **Internal workout**: workout by original bank, includes various restructuring options.

2. **Asset protection scheme**: risk sharing agreement to limit further losses, usually state backed, usually short horizon; potential losses large but with low probability.

3. **Securitisation**: an alternative to outright sale; partial risk transfer only.

4. **Asset management company**: complete separation of asset from originating bank, often state backed, usually long horizon; large losses typically already realized.

5. **Direct sale**: assets sold directly to investors, where sufficient liquid markets exists.

APSs have proven to be useful in situations where potential losses from declining asset valuation are large but the likelihood of the losses actually occurring is low, and securitisation provides a mechanism to transfer part of the risk related to the NPL portfolios to private investors and obtain stable funding. Such policy responses would likely require changes in the institutional and legal infrastructures of at least some euro area countries and are unlikely to deliver a rapid reduction in the stock of NPLs. Moreover, public support may be required, particularly for APSs and AMCs, but also for securitisation schemes, which may restrict their applicability.

Regarding Italian banks, it is important to comment on a survey recently conducted by the Bank of Italy (Carpinelli, et al. 2016) on the management approach taken by the Italian banks when dealing with NPL. This report casts an interesting light on the Italian banking system choices and diverse behaviour when confronted with such a specific problem.

The current configuration of the organizational structure of NPLs' management function dates back to very different periods for the different banks interviewed. For some groups with a more stable corporate history, the current structure was set up in the late 1970s; in other cases, the subsequent reorganization of business functions has

only recently led to the current configuration (in a fifth of the answers after 2010). The organizational structures of the banks therefore appear to be diversified. Some groups have specialized, sometimes at group level, organizational units, typically dedicated to liquidations or restructurings, and they have recently adopted integrated software for managing different procedures, that is used as homogeneous repositories of historical information. Other groups have more fragmented structures, which in many cases are a consequence of extraordinary operations carried out in recent years (acquisitions, mergers, group reorganizations); these operations have resulted in a higher organizational complexity with structures overlapping and coexistence of heterogeneous procedures for deteriorated positions management.

The credit recovery function absorbs a relevant share of the banking groups' total operating costs (including personnel and administrative costs, reserves, value adjustments, other write-backs and write-downs). On average, in 2014, this incidence was 2,8%, up by four tenths of a point compared to 2008. Again, variability in responses is very wide and for some larger groups data are not available. However, the average value is higher than what was estimated in older surveys (2,3% in 2000 and 1993-94).

Table 2.2 shows banks' responses about the use of the different bad credits management channels, resulting from the survey in 2014. In terms of amounts, the most used methods were sales and the management through dedicated internal structures. The importance of sales is influenced by the intensive use of this method by few banks. By comparing the representativeness in terms of amounts and numbers, it is noted that the use of dedicated structures affects positions with on average higher amounts, while for small amount positions banks tend to use credit collection agencies.

NPL resolution strategies can deploy a broad range of options available to banks and policymakers. These options are usually complementary. Internal workout by the bank originally holding the impaired asset marks one end of the spectrum of options and should always feature highly in any broader resolution scheme. On the opposite end, direct sales to investors offer an opportunity to dispose of NPLs quickly. In between, there is a range of options such as asset protection schemes (APSs), securitization and the creation of asset management companies (AMCs), which in the past often involved state intervention.

	% of the number	% of the amounts
Specialized units	17,8%	28,7%
Internal legal department only (for legal proceedings)	2,4%	6,4%
Internal legal department only (for out-of-court actions)	8,0%	7,6%
External legal counsel only	2,9%	3,1%
Internal and external legal counsel	8,1%	9,8%
Credit collection agencies	26,7%	12,5%
Loan transfers	34,2%	31,9%
Other (specify)	0,0%	0,0%
Total	100%	100%

Table 2.2: Channels for managing non-performing loans

The two extreme management solutions to which a bank can resort to are:

(A) Keep the impaired loan in its portfolio, which in turn can provide for:

- Management by bank.
- Management by a specialized company (servicing companies).

The bank recovery activities for NPL portfolios are carried out following different business models, which include the adoption of:

- Internal Recovery Departments.
- Captive Special Servicers: specialized product companies within banking groups.
- Non-Captive Special Servicers: independent operators servicing NPLs for domestic banks and international investors.

(B) The cession of the credit with the simultaneous cancellation from the balance sheet.

Each solution has different characteristics which have different effects in terms of onerousness/return and residual risk for the bank.

Keeping loans on balance sheet (internal management or relying on third parties) have two major benefits if compared with sale. The first one is that bank has the instruments to manage the relationship with the debtor (either directly or through instructions

given to a third party) but this benefit requires the use of bank resources, whether human and/or economical. The second is about the possibility of not dispersing the actual value removable from individual positions in favour of third party investors, a value that would not emerge if the valuation of the latter followed a merely statistical approach based on average or median values and often does not consider the presence of additional collateral (personal or judicial).

If we compare the two options to keep bad debts in banking portfolio, obviously, the reliance on third parties allows the bank to benefit from a number of advantages such as:

- a reduction in operating costs, through the transformation of fixed costs into variable costs, which are reported to the receivables on the positions entrusted (net or gross of the expenses incurred);
- freeing production capacity, as the strong growth in deteriorated credit has not led to a similar growth in internal management structures, resulting in overload for bank managers;
- have access to local best practice on recovery, resulting in improvement of recovery performance. The best performance comes from two distinctive elements:
  - a greater degree of specialization of managers regarding different credit categories (i.e. corporate vs. retail rather than mortgage credits vs. unsecured or small ticket vs. large tickets);
  - a remuneration structure for outsourcers that allows an alignment of interests between the bank and the servicer. Typically, commissions are largely related to recoveries and only a small part is fixed for managed practice.

However, it should be noted that not all specialized servicers operate on all asset classes; it follows that the selection of the reference servicer may have an impact on the level of improvement of recovery performance. If, therefore, you want to refer to different categories of credit, the bank may entrust multiple credit bundles to multiple traders to benefit from the more specialization of market participants.

On the other hand, relying on third party requires monitoring tools and management skills not typical of banking structures dedicated to deteriorated credit. During the

assignment of the work, it is also appropriate to create a fair competitive environment among the operators to obtain the best conditions, as well as to define Key Performance Indicators (KPIs) as reference points (e.g. target recovery rates, legal expenses, etc.) that must be respected throughout the lifetime of the work. KPIs should then be monitored over time and compared with market benchmarks. In this way, we have a complete dashboard useful to track the results. Internal management has the following benefits:

- The possibility to define and pursue an autonomous recovery strategy and in line with the credit guidelines of the bank. This advantage is particularly evident for large and/or complex positions;
- Being able to trace recovery capacity on individual segments of the portfolio so that appropriate statistics can be built for risk management purposes.

On the other hand, internal management presents some issues that need to be appropriately addressed and managed, such as:

- *external legal management*: it should provide for a standard convention with a clear declination of the decision-making powers with reference to the actions to be taken on the individual dossiers and the costs to be met for the performance of their services (possibly linked to net recovery of the position); the definition of guidelines that managers need to follow in relation to out-of-court and legal recover strategies with clear indications of how to pursue the attempt of extra-judicial recover;
- *the practices management*: it should provide for an allocation practices system that prioritizes the positions with higher probability of success;
- *monitoring*: it is appropriate to monitor the workloads of internal managers and external lawyers, as well as their performance;
- *definition of guidelines* that managers need to follow in relation to out-of-court and legal recover strategies with clear indications of how to pursue the attempt of extra-judicial recover;

- a *system of incentives* for managers to align their remuneration with the results obtained.

The sale of impaired loans allows the bank to achieve two types of benefits. The first type concerns the benefits of re-focusing credit management on the core positions, resulting in improved efficiency and effectiveness of management processes. The second type concerns the impact that the credit transfer has on bank's balance sheet. Benefits mainly concern the following factors:

- **Profitability**. Through the sale of assets, the bank is in possession of new liquidity that can be used for the granting of new loans which, unlike the deteriorated and sold ones, generate interest income;

- **Capitalization**. The elimination from the balance sheet of assets which are associated with high weights for the determination of the minimum capital requirements allows a capital recovery that, as in the previous point, can be used to issue new loans;

- **Riskiness of the bank**. The disposal of impaired assets improves the bank's risk assessment done by the market and can bring benefits in terms of rating and shares valuation.

In the face of these benefits, the sale can also generate some burdens and disadvantages. Among them, the main feature is the possibility that there is a divergence between the net value of the loans being recorded in the balance sheet (given by the nominal value of the credit less the write-downs made) and their market value that is the price at which investors are willing to buy these assets. This eventual pricing gap has an immediate negative impact on the income statement and on the profitability of the bank. The reported loss entire amount of the sale phase, affects the income statement for the year in which the sale is made. In addition, if this loss in the income statement in turn reduces the bank's assets, it may also have repercussions on the banks' ability to meet the capital requirements. As emerged from the AQR, some of the major Italian banks, but also smaller ones, have a lower or slightly higher capital than the one required by the supervisory bodies. This fact limits the possibility for banks to absorb losses resulting from a

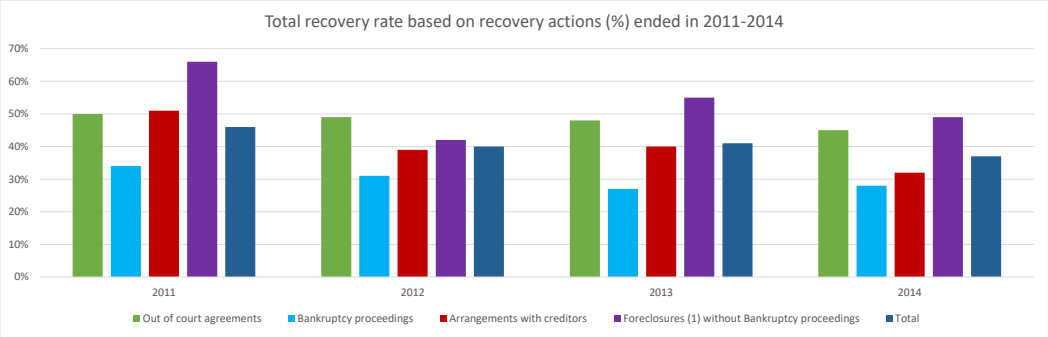

Figure 2.21: Total recovery rate based on recovery actions (%) ended in 2011-2015 (Source: Bank of Italy)

possible pricing gap. Pricing gap is one of the main factors that has obstructed the sale of these assets and, on the other hand, encouraged to keep them in the portfolio even when they are not considered to be core. According to operators' estimates, the pricing gap varies between 20% and 30% in the case of bad debts.

2.2.1 Credit recovery procedures undertaken by the main Italian banking groups

In the second half of 2015, Bank of Italy investigated the effectiveness of impaired credit management procedures at major Italian banking groups. The recovery rate in the period 2011-2014 was 41% on average: considering different procedures, it shows that foreclosures have the highest recovery rates (approximately 50%); out-of-court agreements have average values significantly higher than bankruptcy proceedings and among bankruptcy, proceedings the arrangements with creditors are characterized by recovery rates greater than bankruptcies (Figure 2.21). Between 2011 and 2014, the recovered percentages have been reduced for all procedures, probably due to the growing difficulty in enhancing failing companies' assets in an unfavourable context.

Average recovery rates show a strong variability among banks, which is not related to the size of banking group: results on recovery rates of different procedures cannot be interpreted as indicative of their effectiveness as they also reflect bank creditor's choices on the procedure to follow (given the legal constraints), which in turn are affected by the characteristics of the positions to be liquidated (in terms of deterioration level and col-

laterals' extent). For example, the highest recovery rate recorded for foreclosures is probably because positions, for which these procedures are activated, are typically covered by collateral security. With the persistence of the economic downturn, recovered amounts have decreased. The ability to recover the sums provided decreased by more than eight percentage points from 2011 to 2014, reaching 37%. The downturn has been particularly significant for arrangements with creditors and foreclosures procedures. By comparing these results with those of previous surveys, recovery rates seem to have been reduced mainly for out-of-court agreements and foreclosures, while there is not a clear evolution for bankruptcy proceedings. Banks of the sample provided information on 240 thousand companies positions involved in liquidation procedures at the end of 2014, with 95 billion-euro total exposure representing 78% of their corporate bad debts. They also provided information on 21.000 restructuring positions for a total of 33,4 billion.

Over 90% of the reported credits are related to liquidations that take place in legal proceedings; the remaining 10% is related to out-of-court agreements. This data should not be interpreted as indicative of the relative use of out-of-court proceedings compared to legal ones: as data refers to open positions at the end of 2014, they do not include the agreements closed during the year and therefore underestimate the weight of out-of-court agreements that are typically faster.

Figure 2.22 on p. 87 shows that bankruptcy proceedings represent about half of re-

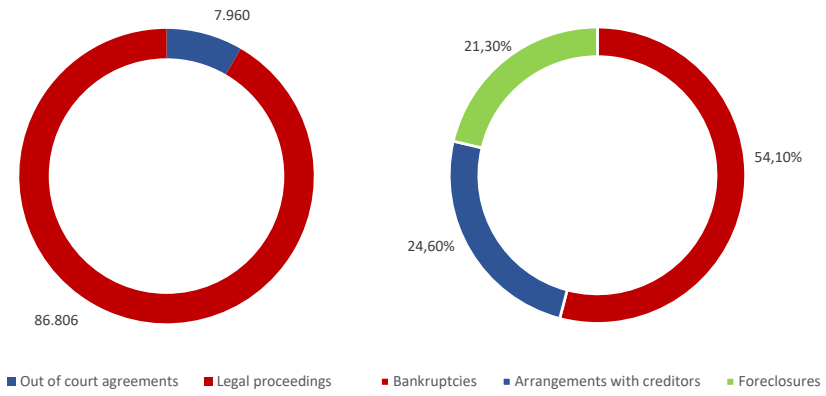

Figure 2.22: Liquidation procedures expressed in mn € amounts and breakdown of legal proceedings in bankruptcy, arrangements with creditors and foreclosures (Source: Bank of Italy)

	Number of positions	Amounts (bn €)
Liquidations:	239 649	94 766
• Out of court agreements	56 557	7 960
• Legal proceedings	183 092	86 806
Restructuring:	21 106	33 364
• Out of court agreements	17 434	14 413
• Legal proceedings	3 672	18 951

Table 2.3: Procedures used by banks for managing non-performing loans

Liquidations	Average amount of NPLs
Total	395 435
Out of court agreements	118 249
Legal proceedings	397 792
• Bankruptcies	450 073
• Arrangement with creditors	964 403
• Foreclosures	308 021
• Restructuring agreements	—
• Recovery plans	—

Table 2.4: Average amount of non-performing loans per liquidation procedure

ported amounts total value, while the weight of arrangements with creditors slightly exceeds foreclosures. The average amount of bankruptcy procedures (bankruptcies and arrangements with creditors) is higher than individual liquidation (foreclosures). This is presumably because law allows companies to use bankruptcy proceedings if they exceed certain dimensional thresholds. Arrangements with creditors are used to liquidate larger positions than bankruptcies: the average amount is almost one million euros for the first and about 450 thousand euros for the second. Finally, out-of-court agreements are used to recover credits with lower amounts than those involved in legal proceedings.

Regarding restructuring procedures, in the investigation period, bankruptcy law provided for three different restructuring legal actions: recovery plans, restructuring agreements and arrangements with creditors. These tools differ primarily in involvement level of judicial authority, that implies high or low procedural complexity, and in contents agreements applicability to creditors who do not accede to them. The judicial authority involvement is increasing from recovery plan to arrangement with creditors: only in arrangement with creditors, it is possible to extend the content of the agreement (which may include partial repayment of loans) to debtors that are not acceding to it. These

Restructuring procedures	Average amount of NPLs
Total	1 580 764
Out of court agreements	913 433
Legal proceedings	5 168 628
• Bankruptcies	—
• Arrangement with creditors	2 043 368
• Foreclosures	—
• Restructuring agreements	8 224 091
• Recovery plans	3 214 017

Table 2.5: Average amount of non-performing loans per restructuring procedure

three restructuring procedures, although affecting less than a fifth of debtor's companies, account for 57% of loans volume, subject to restructuring; the most used procedure is the recovery plan.

More generally, restructurings have far greater amounts than liquidations: 1,6 million euros, compared to just under 400 thousand euros.

For equal credit deterioration level, creditors and debtors' incentives to look for solutions that preserve business continuity are higher for large businesses, which typically have greater amounts. Finally, arrangement with creditors continues to be used mainly for liquidation purposes, despite the reform in 2005 and the subsequent interventions aimed at supporting its use as a restructuring tool for firms in crisis. Considering the total number of loans affected by arrangements with creditors, those in liquidation are 93,7% in terms of the amount.

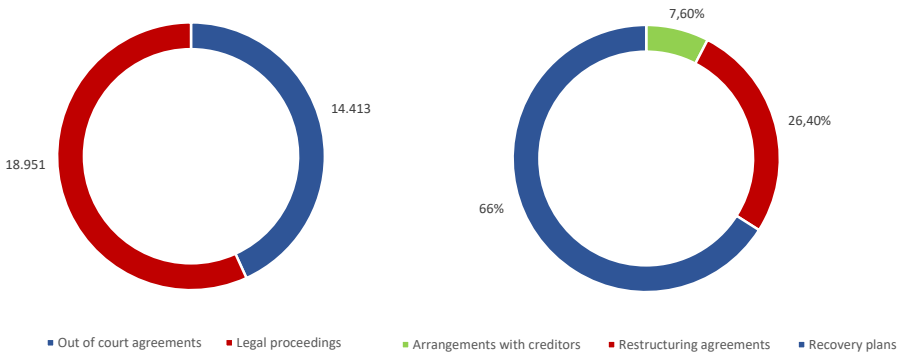

Figure 2.23: Restructuring procedures expressed in mn € amounts and breakdown of legal proceedings in arrangements with creditors, restructuring agreements and recovery plans (Source: Bank of Italy)

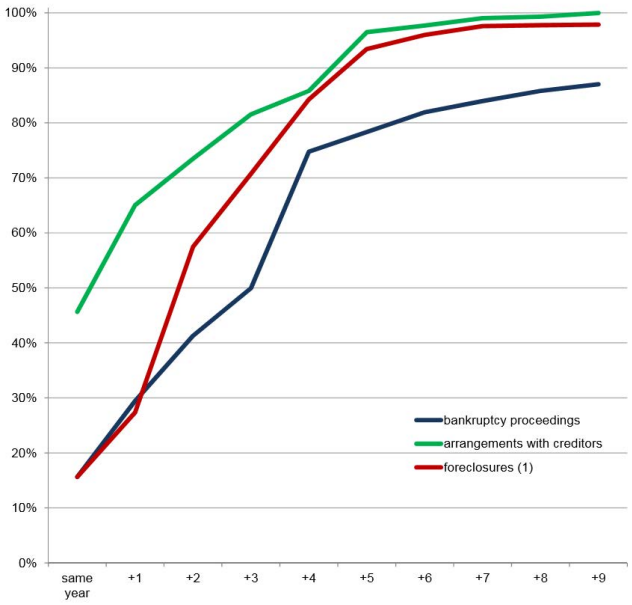

Figure 2.24: Increase of recovery rates over time

Information collected through the survey allows also tracing a time profile of recovery rates for procedures ended in 2014. The graphs in Figure 2.24 represent how much of the total recovery was made n years after the start of liquidation, regardless of procedure's duration. The total amount recovered by the fourth year is approximately 85% for foreclosures and arrangements with creditors, 75% for bankruptcies. By the fifth year, recovery is nearly completed for foreclosures and arrangements with creditors, while it is more than 80 percent for bankruptcies.

The results refer to nominal non-discounted recoveries. The overall recovery rates, if calculated by discounting the flows using an appropriate discount rate, would be lower and the curve for recovery rates over time would be lower and flatter. Accordingly, a very slow increase in nominal recovery rates over time, as suggested by Figure 2.24 for procedures lasting longer than five years, yields a very limited additional recovery for creditors in real terms.

The time profile of recovery rate shows that the relationship between the age (and hence, tentatively, the duration) of the procedures and their effectiveness is not linear. This result can be partly determined by selection problems: positions subject to longer procedures may be those that were initially in a worse credit deterioration or with more

Procedures	Number of positions(%)		
	Unsecured	Personal guarantees	Collateral security
Liquidation procedures	36,6	49,3	14,2
Restructuring procedures	37,3	22,9	39,7

Table 2.6: Percentage of procedures unsecured, subject to personal guarantees and collateral security

complex profiles, for example in legal terms.

Among loans in liquidation at the end of 2014, 42% is supported by collateral security. The rest of the credits is equally divided between secured by personal guarantees and unsecured.

Collaterals' impact in restructuring cases is higher than liquidation: this result suggests that debtors are more willing to reach agreements that preserve business continuity when bank's credit is supported by significant value guarantees.

2.2.2 Credit servicing and the outsourcing option

If the above considerations could make it possible to outsource the management activity, in reality, most banks, in these years of significant impaired loans growth, did not use massively the outsourcing of the recovery service. Only now, as a result of the focus on credit in general placed by the supervisory authorities (ECB in the first place), the high stock of NPL and in particular the limited ability to recover, some banks are reviewing their overall management model, assessing the opportunity to outsource the management of some clusters of credits and to pursue the disposal of others. In this perspective, it should be remembered that a structured approach, consistent with bank's objectives and continual on the management of NPLs, couldn't disregard:

- a strong presence on the information base, with complete and up-to-date data on the operational, accounting and valuation side;
- the presence of analysis and support tools for decisions based on clear performance indicators.

The role of the servicer is composed by different activities described below.

- Management on behalf of bank (also by using special vehicles) of NPLs portfolios and services provider like: due diligence and valuation of collateral, identification of enhancement strategies (actions on assets, acquisitions, out-of-court agreements), business planning, servicing for court / out of court debt collection, development and management of real estate owned companies (REOCo), which is an investment company dedicated to the enhancement of real estate assets associated with secured credits.

- Creation of financial transactions that, by means of complex participatory structures, make it possible to limit the portion of credit to be devalued and to deconsolidate non-performing loans, by realizing products with underlying real estate to be valued through specific expertise.

- Support to the bank in the structuring of NPLs portfolios sales to third-party investors and provider of the following services: database set up, potential investor scouting, vendor due diligence and credits valuation, data room; structuring of special purpose vehicles (SPVs), management of the sales process.

- Consultants for investors interested in buying NPLs portfolios. They provide services like: structuring and management of investment vehicles, buyer due diligence, business planning, post-acquisition credit servicing, REOCo creation and development.

Credit servicing enables private companies, banks and primary investors (investment funds, vehicles) to optimize asset management, with significant returns in terms of reducing expected payment times (Figure 2.25).

In the last years, the Italian credit servicing segment has experienced solid growth, both due to higher consumer credit volumes and an ever-increasing number of financial institutions outsourcing their NPLs to dedicated servicing and collection entities. This market development has been accompanied by a high level of competition among credit servicers, which has led to pressure on fees.

Moreover, clients often require a customised service for their operations and demand both flexibility and the ability to communicate and manage data consistently with the client bank's needs.

The credit servicing industry currently represents a large opportunity and should see meaningful growth over the next several years.

Another source of business for structured independent servicers is the envisaged re-opening of NPL securitisation market. In the case of GACS, the presence of a servicer that is independent from the originating bank is a pre-requisite for obtaining the State guarantee. All Atlante sponsored NPL transactions will likely seek to use the GACS for funding. Therefore, third party servicing platforms will benefit from both private market NPLs transactions and the Atlante fund sponsored and GACS guaranteed NPLs transactions. International players, understanding the prospects for this profitable trend and looking for new opportunities to exploit, have already broadened their focus to include a credit servicing business and a number are interested in acquiring platforms.

It is expected that there will be significant activity for the credit servicing industry in

Figure 2.25: Credit management activities

Servicer	Special servicing	Master servicing	Due diligence
Dobank	43 837	0	0
Italfondiario	41 265	257	61 385
Cerved	12 893	0	6 845
Guber	7 431	0	0
FBS	7 416	0	0
Caf	6 980	6 975	5
Fire	3 687	0	1 925
Primus Capital	2 930	0	0
AT	2 901	0	503
Prelios	2 788	6 891	0
Creditech	2 730	1 835	0
Officine CTS	2 605	0	398
Securitization Services	1 711	20 587	0
Finint Revalue	1 323	0	1 643
CRIF	1 411	0	28 000
Parr Credit	1 216	0	0
Credito Fondiario	1 037	3 818	1 751
CS Union	162	0	0

Table 2.7: Main servicers on the Italian market. (AUM: Assets Under Management in ml €)

the next several years, benefitting from NPLs portfolio sales and the envisaged reopening of the NPLs securitisations, as well as the continued outsourcing of loan servicing by banks.

The Italian servicing market is continuing to experience solid growth, thanks to portfolio sales as well as an increasing number of financial institutions outsourcing their Bad Loans management. The interest of international players in the acquisition of servicing platforms remains high, with 14 acquisitions completed in the last 4 years. Additionally, consolidation within the servicing industry gained momentum with the acquisition of 100% shares of Italfondiario by doBank in July 2016. In November, MPS announced it has reached a binding agreement with Cerved Group to sell its special servicing unit, which will come with: (a) asset managers; (b) a contract for servicing of ca. €9 bn of its Bad Loans stock to be securitized; (c) a flow agreement to manage the bank's future Bad Loans. Closing is expected in Q1 2017.

The complexity of deteriorated credit's recovery and management has resulted in numerous types of servicers in the NPL market, in particular:

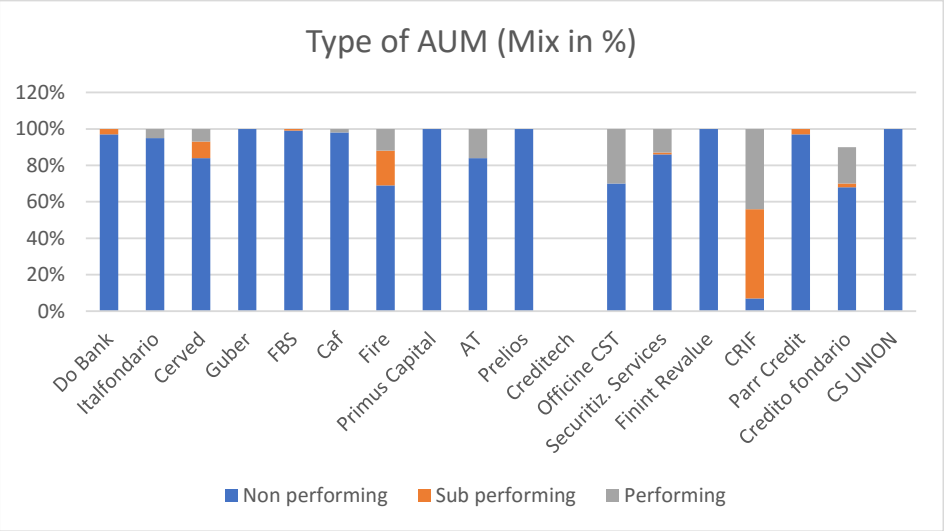

Figure 2.26: Type of AUM (Source: PwC)

- Master servicer or nominal servicer, financial intermediary subject to control of the Bank of Italy, responsible for regulatory tasks, whose function is to control and monitor when the portfolio management is entrusted to a third party (servicer or sub -servicer);

- Servicer, an entity authorized to management and recovery services, also responsible for verifying that the transaction complies with the law and the informational prospectus. It can avail itself of one or more auxiliaries to manage credit recovery (sub-servicer); it is subject to a prudential supervisory regime equivalent to banks, with the aim of pursuing objectives of financial stability and safeguarding of prudent management;

- Sub-servicer, regulated by art. 115 of the TULP (Testo unico delle Leggi di Pubblica Sicurezza), supervised by the Ministry of the Interior and authorized to carry out credit recovery activities.

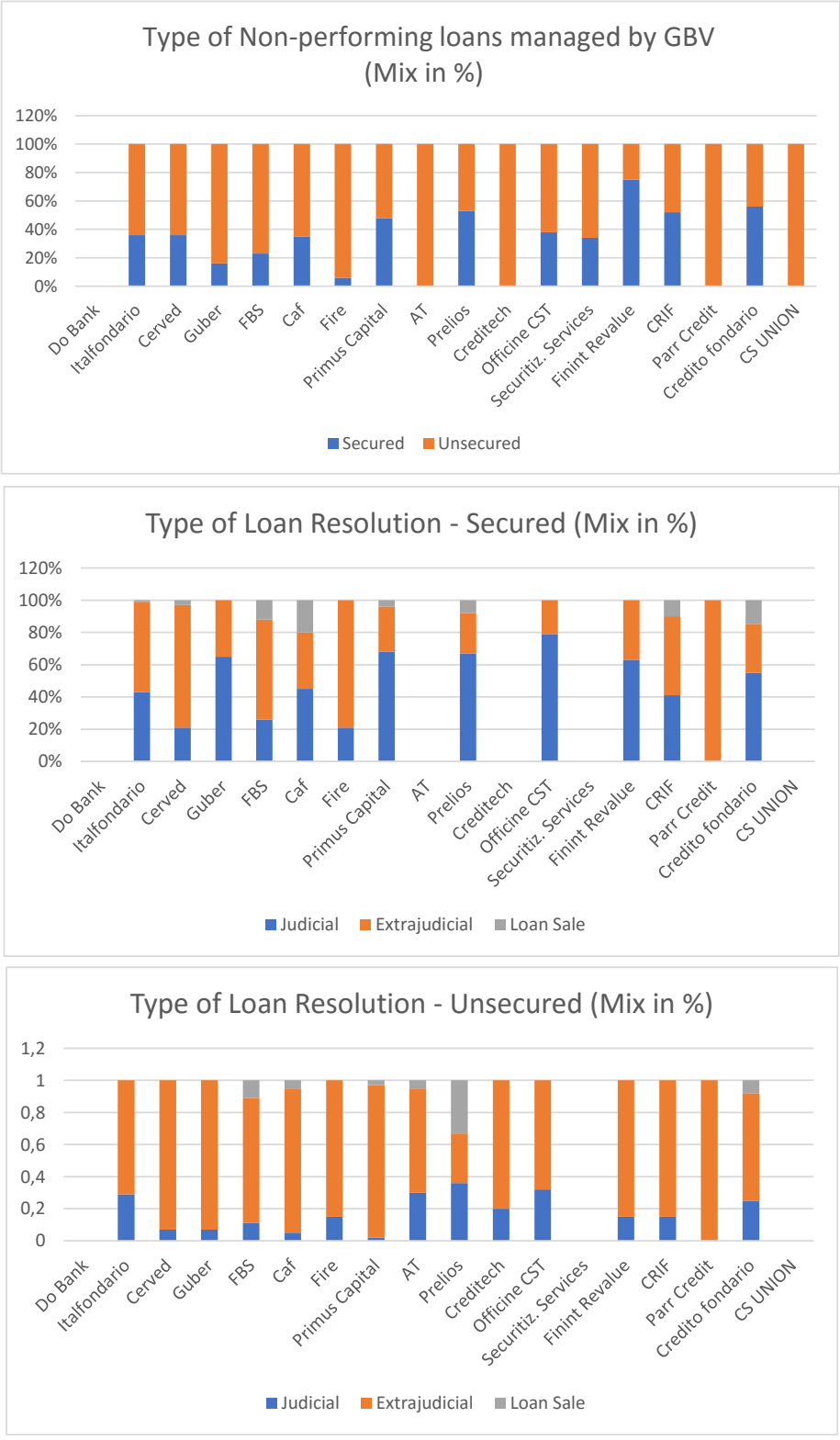

Figure 2.27: Source: PwC

2.2.3 Bad banks

Addressing the NPL issue implies allocating losses within the system. No matter the scheme, losses have to be borne either by banks' customers, banks themselves, investors or States. Various countries decided to create asset management companies or special purpose vehicles in order to relieve banks from the burden of NPLs and to avoid fire sales in illiquid markets, thereby minimizing losses and reducing the cost of restructuring failing banks. Similar asset relief can be achieved through a guarantee on a specific portfolio of assets (asset protection scheme, 'APS"). In both instances (physical transfer or APS), the design of the mechanism may involve State aid.

Four types of bad banks can be singled out:

1. Single name Asset Management Company (AMC): NPL management entity based on a single bank without participation by third parties.

2. Privately/publicly funded Single Name AMC: NPL management entity based on a single bank but with participation by third parties (both public or private).

3. Leveraged Pool AMC: a system bad bank, as usually understood. Such AMC collects bad credits from a pool of banks and is financed or participated by the state, in a more or less relevant measure.

4. Private Pool AMC: a system bad bank, but without any public support.

With the term "bad bank" we refer generally to a more or less complex and structured entity that manages bad assets. Bad banks are usually opposed to the good banks, which manage performing assets and all the commercial activities of banking intermediation. The establishment of a bad bank must deal with the European state aid rules that have been amended in 2013 becoming far more restrictive than the previous discipline. Before this change, following the international financial crisis, there were different European bad bank experiences, such as Spain and Ireland. Impaired loans are transferred to a vehicle, or rather to an Asset Management Company, which, by the nature of the assets sold, is commonly called bad bank. Its objective is to recover, in relatively short time and by recruiting specialized personnel, NPLs through the following methods:

1. direct recovery to the debtor;
2. the creation of "packages" sold on the market to potential buyers;
3. securitization.

In this way, the management of the good bank can focus on the core business and thus accelerate the return of the bank to profitable conditions, and, by breaking bank-enterprise relationships that are now unproductive and harmful for both parties, it is set an entity focused on the professional management of credit recovery. Even in the case of bad banks, we can recognize the typical benefits of the disposal of positions that are no longer considered strategic, made by banks. In fact, bad bank is a particular type of Asset Management Company (AMC), an SGR, created to manage and recover bad loans and assets. In this sense, it differs from the broadest category of AMC as it operates with a precise and limited time horizon and with the objective of decreasing, until writing off, the balance sheet assets.

When the settlement solution is considered at the level of the entire banking system, or a large part of it, it is important to consider the following rules:

1. correct diagnosis of the size of the NPLs;
2. the definition of an incisive and shared policy plan;
3. an objective evaluation system of assets sold;
4. adequate financial and human resources in AMC.

For the success or failure of recovery activity is extremely important the initial pricing of bad debts. As we have seen, a pricing gap may emerge at this stage and it generates losses for the transferring bank. By contrast, the objective of bad bank is to maximize the recoverable value given the purchase price and so prices above market rates reduce its yield. At the same time, considering that the recovery value depends on the recovery timeliness, if the credit transfer value does not reflect realistically market values, the bad bank may be induced to delay recovery actions because it is afraid of incurring in immediate losses, thus reiterating banking behaviours that we wanted to solve. The transfer

price therefore generates a sort of conflict of interest between the transferring banks and the AMC. To try to resolve this conflict, in the case of a system solution, the transfer price should be determined:

- by independent experts, that are third parties with respect to the transferring banks and the public authority involved in the recapitalization of banks;
- with economic and financial assessments based on reasonable, reliable recovery hypotheses and based on verifiable information (access to credit files is crucial from this point of view).

In the case of a bad bank in European Union, the sale price determination mechanism must also be approved by DG competition. In fact, the positive difference between the transfer price and the market price is considered to be a net transfer of public resources to the banks involved and thus constitutes State aid which, as such, must be approved by the European Commission. It is clear that in the case of a system bad bank the determination of the transfer price is a political choice. More the transfer price is close to the market price of ceded loans, greater is the capital loss for the transferring bank, and more likely is the need of its recapitalization (probably with public funds). On the other hand, more the transfer price is close to the accounting value in bank's balance sheet and above the market value, the more difficult will be for the bad bank to achieve economic and equity equilibrium and a public support will be needed. In both cases, the pricing gap determines a cost, that in a generalized crisis is difficult to be sustained by private individuals (whether they are banks or AMC shareholders).

Asset Management Companies (AMCs) can in principle play a useful role in developing a distressed debt market, in the case of a system-wide NPL problem. However, the authorities appear to have put to rest for now any discussion of AMCs, given not only EU state aid concerns but also that uncertainty related to any possible AMC was impacting on banks' plans to progress with NPL resolution.

Various banks have opted for segregating toxic assets from their ongoing business of since the start of the financial crisis. Where there was no private solution the State had to set up a public bad bank to take over the assets from a private bank, as in the case of Erste Abwicklungsanstalt and FMS Wertmanagement in Germany (respective bad

banks of West LB and Hypo Real Estate), or KA Finanz in Austria (bad bank of Kommunal Kredit Austria AG) which were all publicly owned. Similarly, bad banks were created out of banks which were already publicly owned, such as Hypo Alpe Adria in Austria).

In Italy, the Government rescued four local troubled banks (Banca Marche, Cariferrara, Banca Etruria and Carichieti) by transferring their € 8,5 billion of NPL to a single vehicle (called REV), and placing them on the market for sale. The sales process for these new banks is ongoing and both local banks and international investors have expressed their interest. The NPLs within REV will also be disposed over the near term. The value at which such loans were transferred from the originating banks was equal to 17,6% of GBV (25% on secured and 8% on unsecured).

Ireland (NAMA), Spain (SAREB) and Slovenia (BAMC) set-up system-wide bad banks were non-performing assets were transferred from banks under restructuring. This can create scale economies in the management of illiquid assets, through the recruitment of NPL workout specialists for example. As for individual bad banks, the pricing of such transfers is key in assessing the amount of State aid involved, and the capital structure of the bad bank has also a decisive impact on public finances, since a publicly owned bad bank is accounted for as public debt and not as contingent liability. While NAMA and SAREB are both mainly privately owned, the Slovenian bad bank is fully publicly owned.

One alternative to the physical transfer or distressed assets is the provision of guarantees to cover the losses related to a specific portfolio of assets. Such schemes cap the losses borne by banks through an insurance mechanism until market conditions recover. The advantage is that no upfront funding is needed from the State while the bank continues to manage the assets (which requires specific skills and IT systems). Many banks in Germany, Austria, Spain as well as Dexia benefited from such asset protection schemes.

The European Commission approved public bad banks and asset protection schemes which are subject to strict conditions, including: (a) the restructuring of the aided bank; (b) a transfer (or guarantees) at a price which reflects the real economic value of assets; (c) burden sharing requirements (including the bail-in of subordinated creditors for those aid measures notified after 1 August 2013).

Since 1 January 2016, the bail-in required under the BRRD applies fully and makes it even less attractive for banks and governments to provide such restructuring aid. There-

fore, some Member States decided to design mechanisms which do not involve State Aid. On February 10, 2016, the Commission approved an asset protection scheme in Italy, as well as a public bad bank in Hungary. In both instances, the Commission concludes the transfers of assets (Hungary) or risks (Italy) would be done at market prices, and hence involve no State Aid.

2.2.4 NPL markets in Italy and Europe

Although there are significant volumes and strong interest of many operators on this asset class, which potentially can offer very interesting intermediation margins, the NPLs market is still at an introductory stage of its life cycle: this is confirmed also by the analysis of available transactions, which provide guidance on the size and segments of NPLs most sought after by investors. Referring to the European context previously analysed, with a total amount of gross NPLs which in December 2015 had exceeded € 1200 billion, over the same period, NPLs market amounted to 140,5 billion, maximum peak recorded until today (see the bars in Figure 2.28 and 2.29). The marginality of the phenomenon is evident if we consider that closed transactions covered only 12% of total impaired loans. Even the first data of 2016 does not seem to highlight the acceleration that was expected. Despite the different starting situations, countries with greater intensity of transactions are those in which governments have been able to deal more quickly NPLs problem with systemic bad bank solutions that have become immediately operating. It is not a coincidence that Spain and Ireland have greatly increased the volume of sold credits in the years just after the introduction of SAREB and NAMA, as it happened in England after that UKAR was set up in 2010.

If we analyse the type of credit traded on the market, we can underline that major transactions concern the retail segment, which from the beginning of 2013 to the end of 2015 accounts for 43,8% of impaired loans, with a growth peak in 2015 and it is followed by the commercial real estate sector (CRE) that traded 108 billion, equal to 39%. We can observe a significant growth, even if with still modest volumes, of transactions related to the corporate segment. A second characteristic of the market is the strong demand concentration, as the first ten investors cover almost 50% of transactions. In particular, the principal investor in the European market was the American investment fund Cerberus

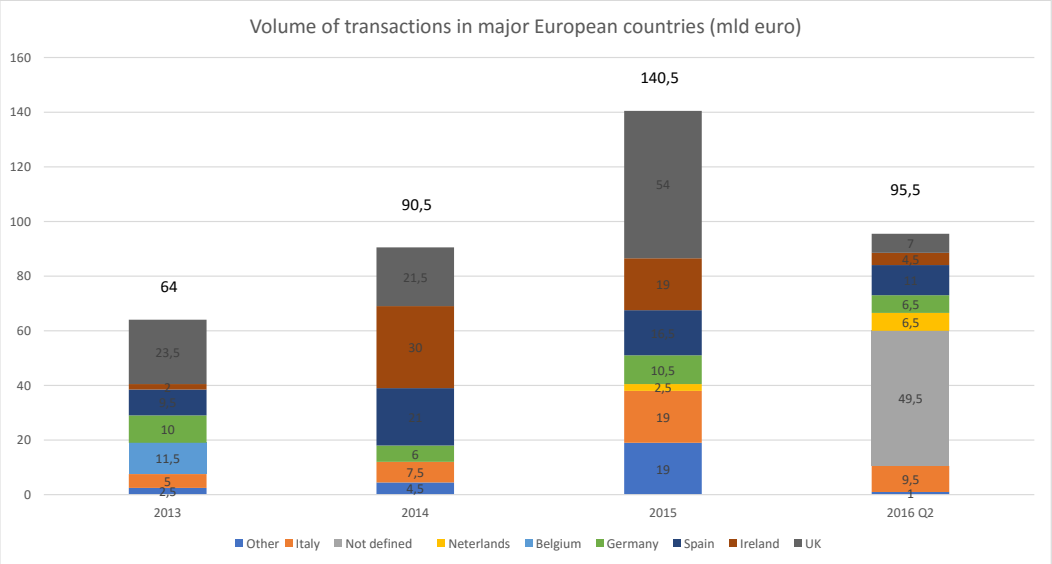

Figure 2.28: Volume of transactions in EU (Source: PwC)

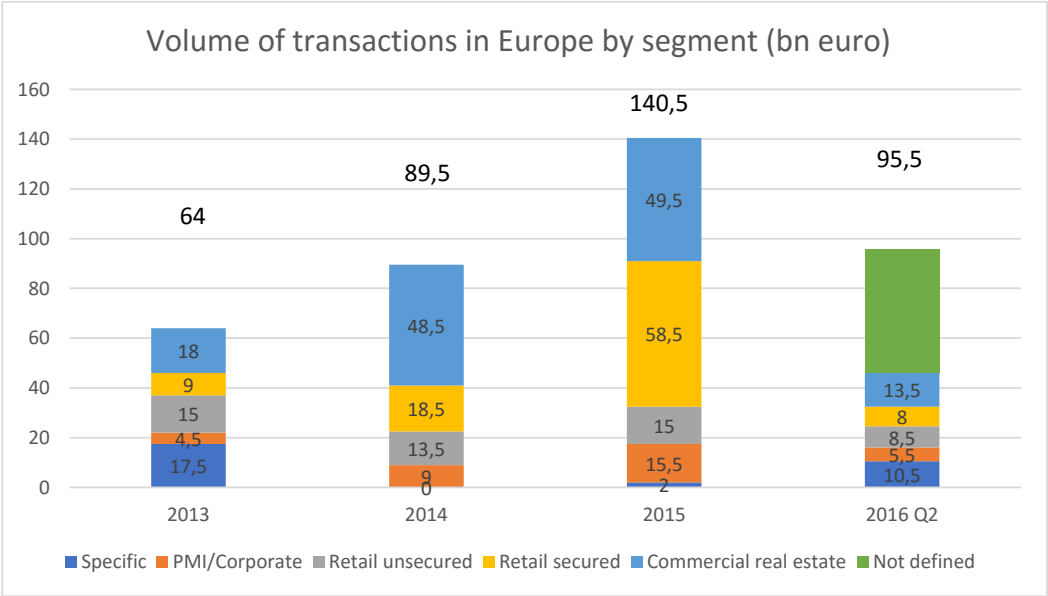

Figure 2.29: Volume of transactions in EU, by segment(Source: PwC)

Capital Management, which recorded more than 21% of the transactions. Likewise, the major trades were made by bad banks, like in the case of UKAR, where a portfolio of 13 billion pounds as nominal value was sold to Cerberus.

The Italian situation is certainly problematic if we consider the value of transactions

compared to NPLs amount in the balance sheets of banks. The gross amount of debt traded in 2015 is 5,6%, half of the European average, although the number of transactions appears to be slightly growing: in 2013 and 2014, sales accounted for less than 2% of impaired loans volume, more than doubled in 2015, but still far from the desired level. The signals of 2016 are still contrasting if we consider that 10 billion on 19,5 reported are not defined (Figure 2.30) and critical mass is crucial in NPLs market because the closing of the first big deals may change the attitude of many operators triggering a virtuous circle. As we can see, the most traded segment concerns unsecured retail, covering about half of the transactions over the years. However, even if it is in rebound, it is worrying about the low level of vivacity of the corporate segment, where some critical structural elements remain. Compared to the total value of the transactions closed in June 2016 (without considering the transactions being closed), corporate segment represents about a quarter of the overall market, still numerically low, although doubled compared to the previous year.

Considering a time span between January 2015 and June 2016, the main players in the Italian market, as observed by the Private Equity Laboratory and Growth Finance, were, on the sales side, UniCredit, with 4,78 billion nominal value sold between 2015 and 2016, plus an additional 625 million euros considering the disinvestments that have taken place together with other lenders (Table 2.8 on p. 105). Then there is MPS, with 2,81 billion sold, and Goldman Sachs, with a sale of 2 billion euros entirely attributable to the disposal of the Archon Project. Among Italian banks, the Banco Popolare is the third most active actor in our country, with 1,6 billion loans sold.

Considering buyers (Table 2.9 on p. 105), even though the market is populated by an overwhelming majority of foreign investors, NPL's major buyer is Banca IFIS, specialist in the unsecured retail segment, with approximately € 6,4 billion of impaired loans between 2015 and 2016, also realized through co-investments. AnaCap Financial Partners is the second most active market operator with a degree of differentiation in asset class greater than the average. The third largest investor is Fortress Investment Group, with a co-investment by Prelios Group for 2,4 billion euros, all referring to the sale by Unicredit of its Bad Debts Management Platform (Uccmb), that was a transaction completed in early 2015 with an estimated sale price of 550 million. Then there is De Shaw,

the US investment fund and buyer of the Archon Project (2,35 billion euros). Lastly, there are transactions also closed by Hoist Capital, Cerberus and Deutsche Bank, which have reached a significant market share with total purchases of over one billion.

The first market data for the Italian situation (Table 2.10 on p. 106) in the second half of 2016, although characterized by a lower degree of detail, recorded 18 transactions, for a further 5,7 billion euros mainly in the unsecured sector, confirming what already pointed out above. Attention is given to the disposal of NPLs by Unicredit, for 940 million euros, to the investor Kruk, a Polish group; the underlying portfolio presents a small quantity of loans to Italian SMEs respect to the retail component. It is also very interesting the transaction for 861 million initiated by Banca IFIS, which shows a growing presence in NPL secondary market. At the end of the year (and therefore not included in the statistics of the operations already completed), a sale of an unsecured NPLs portfolio of 750 million was announced by Banca IFIS and, amongst the buyers, there is the previously mentioned Kruk group. Finally, Banca Popolare di Bari's sale of 480 million euros of NPL must be reported because it is the first operation on the Italian market using GAC.

After the closure of its first transaction, Banca Popolare di Bari is planning a further ca € 350 m securitization of its Bad Loans.

Carige, Iccrea, Credito Valtellinese and Unicredit are among other banks working on Bad Loans securitization with GACS. In particular:

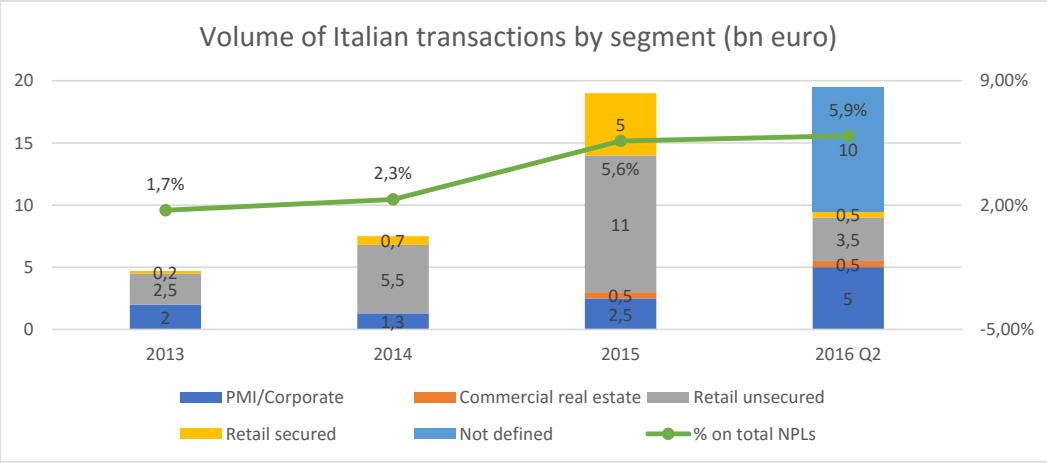

Figure 2.30: Volume of Italian transactions by segment(Source: PwC)

- Unicredit is well placed to complete the sale of a portfolio of ca. € 18 bn Bad Loans in multiple tranches;
- Credito Valtellinese is to carry out a securitization of a GBV € 1.5bn of Bad Loans;
- Carige is expected to dispose ca € 1.8 bn of Bad Loans through a securitization processes, € 900 m by the end of 2016 and other € 900 m in 2017;
- Banca Popolare di Vicenza and Veneto Banca are planning to securitize part of their NPLs using GACS.

Vendor	Detail	GBV	Transactions (#)
Unicredit	Platform, RE	5442	9
MPS	Retail Unsec,SMEs	2847	6
Goldman Sachs	Platform	2100	1
Ge Capital	Ge Capital	1783	3
Banco Popolare	SMEs, Retail Unsec	1635	5
DE Shaw	Retail Unsec	1400	1
Intesa Sanpaolo	Corporate	785	2
Total		**15993**	**27**

Table 2.8: Main NPLs vendors in Italy (January 2015–June 2016)

Buyer	Detail	GBV	Transactions (#)
Banca IFIS	Retail Unsec	6455	16
Anacap	Mixed, RE	3100	3
Fortress - Prelios	Platform	2400	1
De Shaw	Mixed, CRE	2350	3
Hoist	SMEs. Retail Unsec	1755	4
Cerberus	Retail Unsec, Corporate	1163	5
KKR	Corporate	1000	1
Deutsche Bank	Retail Unsec	1000	1
Fonspa	Mixed, Corporate	722	3
Algebris	RE	717	3
Total		**20662**	**40**

Table 2.9: Main NPLs buyers in Italy (January 2015–June 2016)

Quarter	Seller	Volume	Asset class	Buyer	Securitization
Q4	Banca IFIS	71	Mixed	Confidential	No
Q4	Popolare di Bari	480	Mixed	Davidson Kempner	Yes (GACS)
Q4	Cassa Centrale	338	Mixed	Locam	No
Q4	Confidential	76	Consumer	Banca IFIS	No
Q4	Sorgenia	131	Other	Davis and Morgan	No
Q4	Banco Popolare	600	Mixed	Hoist Finance	No
Q4	UniCredit	130	Other	Pimpco, GWM, Finance Roma	No
Q4	Confidential	100	Unsecured	Banca IFIS	No
Q4	Banca IFIS	861	Unsecured	Confidential	No
Q4	UniCredit	940	Mixed	Kruk	No
Q3	Confidential	260	Mixed	Confidential	No
Q3	BPER	450	Mixed	Algebris/Cerberus	No
Q3	Findomestic	384	Consumer	Banca IFIS	No
Q3	Confidential	35	Consumer	Banca IFIS	No
Q3	Confidential	104	Consumer	Banca IFIS	No
Q3	Confidential	72	Consumer	Banca IFIS	No
Q3	UniCredit	570	Unsecured	Balbec	No
Q3	Cariparma	54	Mixed	Idea NPLs	No
Total	**18**	**5656**			
Q2	Cariparma	22	Secured	Idea NPLs	No
Q2	Banco Popolare	152	Unsecured	Banca IFIS	No
Q2	Banca IFIS	226	Consumer	Confidential	No
Q2	Suedtiroler Sparkasse	320	Mixed	Algebris	No
Q2	MPS	290	Consumer	Kruk	No
Q2	Banca IFIS	45	Mixed	Locam	No
Q2	Locam	466	Consumer	Banca IFIS	No
Q2	Confidential	470	Consumer	Banca IFIS	No
Q2	CreVal	103	Other	Credito Fondiario	No
Q2	UniCredit	417	Consumer	AnaCap	No
Q2	Confidential	208	Consumer	Banca IFIS	No
Q2	CreVal	21	Mixed	Algebris	No
Q1	Banca Carim	35	Secured	Confidential	No
Q1	Confidential	223	Consumer	CS Union	No
Q1	Deutsche Bank	240	Consumer	Banca IFIS	No
Q1	Confidential	1000	Consumer	Banca IFIS	No
Q1	Multiple sellers BCC	300	Mixed	Credito Fondiario	No
Q1	RBS & GE	2500	Mixed	AnaCap	No
Q1	CreVal	302	Mixed	Credito Fondiario	No
Q1	Multiple sellers BCC	n.d	Mixed	CRC for senior	No

Table 2.10: Main Italian NPLs transactions in 2016

2.3 Obstacles to NPL resolutions and measures adopted

2.3.1 Main obstacles

There is no doubt that the difficulty of matching buyers' expectations and the conditions required by sellers is the main cause of the failure to develop a market of impaired loans. The main obstacle is the possibility that there is a divergence between the net value of the loans in the balance sheet (given, in summary, by the nominal value of the credit less the write-downs made) and their market value, that is the price at which investors are willing to buy these assets. The NBV of bad loans is significantly higher than the price that investors in this market (generally international hedge funds) are willing to pay. The data on NBV are quite clear: currently in the system NBV is on average 41 per cent of GBV. There is no clear indicative information about market prices because the market is very thin and the loans sold are very different among them depending on type, guarantees and amount of the write-down. For example, there are cases in which the sale value is 45% of GBV because the loan is secured by high value guarantees (such as high-value residential property), and others in which it is 3% (unsecured positions). For this reason, it's not possible to define an average value that is representative of market prices. For example, in the case of the bad loans of the four troubled banks put into resolution in November 2015 (GBV of € 8,5 billion), independent experts' latest estimates set the sale value at 22,3% of GBV.

Although we do not have access to investors' valuation methods, it is possible to analyse some of the factors that can generate gaps between market prices and banks' book values.

Among them the most relevant are:

- Recovery time and IRR (internal rate of return)
- Information base
- Segmentation of the portfolio
- Banking policy

In April 2016 Bank of Italy published a technical report titled "Quanto valgono i crediti deteriorati?" ("What is the value of NPL?") which investigates the main drivers of the bid-ask gap and, in particular, the following two issues:

1. The rate of return required by investors is very high for different reasons. First, they generally have less financial leverage than banks. In fact, liabilities consist almost entirely of equity. In the second place, even assuming the same valuation of expected cash flows, investors are risk averse and the more the possible loan recoveries are dispersed around the average value, the larger is the requested premium. In the third place, the expected return demanded by investors also takes account of performance fees required by fund managers, which can be as high as 20% of net profits. Finally, as we will see, there may be differences in the valuation of future cash flows due to information asymmetries in the credit market.

2. The problem is that investors use return to discount the expected cash flows from NPLs and this fact implicates a lower NPL price. Banks adopting the IAS/IFRS accounting principles instead use the original effective interest rate on the assets, which is usually much lower. As required by international accounting principles, banks include the indirect costs of managing NPLs in their financial statement of the year in which they are incurred, while potential acquirers deduct them immediately from the value. These costs contribute also to reduce the purchase price.

The paper shows that these two factors have a significant impact on the difference between the book value of bad loans and the price an investor is willing to pay, and this difference is proportional to the length of the recovery procedure (judicial or extrajudicial). Recovery times play a key role in the valuation of these assets.

So these results show that shorter recovery times would almost immediately increase the value of NPLs, with positive consequences for NPLs market. Simulations conducted by the Bank of Italy show that a two-year reduction in recovery times would implicate a market price increase of approximately 10% points and, other things being equal, a significant reduction in long-term stocks of NPLs.

As we have seen all Italian banks, like the main European banks that adopt international accounting principles (IAS-IFRS), measure the book value of loans according to

the amortized cost method, which provides for the discounting of future expected cash flows over the life of the loan. The discounting considers the time value of money; according to IAS, banks must use the original effective interest rate, i, of the loan itself as discount factor. As a rule, the gross book value (GBV) is equal to the discounted sum:

$$\text{GBV} = \sum_{t=1}^{n} \frac{f_t}{(1+i)^t} \tag{2.5}$$

where f indicates the expected cash flows. This method is also used to determine the net value of NPLs. When the debtor (for example a company) faces difficulties in repaying a loan, the bank must assess: (a) the probability of not being able to recover the entire amount (including interest) by the date contractually defined; (b) the recoverable amount, which largely depends on loan's guarantee; (c) the cash flow recovery time, which usually differs from what it's defined initially in the contract. Because of these things there will be a new estimation of expected cash flows, f', which normally entails a write-down in the profit and loss account (P&L) for the year.

When they measure the new f' banks must also consider the direct costs of managing NPLs, for example the costs of collecting and selling the collateral. They do not consider indirect costs (for example staff costs or fees paid to a servicer) which are recorded in the P&L for the relevant year. Therefore, the NPL net book value (NBV) equals:

$$\text{NBV} = \sum_{t'=1}^{n'} \frac{f'_{t'}}{(1+i)^{t'}} \tag{2.6}$$

where f' represents the new cash flow, which will be lower than before because of the company's changed financial situation, and n' represents the new recovery time. The latter will be higher than before and it considers the length of the enforcement procedures for the sale of the collateral.

The value adjustment is therefore equal to the difference between GBV and NBV:

$$\text{R} = \text{GBV} - \text{NBV} \tag{2.7}$$

Over time, the position might become performing again (in which case the bank will record a recovery equal to R), or it might deteriorate further (in which case the bank will record further write-downs). In every period, we can define the difference between GBV and NBV as the sum of value adjustments (and possible recoveries) recorded over time.

As we have already seen the coverage ratio is given by the ratio between the number of write-downs and the gross amount of impaired positions.

The report by Bank of Italy includes an interesting simulation. A fictitious exposure classified as bad loan with a GBV of € 100 is considered, which is supposed to be partly secured by a real guarantee. It is assumed that the bank's estimate of expected cash flows is the same as that of investors in the market, with only one inflow, which will be collected in full at the end of the recovery procedure. Its expected value is 47% of the gross value of the loan (already net of the direct costs of selling the guarantee). It is also assumed that the expected residual recovery time is four years, which is consistent with the result of the survey about bank's debt collection procedures, carried out by Bank of Italy in 2015.

First, the paper analyses how these assumptions translate into the valuation of a position from the bank's point of view. To do so, it makes an additional assumption regarding the original effective interest rate on the loan which the banks must use to discount the expected cash flows. It assumes it equal to 4%, which is the average value recorded by the 2014 asset quality review (AQR).

According to these data, the bank records the net position as 40% of GBV, with a coverage ratio of 60%.

The paper then considers the investor's point of view. As already said investors have a different economic perspective compared with banks and they use different methods to estimate the value of bad loans. In fact:

1. they deduct from the price all the indirect management costs (administrative expenses and servicer fees) they will incur during the 4 years needed to recover the cash flows while banks pay and record these costs annually until the position is closed.

2. they want to have a much higher internal rate of return (IRR) than the discounting rate used by the banks in their financial statements.

We can study the impact of these two factors on prices. Since there are no reliable publicly available statistics on the indirect costs of managing bad loans, realistically we can assume that they may account for as much as 6 per cent of nominal expected cash flows.

Bad loan valuation	row	Bank	Bank with indirect costs	Investor's IRR 15%	Investor's IRR 25%
Assumptions		(a)	(b)	(c)	(d)
GBV	1	100	100	100	100
Expected value collected at maturity (from sale of guarantee and other)	2	47	47	47	47
Time remaining to collection of cash flow (years)	3	4	4	4	4
Investor's IRR	4	n.a.	n.a.	n.a	n.a.
Indirect costs	5	0%	6%	6%	6%
Average cash flow discounting rate	6	4%	4%	15%	25%
RESULTS					
Discounted cash flow	7	40,2	40,2	26,9	19,3
Indirect costs	8	0	2,8	2,8	2,8
Book value (bank's NBV): price for investor	9	40,2	37,4	24,1	16,4
Expected loss on position (coverage ratio)	10	59,8	62,6	—	—
Methodology					
Numbers in columns (a)…(d) of rows r7…r10 have been obtained as follows: • r7=r2/(1+r6)^{r3} • r8=r5 ∗ r2 • r9=r7–r8 • r10=r1–r9					

Table 2.11: Main difference between banks' and investors methods of evaluating bad loans (Bank of Italy)

Table 2.11, column (b), shows the valuation of a bank which includes also these costs, contravening accounting principles, and does not change the other factors listed in column (a). In this case, the present value of the bad loan is 37% of GBV, about 3 percentage points below the example in column (a). Provisioning should therefore be increased by the same amount.

Regarding IRR, based on available evidence, the simulation assumes that investors' IRR to acquire bad loans is between 15% and 25%.

The results, which appear in columns (c) and (d) of Table 2.11, show that the effect on the valuation of bad loans is significant, ranging from 13 to 21 percentage points of GBV according to the IRR.

Recovery time (years)	Price
1	36,3%
2	29,8%
3	24,4%
4	19,8%
5	16,1%
6	12,9%

Table 2.12: Sensitivity analysis of the value of the bad loans with respect to the cash flow recovery

Taking both factors into account (indirect costs and IRR), the different approach followed by investors would justify a purchase price for the investor of between 24,1% and 16,4% of GBV.

To sum up these findings suggest that the main reasons for the gap in the market price of bad loans relate to the different valuation criteria used in the financial statement and by investors to compute the value, rather than to insufficient coverage ratios.

Recovery time affects significantly the valuation of a bad loan position, both in terms of accounting value and, especially, of market value. Among factors that affect recovery time there are: the efficacy of a bank's internal procedures and the efficiency of a country's legal and judicial system. As a result of the latter, the valuation can change significantly even within the same country because different courts could process recovery procedures at different speeds. Table 2.12 contains a sensitivity analysis of the value of the bad loan with respect to the cash flow recovery time. It shows the price that investors would be willing to pay to buy the bad loan as a function of various recovery times, assuming an IRR of 20%. Shortening the recovery time by even a year, from 4 to 3 years, increases the price by 4,6% of GBV.

Recovery times affect not only the valuation of bad loans (and more generally NPLs) but also NPls level in the balance sheet. The longer the recovery time, the higher is the NPL ratio. There are recent estimates showing that two banks with a loan growth rate of 5% and a rate of new bad loans of 2% but with different bad loan recovery times (2 years and 5 years), in equilibrium would have respective bad loan to total loan ratios of 3,5% and 7,4%. The lack of an adequate set of information on the portfolio represents a second factor considered highly critical by operators. For the market, it is important to

have clarity and security about what it is buying and this is a key element to adequately set the offer price. The issue is even more critical in the case of international buyers who have little knowledge of the Italian market and are used to operate in maximum disclosure situations that are not always present in our context. An information set that does not meet the requests of the potential buyer may implicate:

- Less effectiveness of the portfolio segmentation process;
- A difficulty in quantifying the recovery rate;
- An increase in the cost of due diligence;
- More complexity in the operation execution.

Attention to a rational segmentation process of the portfolio arises from the assumption that NPLs investors are typically highly specialized traders interested in acquiring assets in a market segment consistent with their skills: a lack of interest is in fact reserved for generic and little synergistic portfolio and so the quality of the segmentation helps to avoid significant depreciations. These considerations also have little impact on the complexity level of the operation to demonstrate the interconnection of the different factors.

Possible negative results of due diligence caused by unavailability of appropriate information will result in time-consuming and costs unlikely recoverable.

In the secondary market, the most traded segment is the unsecured NPLs, like for example retail loans, credit card debt etc.

It is usually easy work on these assets because there is sufficient transparency for investors concerning their value. In fact, since they are unsecured loans, banks make high levels of provisioning and this allow sales to take place generally at very low prices relative to book value, making it easier for investors to achieve their targeted returns. Unlike unsecured, the secondary market for secured NPLs is more complex and it could be characterised by the so-called market for “lemons”. Secured loans are more complex, opaque and less granular than unsecured one, and banks usually generate much lower provisioning levels because they attribute significant value to collateral. The activity in this

segment is quite low in the secondary market. It implicates that an asymmetric information problem may exist, in particular for higher quality, collateralised NPLs. In a classical market for lemons context, it is assumed that informational asymmetries arise because buyers know less about asset quality than sellers. Buyers would therefore fear that sellers are offering low quality assets and for this reason they offer low prices. The sellers, being able to distinguish between low and high-quality assets, trade only in the low type, the lemons, and in this way, there is the market's failure of the remaining assets. In addition, it may happen that sellers of NPLs do not have perfect information concerning their own assets. In this case the problems associated with informational asymmetry remain because buyers cannot know whether sellers are revealing all available information.

Low provisioning for problem loans has led to large pricing gaps that have obstructed write-offs and sales. When provisions are too low, write-offs generate losses that are immediately taken out of bank capital. Like writing off, selling NPLs would imply some discount compared to book valuations, if investors perceive current provisioning as too low.

Depending on the type of loans, this NPL "pricing gap" between book and market values is reported to be around 15/20%. There is also a trade-off between loan loss provisions and level of write-offs also because banks may have the incentive to keep rather than sell high provisions loans in order to increase their overall provisioning coverage ratios. As we have seen coverage ratio is defined as provisions/gross loans and is a common indicator used by credit rating agencies to assess the riskiness of banks. Other things being equal, a higher aggregate coverage ratio makes banks appear less risky. So, there is an incentive for banks to not write-off highly provisioned loans even if they should. Putting aside the benefits of disposing NPLs, if a bank writes off bad loans that have high provisions, it reduces the provisions coverage ratio by lowering gross loans (the denominator) more than level of provisioning (the numerator). This follows from the accounting rule: provisions at the end of one period are equal to provisions at the start of the period, plus or minus any additional provisions or write-backs, minus the effect of reductions in the portfolio (such as sales of loans, or loans reaching maturity), minus write-offs. A loan is written-off when the bank no longer expects the principal to be repaid. As write off's result both loans and the provisions against them disappear from the balance sheet. Since

some loans tend to have higher provisions as a proportion of the gross amount of the loan, it follows that a bank that decided to write off mainly its highly provisioned problem loans will show lower provisions as a percentage of their gross loans than a bank with the same number of high provisions loans that did not.

This event is not a problem in normal times when NPLs are low because banks may be indifferent to the impact of NPL sales on their coverage ratios. However, when NPLs are high and coverage is low, banks may face strong market pressure to maintain their provisioning coverage ratio and keep provisioned loans, rather than sell them.

The problem just described is highlighted in Jassaud and Kang's report "A Strategy for Developing a Market for Nonperforming Loans in Italy" (IMF Working Paper 2015), where the conclusion is that one of the reasons for which Italian banks have delayed writing-off NPLs is that these would decrease their overall provisioning ratio and possibly their external credit rating.

Another important thing is that while IFRS explicitly permits loan write-downs for impairment losses, it does not provide guidance on write-off modalities, which are left to the supervisors.

Each bank is responsible for defining its NPL write-off policy based on internal and external factors. Supervisors would expect that each bank would have a clearly defined NPL write-off policy approved by the management body. This should be available when required by supervisor.

The lack of accounting guidance under IFRS delays NPL write-offs. As we have seen banks in Italy follow IFRS principles, where the current rules (IAS 39) do not define when and how to write off uncollectible loans. The new norm (IFRS 9) will include a definition of "write-off" and will reinforce the current guidance.

According to supervisors, banks should ensure that NPL write-off activities must avoid any arbitrage of provision coverage calculation. In fact, write-offs should take place only if justified by the uncollectability of the exposure in accordance with the internal write-off policy and not for the purpose of reaching a given level of gross NPLs or maintaining a given level of coverage ratio.

2.3.2 Actions adopted

In recent months, the Italian authorities have introduced new measures aimed at improving the efficiency and speed of judicial and extrajudicial insolvency procedures to enhance the reduction of Bad Loans on bank balance sheets.

Among the initiatives activated, the Italian government has introduced/sponsored:

- State-backed guarantee on senior tranches of securitized Bad Loans ("GACS").
- State-backed guarantee on senior tranches of securitized Bad Loans ("GACS").
- Two Atlante funds aimed at supporting capital raising and acquisitions of mezzanine and equity tranches in securitizations of Bad Loans.
- Two Atlante funds aimed at supporting capital raising and acquisitions of mezzanine and equity tranches in securitizations of Bad Loans.
- Amendments on bankruptcy and foreclosure proceedings aimed at accelerating recovery of Bad Loans.
- beneficial tax treatments of banks' loans provisions.

Here below I list in chronological order the measures adopted in the last few years by the Italian Government:

L. 132 bankruptcy reform law *(August 2015)*: Measures to shorten bankruptcies to facilitate voluntary agreements, to speed up to foreclosure process and to introduce tax deductibility on loan losses and impairements.

GACS *(January 2016)*: Guarantees to facilitate the removal of bad debts from the books of commercial banks.

Atlante Fund *(April 2016)*: Private initiative backed by the Italian government. Atlante aims to ensure success of banks recapitalization and to buy bad debts.

Decree 59/2016 *(May 2016)*: Further measures to speed up recovery rates

Atlante fund

In April 2016, a variety of banks, insurance companies, pension funds and other institutional investors agreed to participate in the launch of the alternative investment fund known as 'Atlante', which will be managed by Quaestio Capital Management Company SGR SpA. All the investors in the fund belong to the private sector, avoiding the risk that its interventions might be considered in violation of the rules on state aid.

The fund's regulation ensures the management company's formal and substantive independence from the investors, so in the event that it acquires control of one or more banks, the management company will be able to exercise the typical powers of shareholder with ample discretion.

The management company intends to raise up to a minimum of €4 billion through Atlante.

The fund's purposes were:

- to ensure the success of the capital increases required by the regulatory authority of banks that are currently facing objective market difficulties, acting as a backstop facility, beginning with those already planned by Banca Popolare di Vicenza and Veneto Banca.

- to contribute to the start-up of a market for non-performing bank loans: the amount of non-performing loans that could be taken off bank balance sheets is by far greater than those acquired by the fund, since Atlante is concentrating its investment on the junior and mezzanine tranches of securitisation vehicles, whose market is particularly small, leveraging the more senior credit for which there is already investors' interest.

The result was that Quaestio SGR was able to collect €4,2 bn (3 bn from banks, 500 m from banking foundations, 250 m from Cassa Depositi e Prestiti, 450 m from other istitutions). The capital raised was dedicated to: 2,5 bn were used to support the capital increase of Banca Popolare di Vicenza and Veneto Banca (1,5 bn for the first one, 1 bn for the second one).

Fund's regulation stipulates that it may allocate up to 70% of its investment capital to banks that have capital ratios below the minimum set by SREB (supervisory review and evaluation process) and therefore require, upon request of the Supervisory Authority, capital enhancement measures.

Obviously, not all capital increases qualify for a potential fund investment, but only those that the market alone cannot secure and which can lead to bail-in risk and/or system risk. More specifically, the subscription of the maximum shares that the fund can realize cannot be more than 75% of the single issue, unless it is necessary to subscribe a larger share of capital for the successful completion of the transaction. Last option mentioned has been adopted in both equity operations on Banca Popolare di Vicenza and Veneto Banca, done by Atlas Fund; in both cases, the fund subscribed for more than 90% of the capital increase.

The remaining 1,7 bn were dedicated to the launch of Atlante 2 in August 2016. This second fund is financed by financial istitutions and has the objective to reach a target of 3,5 bn by July 2017. Its goal is to invest in Junior and Mezzanine tranche of NPL securitisations and it is planned to begin with Monte dei Paschi scheme.

After the EU-wide stress test in July, which marked Monte dei Paschi di Siena ("MPS") as the most fragile bank in Europe, the bank announced a plan to dispose its GBV € 27,6 bn of gross Bad Loans and leases. In this context, MPS is planning to securitize its entire stock of Bad Loans for a total estimated sale price of € 9,1 bn (32,8%).

The capital structure of the securitization is expected to be as follows:

- up to € 5 bn of senior bridge facility underwritten by investment banks and eventually rated investment grade and placed in the market with GACS;
- up to € 5 bn of senior bridge facility underwritten by investment banks and eventually rated investment grade and placed in the market with GACS;
- ca € 1 bn of senior mezzanine facility underwritten by MPS and later placed in the market, probably without GACS, at below investment grade ratings;
- ca € 1,6 bn of junior mezzanine underwritten by the Atlante fund;
- ca € 1,6 bn of junior underwritten by existing MPS shareholders.

The key element of Atlante Fund is the average return searched by this fund, which is 6%. This return, for impaired investments, is significantly less to what is expected from the market, which is between 10% and 15%.

GACS

The GACS has been the result of a long negotiation between the Italian Government and the European Commission that ended in early 2016. However, the compromise reached is far from the original project that was the creation of an asset management company (AMC) funded by private and public investors, which would have to incorporate deteriorated credits at system level and transferred at market prices. Then it would have to charge of debt collection in order to remunerate investors. The mechanism identified does not include the establishment of any bad bank such as SAREB in Spain or NAMA in Ireland. GACS is granted to banks at market prices; financial institutions will use it to make the securitization structure more liquid and facilitate NPLs dismantling.

This is a guarantee that the Treasury provides to requesting intermediaries. The State guarantees only the senior tranches of securitisations, namely, the more secure tranches that support the least likely losses from less-than-expected credit recovery. The higher risk tranches will not be repaid until the senior tranches guaranteed by the State have been repaid in full. The guarantee is priced at market, as also recognised by the European Commission, which has agreed on the fact that the programme does not contemplate State aid that would distort competition.

The technical modality does not include payments from the State and therefore it does not impact on the national budget, at least until loan tranches covered by guarantee are repaid. In fact, the State has initially set up a fund with a budget of only 100m euros, then raised to 120, which will be financed by the required premiums on guarantees required and which will serve to face possible insolvencies. In response to this solution, the government hoped a development of non-performing credit market, especially in its most deteriorated component (bad debts); at the moment, the only one operation with the use of state guarantees was completed in August 2016 by Banca Popolare di Bari.

The mechanism introduced by the Law of April 8, 2016, no. 49, provides for the possibility for banks to buy a state guarantee to facilitate the structuring of securitization

transactions; It should be noted, however, that the purchase of the collateral is optional, and so the bank's management must look for alternative or complementary solutions that lead to bad debts elimination, with the best costs/benefits ratio for the bank itself.

Bad debts securitization operation is constructed as a normal securitization operation by creating a special purpose vehicle (SPV) to which the banks transfer their bad debts at a value not exceeding their net book value. SPV finances the purchase of bad debts through the issue on the market of asset backed securities (ABS), that are financial instruments whose flows, interests and capital repayments, are guaranteed by those arising from underlying assets.

The notes generated by the SPV are divided into senior and junior tranches (with the possible creation of a mezzanine tranche characterized by an intermediate risk profile between senior and junior); senior tranches must be rated not less than the investment grade by one of the four agencies recognized by the ECB (S & P, Moody's, Fitch, DBRS) and it represents a precondition for receiving the state guarantee. The state guarantee, if requested, is then applied only to senior tranche and provides for an adequate return related to State's risk, which in turn depends on the rating of the senior tranches and their maturity. The amount of the fee will be determined by the average premium paid on the credit default swaps (CDSs) of Italian issuers with the same risk profile of the senior tranche. In particular:

- If the senior tranche rating is equal to BBB- / Baa3 / BBB- / BBBL, it is applied a CDS basket related to companies with BBB / Baa2, BBB- / Baa3 or BB+ / Ba1. At the date of Decree Law issuing, this basket was composed by CDS of UBI Banca SpA, Unicredit SpA, Intesa Sanpaolo SpA, Enel SpA, Acea SpA, Telecom Italia SpA, Finmeccanica SpA, Mediobanca SpA;

- If the senior tranche rating is equal to BBB/Baa2/BBB/BBB it is applied a CDS basket related to companies with BBB+/Baa1,BBB/Baa2, o BBB-/Baa3. At the date of Decree Law issuing this basket was composed by CDS of UBI Banca SpA, UniCredit SpA, Intesa Sanpaolo SpA, Enel SpA, Acea SpA, Assicurazioni Generali SpA, Mediobanca SpA, Atlantia SpA;

- If the senior tranche rating is equal to BBB+ / Baa1 / BBB+ / BBBH, it is applied a CDS basket related to companies with BBB / Baa2, BBB+ / Baa1 / or A- / A3. At the date of decree law issuing this basket was composed of CDS of UBI Banca SpA, Unicredit SpA, Intesa Sanpaolo SpA, Enel SpA, Acea SpA, Assicurazioni Generali SpA, Atlantia SpA, Eni SpA.

As I already noted, since the state guarantee covers only the senior tranches, any mezzanine and junior tranches (or equity) tranches are subordinated to the repayment of the senior and consequently they are the first to bear any losses. For this reason (more intrinsic risks), they offer higher returns.

In addition to rating, the other relevant variable to determine the guarantee cost is the maturity of the tranche to which it is applied; the cost will therefore be proportional to the increase in maturity, both in order to cover the highest risk associated with a longer bonds duration and to encourage a faster bad debts recovery. The remuneration associated with the time variable implicates the adoption of the following scheme:

- From the first to the third year, the prize is determined on the basis of the average 3 years CDS prizes of the chosen basket;
- From the fourth to fifth year, the premium paid on the outstanding debt is determined on the basis of the average 5 years CDS prizes of the selected basket;
- From the sixth year onwards, the prize paid is determined based on the average 7-years CDS prizes.

In addition, it is important to point out that the guarantee is granted on senior securities only to the condition that the bank has previously succeeded in placing 50% plus one of the junior securities and in any case a junior and mezzanine amount such as to allow securitised loans elimination by bank's balance sheet. This implies that the bank obtains from its auditors the green light to derecognise the securitized credits according to IAS 39.

Lastly, it should be pointed out how the sums resulting from the collection of the loans transferred possible financial coverage contracts in place and credit line's use must comply with well-defined priorities.

Specifically, the available funds, net of sums retained by servicer, must be used according to the following order:

1. Any tax burdens
2. Sums to service providers
3. Payment of sums due to interests and commissions relating credit line activation;
4. Payment of the sums due to GACS granting on senior securities;
5. Payment of sums to counterparties of financial coverage contracts;
6. Payment of sums due to interests on senior securities;
7. Restoring credit line availability if used;
8. Payment of sums due to interests on mezzanine securities (if issued);
9. Full repayment of senior capital;
10. Full repayment of mezzanine capital;
11. Payment of sums due to principal and interests or other form of remuneration of junior securities.

It is therefore evident that junior tranche will not get any remuneration until senior and mezzanine tranches are fully repaid.

Chapter 3

Portfolio analysis and evaluation

In Chapter 2 we saw that servicing markets are growing and their roles are more and more important, thanks to their specialization in managing NPL in different phases. In the next Section I will try to outline the activity of the servicer. Activities involve many operators interacting with each other in order to find the best strategy and extrapolate the maximum result.

The type of approach differs, depending on the nature and size of the credit involved. At each stage, it is essential to have an effective support management system capable of tracking the relevant information of each portfolio so that they can be available both internally and externally.

3.1 NPL management

The management approach of NPLs (special servicing) is differentiated by: *credit nature* (secured or unsecured) and *size* (small/medium or large loans). The nature of credit, *secured* vs *unsecured*, distinguishes the kind of approach used to acquire and manage NPLs.

Credit size, small/medium or large, affects management and recovery:

- Small/medium loans: a massive activity, carried out industrially by a team of experts and coordinating the legal and commercial network across the Italian territory;

- Large loans: a tailor-made activity, characterized by a flexible structure focused on high-level legal, managerial and commercial skills in order to:
  - Manage relationships with the market (originator, investors, third parties);
  - Perform due diligence, business planning, and manage complex bankruptcy proceedings;
  - Coordinate the network of agencies in the area and the other specialized services of the group;
  - Acquire/sell credits portfolios or single loans;
  - Establish REOCo (Real Estate Owned Companies).

The business model adopted is based on a solid internal, specialized and streamlined structure, designed to achieve maximum performance thanks to a constant interaction between different internal operators, such as: *loan management team*; *legal network*; *agent network*. This flexible management system is better described as follows:

- Loan management:
  - Loan management team composed mainly by senior people;
  - Dedicated structures based on credit's nature (secured/unsecured) and size (Small/Medium/Large);
  - Enhanced legal and commercial network coordination capability.
- Legal network:
  - External legal network loyalty;
  - Consolidated relationships with most of the network;
  - Strong orientation on discounted pay-offs (DPO) and cash-in-court activities (recovery of lump sums in courts).
- Agents network:
  - High experience in managing distressed real estate assets;

  - Network specialized in voluntary real estate leasing and judicial auctions' support;
  - Ability to interact with the debtor;
  - Strong orientation to out-of-court solutions.

The *loan manager* has a key role because:

- He receives information from outside, re-elaborates them in order to define the most profitable recovery strategy;
- He is responsible for collection flow, supports the legal network during legal phase, the commercial network for out-of-court agreements and monitors external consultants through the management system.

The management approach of NPLs (special servicing) is differentiated by: *credit nature* (secured or unsecured) and *size* (small/medium or large loans). The nature of credit, secured vs unsecured, distinguishes the kind of approach used to acquire and manage NPLs (see Figure 3.1 on p. 126).

3.1.1 Secured credits

With regard to secured positions, NPLs management process is articulated in four macro-activities, each of them appropriately entrusted to specific skills: evaluation, management, REOCo enhancement, marketing. For each macro activity, the servicer develops an integrated service operating model that can track credit through all recovery phases.

Evaluation:

- portfolio's stratification;
- Valuation of collateral;
- Forecast of loan's recoverability, depending on the type of procedure (foreclosure/bankruptcy);

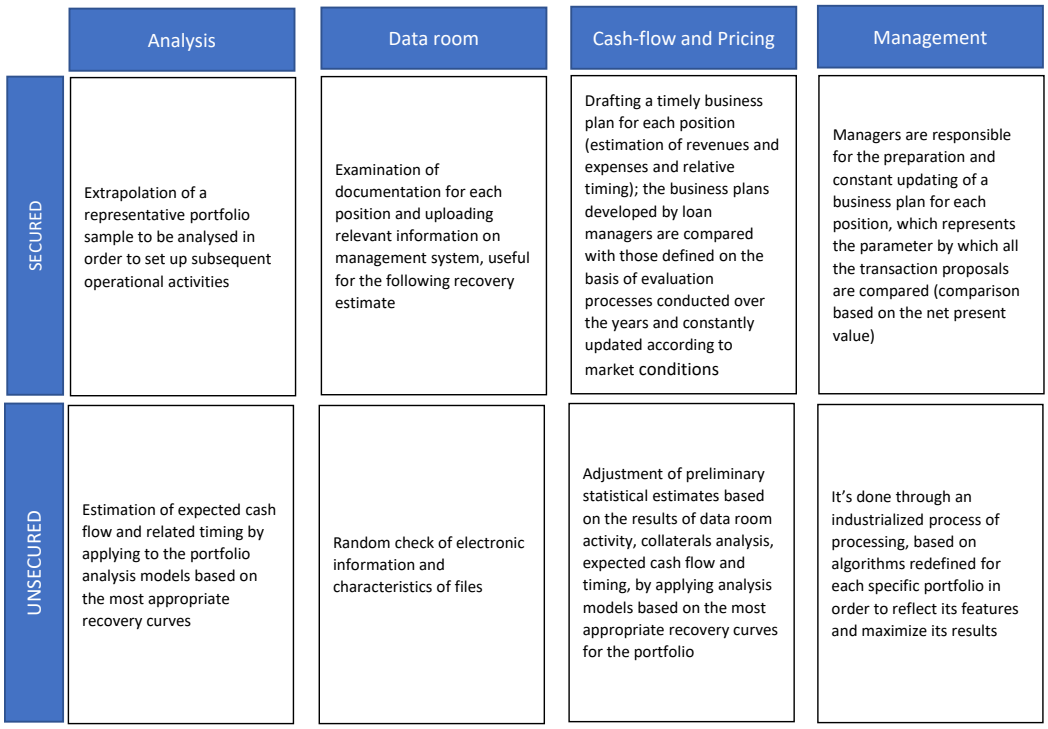

Figure 3.1: Activities flow differentiated for types of credits

- For major loans, is performed a preliminary technical due diligence on the underlying asset;
- Sharing with the bank of the due diligence output in order to identify the portfolio to be managed.

Due diligence involves some steps, the first of which is the determination of the type of valuation (however, always shared with the customer) depending on the size of the collateral:

- Drive-by evaluation (Large size);
- Desktop Evaluation (Medium size);
- Statistical evaluation (Small size).

After defining the value of the assets and completing the phase of legal analysis of the portfolio, the estimate of the collection is done by crossing variables such as court timelines, nature of credit and guarantee, legal and procedural expenses.

Management

Once portfolio's evaluation is completed, the next step to follow is the identification of the best credit recovery strategies (court/out-of-court). The main activities related with this phase of the servicer's work are outlined here below.

- Management of all activities aimed at credit recovery:
  - Impulse to foreclosures and bankruptcy procedures;
  - Out of court recovery of secured credit;
  - Judicial recovery of secured credit;
  - Coordination of the legal and commercial network.
- Planning and coordination of possible credit/property sales phases to potential investors.
- Evaluation of the opportunity to purchase real estate collateral through REOCo (repossess).
- Periodic reporting:
  - Periodic elaboration of the business plan and the relative reporting agreed with mandates;
  - KPI monitoring;
  - Portfolio performance control (DPO analysis, credit transfer and out-of-court actions).

REOCo enhancement

REOCo are created with the aim of enhancing the value of the collaterals which have been associated with some secured positions. This is not always an easy task and, indeed, an appropriate structure needs to be put in place for this purpose. The current experience suggests that the following list should be taken as a guideline.

- Establishment and management of funds and/or investment vehicles for the enhancement of repossessed assets (REOCo);

- Technical due diligence activity;
- Building and cadastral regularization;
- Administrative, locative and fiscal management of assets;
- Energy certifications;
- Maintenance activities;
- Management of all activities aimed at buildings enhancement.

Marketing

Of course, an important part of the real estate collateral enhancement is an appropriate marketing strategy, which is almost always needed to increase the visibility of the assets under liquidation. Thus, the following items must be taken into consideration:

- Management of marketing activities aimed at the selection of potential buyers for voluntary disposals and the identification of potential investors for legal auctions participation;
- Support for the sale of repossessed assets and/or real estate collaterals

3.1.2 Unsecured credits

With regard to unsecured credits, there is a wide range of services provided by the servicer who are specialized in a series of incremental interventions, made by qualified, trained and specialized personnel in order to implement a quick and effective recovery action. Since there are high volumes and often absent warranties, the approach is:

- An industrialized and massive recovery process that allows timely and rapid intervention times;
- The contact with the client is necessary to reach an out-of-court agreement;
- Legal intervention only on condition of a real increase in the probability of success of recovery action and legal expenses that allow to get a final marginality on individual positions.

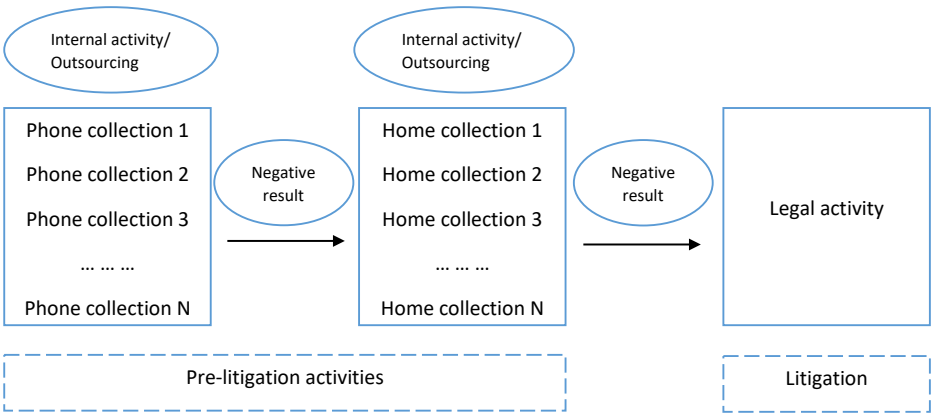

Figure 3.2: Unsecured workflow

The unsecured credit management and recovery process can be represented as shown in Figure 3.2.

The management aimed at recovering unsecured credit is characterized by several aspects:

- Workflow integrated with the management system:
  - At any time, each manager will be able to know the status of the portfolio under management, segmented by the type of activity to be executed;
  - At the same time, the management system provides an overview of the tasks to be completed in due time.
- Dedicated internal department:
  - Established by managers with proven experience and negotiating skills;
  - The outsourcing service provider interacts with the internal loan managers on the management platform, leaving track of the activities carried out or the information gathered on the borrowers under management;
  - Continuous interface with the sender.
- Legal activity:
  - Activated by sender's approval and at a predefined cost, only when commercial information reveal the capacity of the collateral;

  - Records summarizing costs and revenues related to the procedure.

- Reporting:

  - Summary sheets that show performance and progress status for the above-mentioned activities.

3.1.3 Management platform

The essential tool for each servicer is an effective management system, which is used to manage credit from due diligence to recovery, and through which each step and every supporting documentation are recorded. Thus, data analysis and reporting writing are allowed both internally and externally for investors. A valid management system must be: flexible, functional, integrated, secure. In particular, it must allow:

- Bad debts portfolio management both during acquisition/due diligence and recovery activities;

- Handle the portfolio's boarding phase in a relatively short time, also on the basis of the available and prepared paths of the transferring entities;

- Interact with the most common management systems;

- Review complex debt positions (with multiple secured and unsecured loans, with multiple warranties, with multiple judicial and/or extrajudicial procedures, etc.);

- Develop dynamic business plans for final statements and forecasts cash flows or for single practice or for the entire portfolio, based on historical data prepared by the servicer (for example, timing of courts). It must allow also the analysis of individual positions, for initial valuation and monitoring of portfolios;

- Record revenues and expenses incurred in the recovery activity, by activating the link, for the portfolios under management, with the accounting system, by sending balances on customer accounts;

- Organize a sophisticated user system, by real-time connecting internal managers with external networks (lawyers, law firms and real estate professionals);

- Trace internal and external communications;
- Store credit documents in electronic version.

In many cases, the system is "web-based", with access to personalized and password-protected accounts and different access profiles based on the level of interaction with the system. Usually, the system provides real-time information that are useful for portfolio analysis and makes possible to develop final statements and to forecast cash flows for each bad debt position, by distinguishing the nature of the flow, the action from which it is or will be originated, the credit line on which it is allocated and the date at which it occurs.

3.2 Portfolio description

The purpose of this chapter of my dissertation is to discuss and identify the elements which affect pricing and valuation of a portfolio of impaired credits, from the point of view of the investor. The goal is to understand if the pricing which is obtained is aligned or not with what is shown by the market trend. Of course, some assumptions have to be made about variable quantities which are only given with uncertain values. Thus, it is also interesting to perform a sensitivity analysis to see how pricing varies when some of those variables are changed.

The portfolio which I examined is quite recent, since it dates to 2016, and includes positions that became bad debts from 1994 to 2016. I had access to this portfolio through Deloitte Consulting Group and in the next section I will briefly try to sketch its structure and composition.

Unfortunately, standard methods for NPL portfolio evaluation do not seem to be so well documented, since their knowledge and use might give a significant competitive advantage. Thus, while for NPL issues discussed in previous sections and chapters I could refer to many books, articles and technical reports from which I could borrow data, comments and ideas, here I can only rely on the kind help I received from collaborators in Deloitte.

Positions	5.555
Gross Book Value (€)	260.567.948
Average GBV (€)	46.907
Std deviation (€)	139.111

Table 3.1: Portfolio general properties and characteristics

3.2.1 Portfolio composition

The portfolio being valued consists of pecuniary loans, including capital, interests — also default interests — and commissions arising from financing in various technical forms. The portfolio under review consists of 3.516 subjects (debtors) with a total of 5.555 credit positions (each subject might have more than one credit position, of course). The total gross book value (GBV) registered in the portfolio amounts to € 260.567.948 with an average of € 46.907 per each position, and a Standard Deviation of € 139.111 as shown in Table 3.1.

A fraction of all positions (554 out of 5.555) is "secured", i.e. they are linked to a mortgage, while the rest (5.001 out of 5.555) are "unsecured". The total GBV associated with 554 secured positions amounts to € 89.061.708 while for the remaining 5.001 unsecured positions we have a GBV of € 171.506.240 (this is shown in Table 3.2).

Secured positions are covered by mortgage (real collateral), while those unsecured either do not have collateral or are covered by a pledge or privilege (real guarantee), or various other forms of personal guarantees.

Real guarantees are those that relate to property (moveable or immovable), such as pledge and mortgage, while personal guarantees, such as suretyship, relate to a third party who is a guarantor and is liable for the obligation with all its assets, in the event of default of the principal debtor. Generally, real guarantees are therefore considered to be

Portfolio Composition	**Credit Positions**		**Gross Book Value**	
	#	**%**	**#**	**%**
Secured	554	9,97%	89.061.708	34,18%
Unsecured	5.001	90,03%	171.506.240	65,82%
Total	**5.555**	**100,00%**	**260.567.948**	**100,00%**

Table 3.2: Portfolio composition by credit nature

Guarantee	#
Personal	
• Suretyship	3600
• Other personal guarantees	232
• Patronage letter	2
Total Personal	**3834**
Real	
• Other real guarantees	3
• Mortgages	935
• Pledge	13
• Privilege	12
Total Real	**963**
Total	**4797**

Table 3.3: Portfolio's types of guarantees

stronger mitigating factors than personal guarantees. For the portfolio examined here the composition in terms of types of guarantees is presented in Table 3.3, on p. 133.

Unsecured credit management takes place through an industrialized workflow, based on algorithms which are redefined for each specific portfolio, to reflect its features and maximize the results. An important element to reduce losses from system-level recoveries is the diversification effect. If the bad debt portfolio is concentrated on few sectors and geographic areas, it is likely that either everything or almost nothing can be recovered, depending on how the economic situation and recovery process in those areas and sectors evolve; in other words there is a wide dispersion in the possible results and extreme events have a high probability weight. However, this I not the case for the portfolio under consideration, which is broad and diversified and includes debtors of different nature, coming from almost all Italian regions. This allows for a sort of compensation between the outcomes of the various practices. The distribution of final results will be more focused on expected average values, while extreme events (nearly total recovery and almost zero recovery) will have a low probability of manifestation.

The geographical distribution of the debtor's set is presented in Table 3.4 on p. 134. In Northern Italy, the presence of impaired loans is quite substantial: 54,07% of the portfolio is concentrated there, for a total credit value of € 181.500.793 (70% of total GBV).

Portfolio Composition	Credit Positions		Gross Book Value	
	#	%	#	%
Abroad				
Corporate	2	0,06%	9.576	0,004%
Individual	1	0,03%	30.602	0,012%
Total Abroad	**3**	**0,09%**	**40.178**	**0,015%**
Centre				
Corporate	512	14,56%	45.678.187	17,530%
Individual	325	9,24%	7.062.064	2,710%
Total Centre	**837**	**23,81%**	**52.740.251**	**20,240%**
North				
Corporate	1.291	36,72%	160.233.160	61,494%
Individual	610	17,35%	21.267.634	8,162%
Total North	**1.901**	**54,07%**	**181.500.793**	**69,656%**
South & Islands				
Corporate	320	9,10%	16.878.867	6,478%
Individual	455	12,94%	9.407.859	3,611%
Total South & Islands	**775**	**22,04%**	**26.286.726**	**10,088%**
Total	**3.516**	**100,00%**	**260.567.948**	**100,000%**

Table 3.4: Portfolio composition

Centre Italy follows with 837 debtors and a credit of about € 52.740.251 (20% of GBV), and, finally, Southern Italy and the Islands with 775 customers and a fraction of GBV equal to the 10% of the entire portfolio. Only 3 debtors are from abroad, with a total GBV of only 40.178 (0.015%). The nature of the debtor allows for further diversification of the portfolio: despite the predominance of impaired debts attributable to corporate borrowers (partnerships or capital companies), which are 2.125 debtors and represent 85,50% of the total credit value, 1.391 customers are individual borrowers (families and individuals) and have 14,50% of total GBV. This subdivision can be seen in Figure 3.3, p. 135.

The classification of debtors by nature is important because of the judicial actions that can be taken during the credit recovery activity: while legal persons are subject to insolvency proceedings, these are inapplicable to natural persons unless they are entrepreneurs and have the minimal requirements prescribed by bankruptcy law. It is important to distinguish legal entities in partnerships from capital companies: in the former case there are always one or more subjects (natural persons) unlimitedly and solidly responsible for the obligations assumed by the company, while in capital companies this

happens only in special cases prescribed by the law. For natural persons, the age of the debtor is extremely important: the younger the age, the greater the possibility of credit recovering.

A further interesting analysis concerns the classification of positions based on the counterparty year of default and related GBV amount. This type of analysis is called vintage portfolio analysis and allows us to highlight the impact that the financial crisis of 2008 had on the amount of debtors classified as bad debts.

From Figure 3.4 we notice that 86% of positions became bad debts after 2008, while only 14% before. Even this analysis highlights the prevalence of unsecured positions.

Table 3.5, p. 136, makes more clear the analysis and highlights the number of bad debts year by year and their GBV. Notice that 90% of total GBV concerns positions that became bad debts since 2009 onwards.

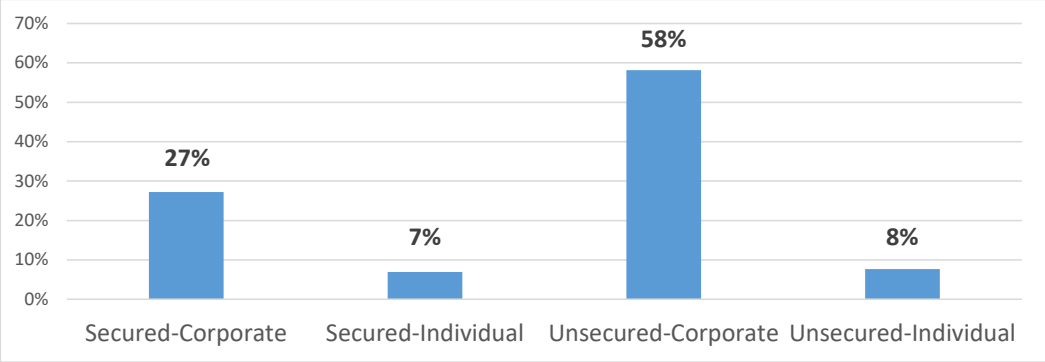

Figure 3.3: Distribution of positions among secured, unsecured, corporate and individuals

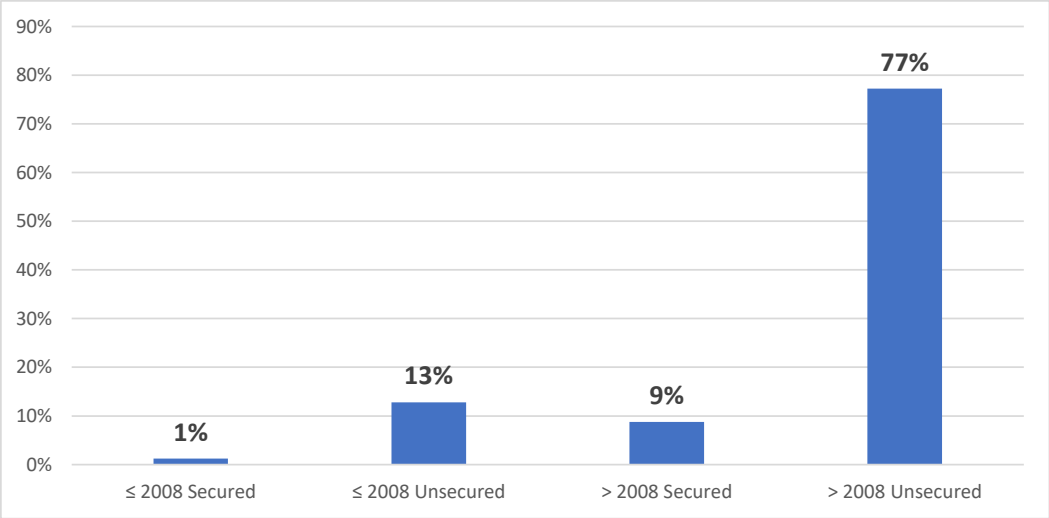

Figure 3.4: Time evolution of secured and unsecured debts

Year of default	GBV	%	# Debtors	%
1994	21.205	0,01%	2	0,06%
1995	24.947	0,01%	1	0,03%
1997	49.497	0,02%	3	0,09%
1998	74.122	0,03%	2	0,06%
1999	2.416.152	0,93%	21	0,60%
2000	527.096	0,20%	6	0,18%
2001	1.540.338	0,59%	10	0,27%
2002	704.170	0,27%	12	0,33%
2003	1.801.797	0,69%	28	0,80%
2004	2.224.450	0,85%	36	1,01%
2005	3.488.797	1,34%	49	1,39%
2006	3.697.321	1,42%	68	1,93%
2007	5.572.200	2,14%	109	3,10%
2008	4.421.763	1,70%	112	3,18%
2009	15.340.257	5,89%	142	4,04%
2010	13.794.728	5,29%	209	5,95%
2011	26.969.493	10,35%	359	10,22%
2012	35.557.090	13,65%	411	11,69%
2013	36.950.124	14,18%	478	13,60%
2014	46.753.826	17,94%	569	16,19%
2015	56.678.902	21,75%	856	24,36%
2016	1.959.673	0,75%	33	0,93%
Total	**260.567.948**	**100,00%**	**3.516**	**100,00%**

Table 3.5: Year of default

3.3 Assumptions and methodology description

As we have seen the portfolio analysed is mainly composed of unsecured positions. For this reason I decided to focus my analysis on this type of positions. The values obtained in this work are empirically calculated and depend on the choice and application of formulas, data, hypotheses and information sources. Data on unsecured positions show that:

(*A*) 401 positions are subject to court proceedings: foreclosures or bankruptcy proceedings (bankruptcy or arrangement with creditors).

(*B*) 69 positions are subject to out-of-court agreements.

(*C*) There are no procedures or agreements in place for 4531 positions.

I now discuss more in detail the different typologies listed here above.

(*A*) Foreclosure is a complex and very costly procedure which, in cases where the debtor is the owner of one or more immovable property, foreclose and sell the property in auction to satisfy the credit. Bankruptcy procedures are those legal proceedings which involve commercial company if:

- It is insolvent
- It is in possession of dimensional requirements provided by Art. 1, paragraph 2, of Bankruptcy Law.

Once the existence of the two requirements has been established, the bankruptcy procedure governs the relationship between the insolvent debtor and its creditors with the presence of a public authority and other parties, which vary according to the procedure and assess the possibility of continuing the business activities or preparing assets liquidation. When the state of insolvency occurs, the creditors' rights on their claims are satisfied through the guarantee of equal treatment. Bankruptcy proceedings can be classified as: bankruptcy, arrangement with creditors, formal "compulsory administrative liquidation", extraordinary administration and special extraordinary administration. Bankruptcy, in the Italian legal

Foreclosure's steps from opening to asset's sale	% Progress
Phase 1: Started	10%
Phase 2: Repossession	20%
Phase 3: Sale instance deposit	30%
Phase 4: CTU deposit	40%
Phase 5: Auction	60%
Phase 6: Partial allotment	70%
Phase 7: Final allotment	90%

Bankrupcty proceeding's steps	% Progress
Phase 1: Bankrupcty judgment; deposition of insinuation to the passive; credit admission	10%
Phase 2: Liquidation programme	30%
Phase 3: CTU; ongoing auctions	40%
Phase 4: Asset sold in auction	60%
Phase 5: Partial allotment	70%
Phase 6: Final allotment	90%

Table 3.6: Procedure phases and percentage of progress

system, is a liquidation procedure, involving the commercial entrepreneur with the entire property and its creditors. The assets are liquidated to pay creditors. Bankruptcy steps are quite long and complex.

The preventive agreement is a bankruptcy proceeding that can be used by a debtor (whether it is an individual entrepreneur, a company or a different entity) who has the requirements of insolvency (provided by Article 1 of Bankruptcy Law), in order to try to recover even through the continuation of the business and eventually the sale of the company to a third party or through assets liquidation to satisfy creditors, but in this way avoiding bankruptcy.

For these positions, I assume that 10% of the GBV will be recovered at the end of the procedure since, based on similar experiences, this value is applied by consulting firms on this type of positions. To determine the recovery time, I calculated for each position the remaining time (in years) of the procedure in progress and to do so, I considered the city of the referring court and the state of progress of the procedure, as we can see in Table 3.6, p. 138. If the information concerning the court's city was absent I took it the same as the debtor's residence. For the city of Caserta I did not find the data of the average procedures time and therefore I assumed it equal to Naples.

Some positions are subject to foreclosures in which however there is salary repos-

session. In these situations, by law, 1/5 of each monthly net salary is foreclosed. In order to get this value, I used the average monthly net salary in the cities of debtors subject to these procedures. For the cases where I found the gross annual value, I divided it by 13 and multiplied by 70% (assuming taxes equal to 30%). The recovery time depends on the amount of the credit (GBV), while regarding recovery percentage I assumed to recover 80%, since for some reason at a certain moment the debtor may no longer receive the salary. One position is subject to foreclosure but I do not have the data concerning the province of belonging and therefore I exclude it from the analysis.

(*B*) The out-of-court debt recovery procedure avoids the burden of costs and time of legal proceedings, but it requires the borrower's cooperation. The servicer company or the legal office try to agree a recovery plan with the debtor via email, telephone and, in some cases, direct contact with an official. If they reach an agreement and the debtor becomes available for payment, immediate or in instalments, the legal office or servicer company will do all the necessary to safeguard the creditor and guarantee compliance with agreements. For example if more time is granted, the agreement with the debtor could include more guarantees such as: debt securities, pledges, mortgages, etc. In this case, it's important to carry out economic/capital analysis to verify the real economic conditions of the debtor. Through the out-of-court agreements, creditor and debtor must absolutely find a convenient solution for both. The solutions are basically two. The first one is the attempt to close the practice through an agreement in full and final settlement; the second one, the most used, is the predisposition of a recovery plan. In this way the debtor has the possibility to repay his debt through a continuous payment over time of an agreed amount. It is important that the creditor understands and perceives the borrower's real needs and conditions in order to find a good deal for both. In fact, a lender in the setting up of a recovery plan must basically focus on two main factors: sustainability of the instalment and time.

Agreement in full and final settlement is basically a percentage reduction of debt. Debtor and creditor agree on a payment called "of the balance" because the debtor

pays a smaller amount than the outstanding debt. It is then defined "removal" because the creditor, after the payment's receipt, will lose the residual unpaid debt and at the same time he declares that he no longer has any reimbursement for the remainder. The creditor issues a letter of discharge in which he declares that he will not demand anything from him. The lender usually accepts an agreement in full and final settlement when the debtor fails to cope with a fixed monthly return since he has no income, either a pension or a salary. The lender prefers to receive a lower but certain amount of money rather than undertake a long and more laborious credit recovery activity. Some positions (3, precisely) in the portfolio have been declared closed through an agreement in full and final settlement, and for this reason I do not consider them in the analysis. Estimating the duration of agreements is not easy because it depends a lot on the specific situation between customer and bank and cases can be very varied. Since I do not have this data I assumed the average duration of out of court agreements equal to 2 years. The recovery amount of the agreements is greater than legal procedures and therefore I assumed it equal to 50%.

(*C*) There are no procedures or agreements in place for 4531 positions. This means that the debt is slowly paying back and hence I suppose to recover a certain percentage of GBV in the coming years. The year by year recovery amount depends on the vintage analysis of positions. In particular, more positions are "old" (they became bad debts many years ago) and less is the recovery amount in the following years. For this reason, I expect to recover in the next 7 years a certain percentage of GBV of positions that defaulted in the last seven years. As recovery rates I consider the values listed in Table 3.7 because they have been applied to similar portfolios:

Years	1	2	3	4	5	6	7	Total
Recovery rate per year (2016-2009)	9,5%	13,5%	5,7%	2,9%	1,7%	1,2%	0,2%	34,7%

Table 3.7: Recovery rates for the years 2009/16

The costs considered in the analysis concern the variable servicer fees, which depend

Cluster GBV	*Servicing fees Unsecured*
0 € - 10.000 €	12,2 %
10.001 € - 50.000 €	12,2 %
50.001 € - 100.000 €	10,5 %
100.001 € - 300.000 €	10,5 %
300.001 € - 500.000 €	8,5 %
500.001 € - 1.000.000 €	8,5 %
1.000.001 € - 100.000.000 €	8,0 %

Table 3.8: Servicer's fee

on the single position recovery amount, adjusted to work volumes and type of credit (Table 3.8, p. 141)

In order to get the value of the fee to be applied in the analysis I made a weighted average on GBV of the fees applied on each position. I got 10.3%.

With the reduction of expected recovery resulting from the deduction of the above-mentioned expenses, we can obtain the net recoverable amount. In order to get the expected cash flow for the positions to date, the result should be discounted at a certain discounted rate because I have estimated a forecast timing different from the present time. As we have seen, the investor uses the Internal Rate of Return (IRR) to actualize future flows. IRR in technical terms is the return of an investment. Mathematically, it is defined as the discount rate i which makes the net present value of cash flows equal to 0. In my analysis I assume it equal to 15% because it is the average target return of investors on the market.

3.4 Empirical results

Regarding the positions for which there is a slow debt payback I obtained the results shown in Table 3.9, p. 142.

Future cash flows are expected recoveries of positions year by year. The servicer fee cost is 10,3% of the gross recovery value. In this way I get the Net Cash Flow for each year. In order to actualize values, I define the discount factor as:

$$\text{Discount factor} = (1 + \text{IRR})^{-t} \tag{3.1}$$

Years	2017	2018	2019	2020	2021	2022	2023
Cash Flows	8.075.763,51	3.368.928,17	1.840.421,11	1.037.767,14	563.435,53	109.846,82	2.199,60
Servicer Fee	831.803,64	346.999,60	189.563,37	106.890,02	58.033,86	11.314,22	226,56
Net Cash Flows (NCF)	7.243.959,87	3.021.928,57	1.650.857,74	930.877,12	505.401,67	98.532,59	1.973,04
Timing (t)	1	2	3	4	5	6	7
Discount Factor	0,87	0,76	0,66	0,57	0,50	0,43	0,38
Net discounted cash flows	6.299.095,54	2.285.012,15	1.085.465,76	532.232,02	251.273,95	42.598,36	741,74

Table 3.9: Cash flows

By multiplying the NCFs for the discount factor I get discounted cash flows and adding these, I obtain the value of NPV (price) and, consequently, price/GBV ratio (see Table 3.10, p. 143).

In order to measure the timing to be applied on the analysis of positions subject to out of court agreements and procedures I made a weighted average on GBV of the timing of different positions. I got 3,89 years. The results are shown in Table 3.11, p. 143.

By combining the two analysis, it is possible to obtain the overall portfolio valuation, summarized in Table 3.12, p. 143.

The price/GBV ratio obtained is aligned with the market trend since on unsecured portfolios it usually varies between 5% and 8% of GBV. Profit for the investor is given by the sum of the expected recovery for the next years (NCF) less the purchase price of the NPL portfolio. In this case it is equal to € 3.907.360,82.

Results	IRR = 15 %
Net Present Value (NPV)	10.496.420
GBV	146.256.499

Table 3.10: Slow debt payback positions

Results	IRR = 15 %
Timing t (years)	3,89
Cash Flows	2.524.351,48
Servicer Fee	260.008,20
Net Cash Flows (NCF)	2.264.343,27
Discount factor	0,58
Net Present Value (NPV)	1.314.093,54
GBV	25.243.514,77

Table 3.11: Positions subject to agreements and procedures

Total Results	IRR 15%
Net Present Value (NPV)	11.810.513,05
GBV	171.500.014,04
Price(NPV)/GBV	6,89%
Profit	3.907.360,82

Table 3.12: Portfolio global results

3.4.1 Sensitivity analysis

The variation of only one above assumptions can significantly modify the results obtained. It is appropriate to carry out a sensitivity analysis to verify and analyze the effects on the results of the model induced by changes in the values of input variables.

It aims to answer questions like: how does the current value of cash flows change with the time horizon and the recovery rate? And whether it would change the latter together with the IRR required by the investor?

The portfolio analysis under consideration is strongly linked to recovery time, recovery rate and IRR, as these are based on methodological assumptions. I considered a 2-year time span and a recovery rate ranging from -10% to + 10% compared to the current one. I changed the IRR from 9% to 18%. To carry out the sensitivity analysis I built a sensitivity console to change the values of the variables considered. The results are shown in Table 3.13, on p. 144.

Considering the recovery-timing analysis, seen in Table 3.15, p. 146, the present value of cash flows has a decreasing trend as the recovery process duration increases: we would obtain the largest recovery by decreasing by 2 years the timing and increasing recovery rate by 10%. In this case NPV would increase by just over 5.000.000 while there would be a 45% increase of price/GBV ratio.

If, on the other hand, we keep the recovery rate constant, taking just one more year becomes relevant: NPV decreases by 13%. Employing two years more for positions recovery means giving up about 2.880.000. The high timing impact is also confirmed by timing-IRR analysis (Table 3.16, p. 147). In this case keeping the latter constant spend two years more makes the price/GBV ratio decrease from 6,89% to 5,21%.

The net present value of expected recovery flows decreases with recovery rate de-

Sensitivity Console	Change
IRR Sensitivity	0%
Recovery Rate Sensitivity %	0%
Timing Sensitivity (years)	0
Timing factor	0,5

Table 3.13: Sensitivity console

crease and discounted rate (IRR) increase. By keeping the discount rate constant, estimated recoveries increase as the recovery rate increases because the recovery percentage increases in the event of debtor default (Tabel 3.14, p. 145).

In particular, a 10% increase in the recovery rate leads to an increase of 1.145.982 of the NPV and an increase of 9,5% of the Price/GBV ratio. Regarding IRR, a change of up to 18% does not cause a large variation of NPV: it decreases by about 570.000 in both sensitivity analysis. A more substantial variation in IRR, however, implicates a significant change. In fact, by varying it up to 9%, we would obtain an NPV increase of 1.320.281.

Portfolio analysis allows us to highlight some features related to NPLs problem. First, unlike all other financial assets, Non Performing Loans do not have their own cash flows: they coincide with the recovered credit, the value of which is more difficult to evaluate and occurs with a forward-looking timing, and therefore uncertain. The valuation of each individual portfolio therefore requires the management of all flows subsequent to transaction: from the price payment and sums due, to the management of collections.

NPV	9,00%	12,00%	15,00%	18,00%
-10%	11.850.255	11.224.476	10.658.280	10.144.017
-5%	12.491.409	11.831.893	11.235.180	10.693.205
0%	13.130.794	12.437.647	11.810.513	11.240.914
5%	13.768.417	13.041.742	12.384.283	11.787.146
10%	14.404.283	13.644.185	12.956.495	12.331.908

Price/GBV	9,00%	12,00%	15,00%	18,00%
-10%	6,91%	6,54%	6,21%	5,91%
-5%	7,28%	6,90%	6,55%	6,24%
0%	7,66%	7,25%	6,89%	6,55%
5%	8,03%	7,60%	7,22%	6,87%
10%	8,40%	7,96%	7,55%	7,19%

Table 3.14: Recovery rate-IRR sensitivity analysis

NPV	-10%	-5%	0%	5%	10%
-2,0	14.095.575	14.858.526	15.619.404	16.378.214	17.134.964
-1,5	13.144.192	13.855.647	14.565.169	15.272.763	15.978.436
-1,0	12.257.022	12.920.458	13.582.090	14.241.925	14.899.969
-0,5	11.429.732	12.048.389	12.665.364	13.280.664	13.894.293
0,0	10.658.280	11.235.180	11.810.513	12.384.283	12.956.495
0,5	9.938.897	10.476.860	11.013.360	11.548.403	12.081.994
1,0	9.268.069	9.769.722	10.270.011	10.768.942	11.266.517
1,5	8.642.519	9.110.313	9.576.835	10.042.090	10.506.081
2,0	8.059.191	8.495.411	8.930.445	9.364.297	9.796.971

Price/GBV	-10%	-5%	0%	5%	10%
-2,0	8,22%	8,66%	9,11%	9,55%	9,99%
-1,5	7,66%	8,08%	8,49%	8,91%	9,32%
-1,0	7,15%	7,53%	7,92%	8,30%	8,69%
-0,5	6,66%	7,03%	7,39%	7,74%	8,10%
0,0	6,21%	6,55%	6,89%	7,22%	7,55%
0,5	5,80%	6,11%	6,42%	6,73%	7,04%
1,0	5,40%	5,70%	5,99%	6,28%	6,57%
1,5	5,04%	5,31%	5,58%	5,86%	6,13%
2,0	4,70%	4,95%	5,21%	5,46%	5,71%

Table 3.15: Timing-recovery rate sensitivity analysis

NPV	9,00%	12,00%	15,00%	18,00%
-2,0	15.600.697	15.601.784	15.619.404	15.651.848
-1,5	14.942.758	14.742.300	14.565.169	14.408.694
-1,0	14.312.566	13.930.164	13.582.090	13.264.278
-0,5	13.708.952	13.162.768	12.665.364	12.210.758
0,0	13.130.794	12.437.647	11.810.513	11.240.914
0,5	12.577.020	11.752.472	11.013.360	10.348.100
1,0	12.046.600	11.105.042	10.270.011	9.526.198
1,5	11.538.551	10.493.278	9.576.835	8.769.576
2,0	11.051.927	9.915.216	8.930.445	8.073.049

Price/GBV	9,00%	12,00%	15,00%	18,00%
-2,0	9,10%	9,10%	9,11%	9,13%
-1,5	8,71%	8,60%	8,49%	8,40%
-1,0	8,35%	8,12%	7,92%	7,73%
-0,5	7,99%	7,68%	7,39%	7,12%
0,0	7,66%	7,25%	6,89%	6,55%
0,5	7,33%	6,85%	6,42%	6,03%
1,0	7,02%	6,48%	5,99%	5,55%
1,5	6,73%	6,12%	5,58%	5,11%
2,0	6,44%	5,78%	5,21%	4,71%

Table 3.16: Timing-IRR sensitivity analysis

Conclusion

The problems associated with Non Performing Loans in Italy in recent years have exploded, because NPLs have been experiencing a period of worrying growth, until at least 2015. As we have seen, in 2016 there has been a trend reversal which, hopefully, might be the starting point for a slow recovery of the banking system. In 2016, the flow of new bad debts has been considerably reduced and it has come back close to pre-crisis levels. If we go into the details of the individual components of impaired loans, the reduction of "unlikely to pay" or "past due" loans has been particularly relevant, in a context in which even new bad debts in general are decreasing.

The deteriorated credit performance is strongly correlated with the real economic trend. A recession period was accompanied by a constant increase in the level of NPLs; speculatively, during times of low growth, there was a substantial stability of NPLs stock. It is important to have appropriate regulatory frameworks in place, in line with the times and phenomenon's evolution. Today, the opportunities offered by the market are proportionate to the ability to handle information more or less correctly: revenue expectations on credit recovery operations are closely related to the way in which new regulations are transposed by those operators strictly active on the market (loan managers, legal entities, servicer, hedge funds, etc.).

Finding a solution to the problem of deteriorated credits does not only mean saving the most fragile Italian banks, but also relaxing a great problem exploded in recent years which has affected the country's economy. For these reasons, it is necessary to develop a unique, orderly and complete legislation on NPLs that will enable to precisely identify the role of individual operators in the market and the tools thanks to which the problem might be solved in the medium term.

In addition, it is necessary to reduce the pricing gap among sellers and buyers (the so called bid-ask spread): as we have seen, investors ask for higher returns against the higher risk to which they are exposed and this affects portfolio valuation, subject to disposal.

The removal of very old NPLs from banks' balance sheets (for example, over five years), the liquidation of non-viable businesses (which do not generate cash flow), and the restructuring of those which, although in difficulty, are considered capable of generating cash flows to cover the payment of interests are all measures considered important and necessary. Banks should also be required to allocate more reserves to bad debts which remain too long in the balance sheet: higher provisions and more cautious guarantees valuation would prompt banks to handle their NPLs more quickly. For this reason, the Italian government in August 2015 launched a reform on the revisions of tax credit system for bank loan losses. The new write-downs and losses (write-offs) will be deductible for tax purposes entirely and immediately (in the previous scheme they were deductible in five years). This legislative intervention removed a competitive disadvantage for Italian banks in the international comparison, as it has made less burdensome for banks the adoption of a more prudent credit assessment policies.

The availability of adequate information on the phenomenon is another important factor: the quality of bad debt management provided by banks suffers from the lack of an integrated information system. This situation, however, appears to be improving: some banking groups have recently been equipped with information systems which are able to handle information on different procedures in an integrated way and in a homogeneous manner. In perspective, a systematic archiving and timely availability of information about the mass of bad debts is crucial not only for their "active" management but also to negotiate the sale. Ultimately, it is necessary to enhance the entire credit risk management process, activate and develop effective and timely techniques and prevention and control tools to prevent the occurrence of the phenomenon through a prospective analysis which allows to assess company capacity in maintaining adequate income levels in relation to the risks to which it is exposed.

In addition to this analysis which must concern sectors and territories in which businesses operate, it is also important the development of insolvencies' forecasting models

suitable for a more accurate valuation of creditworthiness.

As we have seen from the portfolio analysis, the recovery timing greatly influences the pricing of the portfolio itself. The speed of impaired loans disposal is favoured by the adoption of new structural reforms in order to: 1) promote judicial and extrajudicial debt restructuring; 2) reduce backlogs of courts and speed up enforcement; 3) simplify and streamline bankruptcy proceedings and credit recovery activities, shortening long judicial procedures and encouraging, as an alternative, out of court agreements. In fact, there are abysmal differences between judicial procedures in different countries: for example, in Italy, a creditor's proceeding to recover mortgage, following a default of a foreclosure loan, lasts on average almost five years, while in Germany and Spain it lasts less than one year. The average length of bankruptcy proceedings in 2014 and 2015 in Italy was 7-8 years.

The reform of the legal system is one of the key aspects for the resolution of NPLs in Italy. Inefficiencies in the legal system have contributed to the aggravation of the deteriorated credit situation, instead of alleviating it. Legal reforms are necessary to face the problem: strengthening the legal framework for debt resolution is one of the key components of a comprehensive strategy to reduce NPLs and to address the excess of corporate debt.

The reforms introduced by Italian authorities had the goal of improving the efficiency of the system. Aware of the problems in the insolvency and enforcement framework, they have done a series of significant reforms of the legal framework; since the major insolvency reform of 2005, there have been additional reforms of the Italian insolvency framework in 2007, 2009, 2012, 2015, and 2016. This series of reforms has introduced a lot of changes to the original insolvency law ("legge fallimentare" of 1942), whose initial design is difficult to recognize nowadays. The reforms have tried to increase the speed and efficiency of insolvency and enforcement procedures. The last two reforms are:

- Decree Law of June 27, 2015, converted by Parliament into a Law on August 6, 2015;
- Decree Law 59/2016.

The measures contained in the August 2015 Law Decree about new bankruptcies proceedings and new Legislative Acts are effective for the disposal of bad debts and take-off

of a real market for impaired loans. The measures introduced allowed the partial removal of legal and fiscal barriers that contribute to curbing the development of a deteriorated credit market in Italy, thus facilitating a more efficient litigation. In particular, amendments to the Bankruptcy Law and the Code of Civil Procedure help to significantly reduce recovery times (bankruptcy procedures from more than six years to three to five years and foreclosures procedures from four to three) and to increase the effectiveness of bankruptcy and foreclosures procedures by increasing transparency and limiting their duration.

With regard to government interventions launched in 2016, the state-backed guarantee on securitized bad loans (GACS) and the launch of an alternative investment fund called “Atlante” have a particular relevance. Overall, the GACS solution seems to be a “market” solution because public intervention seems superfluous: it is likely that such a mechanism will not solve the problems of Italian banks, which will decrease just a small portion of impaired loans, continuing to have adequate capital buffers and absorb losses due to write-downs, with the risk of need to raise capital, merge or be acquired by larger banks. At present GACS has been used only by Banca Popolare di Bari but other banks are planning to sell NPLs through its use. The GACS has been the subject of discussion between the Italian Government and the European Commission as the measure is due to expire in August. The objective would be to extend the measure for another 18 months until February 2019. A three-years horizon would allow the Guarantee to help the Italian banking system in reducing bad debts at a physiological level with low costs from the point of view of public finances since the guarantee can only intervene on senior (more secure) tranches of securitized NPLs.

The further measure aimed at solving the problem of bad debts and supporting the capital increases required by the Supervisory Authority was the launch of a new alternative investment fund called "Atlante". As we have seen, the fund intervened to rescue the capital increases of Banca Popolare di Vicenza and Veneto Banca, while the residual capital created the “Atlante 2” fund, which aims to raise 3,5 bn by July 2017. The objective of new fund is to invest in mezzanine and junior tranches of NPL securitization transactions.

The introduction by EBA of a uniform classification of impaired loans entails a num-

ber of benefits. It is used for reporting, prudential and disclose purposes. The use of a single definition of NPLs for various purposes meets different needs:

- Limitation of costs incurred by intermediaries;
- Strengthening market discipline as investors make their own savings allocation decisions on the basis of a representation of assets quality provided in the balance sheet equal to that produced for supervisory purposes;
- Sound and prudent management and effectiveness of supervisory action, also considering the link between provisioning, operating profit and capital adequacy.

Valid instruments for bringing back insolvent companies to a well performing situation could be also Corporate Restructuring Vehicles (CRVs), especially for small Italian mid-sized companies. These vehicles other than remove problematic assets from banks' balance sheets, invest directly into the insolvent company, restructure debt and reorganize business.

Appendix

Annotated bibliography

In this Appendix I list and comment on the main documents and bibliographical sources which I used for my research. I had direct access to all of them and here I wish to summarize the content of each one, with a special attention to the aspects connected to the topics under discussion in my work.

- Lossani, Marco et al. 2015. "*Osservatorio Monetario 2/2015.*" Milano: Università Cattolica del Sacro Cuore.

  This long report is split into 4 chapters, which discuss, in order:

  1. The determinants at the micro- and macro-economic level which had an impact on the growth of NPL. A review of the existing literature is given and It is shown that, at the macroeconomic level, the rate of variation of GNP seems to be the main determinant, while, at the micro-economic level other factors play a crucial role.
  2. This chapter analyses the connection between the level of NPL and the institutional and legal normative concerning bankruptcies and company crisis.
  3. The third chapter contains a comparison among the different solutions proposed for managing NPL, at the national and international level. The constitution of so-called bad banks in Italy and its difficulties are the main focus of this section.

4. The final chapter contains an interesting presentation of the planned measures to be taken within the main Italian banking groups for dealing with the issue of NPL.

- Carluccio, E., and V. Conca, editors. *Il mercato dei NPLs: tra domanda e offerta*. Cultura d'impresa. Egea, 2017.

  This is a recent book, formed by a collection of essays, written by many Authors, devoted to the NPL problem. It is the most comprehensive and broad reference to which I had access and from which I could obtain data and ideas. Indeed, for the part concerning the analysis of the Italian situation this was for me a very important, but not unique, source of information.

- Giudici, G. and F. Marchetto. *La gestione dei rischi durante la crisi: lesson learnt*. McGraw-Hill, 2013.

  This book collects the experience of some important professionals who lived through the financial crisis. The evolution of risk management is described, and in particular the strategies which evolved in order to improve the response of financial institutions.

- Aiyar, Shekhar, Wolfgang Bergthaler, Jose M. Garrido, Anna Ilyina, Andreas Jobst, Kenneth Kang, Dmitriy Kovtun, Yan Liu, Dermot Monaghan, and Marina Moretti. 2015. "*A Strategy for Resolving Europe's Problem Loans*." IMF Staff Discussion Note. International Monetary Fund.

  A comprehensive discussion of the problem of NPL in Europe is presented in this working paper by the IMF. It is first argued that high NPL are a significant problem, weighing down growth and productivity, raising funding costs especially for small firms. The problems which delay the resolution of the NPL crisis are listed: issues related with legal systems, information obstacles, tax obstacles. Based on the analysis of previous crisis a comprehensive strategy is recommended, based on better supervision, reforms to insolvency regimes and developing markets for distressed

debts. It is suggested that such reforms should be coordinated among all different stakeholders. All proposals put forward are discussed at length.

For supervising policies the main proposals are: a more conservative approach by banks to collateral evaluation; a more prudential oversight by supervising agencies; more open disclosures policies about NPL portfolios: a strengthened sanctions regime.

Reforms of debt enforcement regimes are also proposed, and in particular an improvement of insolvency laws. Moreover, external NPL management debt markets should be developed, through structure finance techniques, asset management companies and other special-purpose vehicles, which are briefly discussed.

- Ciavoliello, L.G., F. Ciocchetta, F.M. Conti, I. Guida, A. Rendina, and G. Santini. 2016. "*Quanto valgono i crediti deteriorati?*" Note di stabilità finanziaria e vigilanza. Banca d'Italia.

  It is well known that a reason for the lack of a proper secondary market for NPL in Italy is due to a significant difference between the assumed balance value and the amount investors are willing to pay or are offering. An investigation is carried out on the reasons for this discrepancy. It is also noted that recovery time is a fundamental factor, and it is shown, through appropriate simulations, that a two year reduction of the recovery time would increase the market value of NPL by approximately 10%.

- Pascuzzi, Fedele, Patrizia Lando, and Lucia De Vecchi. 2016. "*The Italian NPL Market. The NPL Volcano Is Ready to Erupt.*" PwC Report. PwC Italia.

  The report is completely focused on the Italian situation, up to 2016. The macroeconomic scenario is first analyzed and a significant flow of investments into the Italian property market is forecasted. The new law n. 49/2016 about "Garanzia Cartolarizzazione Sofferenze" (GACS) is described and discussed. It is stated that the measures put in place are valid and beneficial but it will take time for them to be observed and factored into the valuation model used by investors.

The regulatory reforms implemented in the Italian market since 2015 are listed, with particular attention to the Decree n.53/2015. An overview of the situation of well-known banks strongly involved with the NPL issue is given and some critical issues are discussed, in particular in relation with the creation of the Atlante Fund. This report contains quite a few quantitative graphs, limited to the top 10 Italian Banks, about NPL trend, net NPL, net NPL/equity ratio.

The NPL Italian servicing market is split into a group of special servicers, which are listed. It is noted that third party servicing platforms will benefit from both private market NPLs and GACS guaranteed transactions. This report predicts that such transactions will increase significantly. Overall, this report is a useful source of aggregated data on the situation of the top Italian banks on the NPL problem.

- Pascuzzi, Fedele, Pier Paolo Masenza, Katia Mariotti, Vito Ruscigno, and Lucia De Vecchi. 2016. "*The Italian NPL Market - Positive Vibes.*" PwC Italia (`http://www.pwc.com/it/npl`).

  The report notices that the Italian banking market continues to experience challenges surrounding asset quality, capital adequacy and profitability. Moreover, the European Banking Authority stress tests results highlighted Italy's banking problems. The Government has implemented several reforms including the GACS and sponsorship of Atlante fund. Delayed implementation of such reforms resulted in true sales volume being lower than expected. However, 2016 total volume of disposed Bad Loans portfolios is foreseen to increase due to portfolio securitizations assisted by GACS.

  The conclusion is that transactions are expected to reach a high volume in 2017 (about €50bn), and are likely to include bad loans as well as other NPEs (such as Unlikely to Pay and forborne). Secured loans and loans to SMEs and Corporates are also expected to represent a significant portion of the assets sold.

- Garrido, José, Emanuel Kopp, and Anke Weber. 2016. "*Cleaning-up Bank Balance Sheets: Economic, Legal, and Supervisory Measures for Italy.*" IMF Working Paper. Vol. 16. International Monetary Fund.

As the Authors themselves state in the Abstract "this paper examines the Italian banking system's NPL problem, which ties up capital, weighing on bank profitability and authorities' economic reforms. It argues for a comprehensive approach, encompassing economic, supervisory, and legal measures. The authorities' reforms are important steps toward this end. The paper describes measures that could further support their actions."

- Jenke, Andrew, and Nicholas Colman, eds. 2016. "*European Debt Sales*". KPMG Report. KPMG International.

  The whole European situation is analyzed here by KPMG. A one-page analysis describes the situation of each EU Country, so that the report does not go in too many details. As for Italy, it is noted (as elsewhere) that key factors are: (1) limitations in the quality of data necessary for investors; (2) insufficient provision coverage by Italian banks and constraints on directing additional capital to increase coverage ratios; (3) institutional uncertainties; (4) foreclosure times of three to five years as opposed to one to two years for other EU countries.

  The actions taken by the Italian Government in 2015 are briefly summarized but no explicit opinion is given on them and no forecast is presented.

- Edmonds, David, ed. 2016. "*Deleveraging Europe 2015-2016*". Deloitte LLP.

  The report gives a wide overview of the loan market in Europe. Its focus is mainly on this aspect of the NPL crises, with no emphasis on possible solutions, both financial or institutional. For each country, a table is presented with quantitative indications about the major players in the NPL market. In particular, for Italy, a scenario with improved bank profitability and an increase in loan sales is forecasted for 2016, due to government steps taken in 2015.

- EBA. 2016. "*EBA Report on the Dynamics of Non-Performing Exposures in the EU Banking Sector.*" European Banking Authority.

  This report analysis the situation of the dynamics, dispersion and drivers of non-performing exposures in the EU banks, as a result of the recommendations issued

by EBA in 2013. It is based on the EBA definition of NPL and covers 166 banks from 2014 until march 2016. The report is comprehensive and gives significant data, carefully discussed.

- Bholat, David, Rosa Lastra, Sheri Markose, Andrea Miglionico, and Kallol Sen. 2016. "*Non-Performing Loans: Regulatory and Accounting Treatments of Assets.*" Bank of England. (`http://www.bankofengland.co.uk/research/Documents/workingpapers/2016/swp594.pdf`).

  The motivation of this long work is the observation that no common definition of NPL exists. This report documents the divergence about such definition among countries and financial systems. This important research takes into consideration the multidisciplinary aspects of legal, economical, statistical and strategic issues related with NPL, taking an integrated approach. The conclusive recommendation is that a common approach to NPL should complement all initiatives for improved early recognition of credit losses.

- ABI. 2017. "*Outlook ABI-Cerved sulle nuove sofferenze delle imprese.*" ABI - Associazione Bancaria Italiana.

  This is perhaps the most recent (2017) official report on the problem of NPL, completely focused on the Italian situation about which it is rich in data and graphs. The key observation, based on data collected in 2016, is that the ratio of credit that banks must classify as NPL (with respect to total credit) has decreased, almost by one percentage point with respect to the previous year. It is also noted that credit which is classified as "new NPL" as a percentage of total credit is decreasing, too. A further improvement is forecasted for 2017 and, interestingly, the diminishing ratio of NPL seems to be seen all over the spectrum of diverse economic sectors, but not uniformly, interestingly. Thus, a conclusion of this report is that even if risk is diminishing it is becoming more and more polarized.

- European Central Bank. 2016. "*Draft ECB Guidance to Banks on Non-Performing Loans.*" European Central Bank.

This important document contains predominantly qualitative elements, with the stated aim of extending the scope of the guidance and recommendations based on the continuous monitoring of developments concerning NPLs. The ECB plans to place a stronger focus on enhancing the timeliness of provisions and write-offs. While it is acknowledged that addressing non-performing loans will take some time and will require a medium-term focus, the principles identified are proposed as a basic framework for conducting the supervisory evaluation of banks. The ECB expects banks to apply this guidance proportionately and with appropriate urgency, in line with the scale and severity of the NPL challenges they face.

- Jassaud, Nadège and Kenneth Kang 2015. "*A Strategy for Developing a Market for Nonperforming Loans in Italy*" International Monetary Fund, Working Paper WP/15/24.

  This report by the IMF contains a compact but detailed analysis of the Italian situation. The Authors observe that Italian banks (at the time of writing) are holding a substantial amount of bad debt, which has been delinquent for some years. Such NPL weigh on bank evaluation and are responsible for raising the cost of funding and making the banks vulnerable to shocks. The report recommends the creation of a viable debt market, which would have broad benefits. The key ingredients would be: “remove fiscal disincentives for write-offs, strengthen provisioning practises, improve insolvency framework and out-of-court agreements”.

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