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DETERMINANTS OF NON-PERFORMING LOANS: EMPIRICAL EVIDENCE FROM THE ITALIAN BANKING SYSTEM

RELATORE:

CH.MO PROF. DR. DR. H.C. REINHARD H. SCHMIDT
CH.MO PROF. DR. BRUNO MARIA PARIGI

LAUREANDO: SAVERIO DI SIENA

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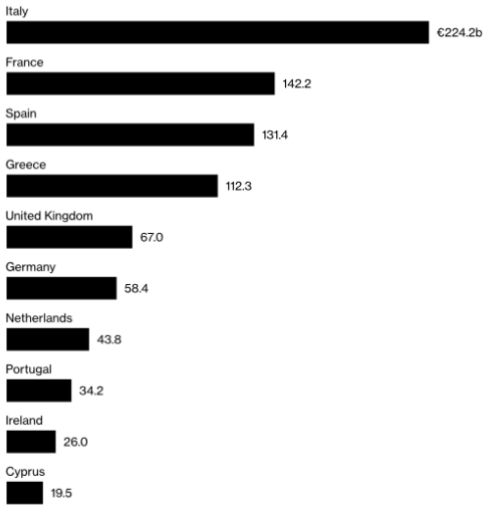
INTRODUCTION

The aim of the research is to present the severity of the non-performing loans issue in Italy and to determine the drivers of these loans in the banking sector.

After the financial crisis, the macroeconomic recession and bank-specific factors of European banks caused an increment of non-performing loans in the system. In Europe, the level of NPLs reached its peak in 2012 with a gross NPL ratio that increased from 2.80 per cent in 2008 to 7.48 per cent in 2012. Although it is a pan-European issue, the problem is particularly severe in the countries that were affected hardest by the sovereign debt crisis. Specifically, Italian banks are sitting on Europe's largest pile of non-performing loans. According to the World bank open database, in Italy the banks' non-performing loans to total gross loans have grown at around 20 per cent annually since the beginning of the crisis and reached the peak in September 2015 at 18.64 per cent, having negative impact on the lending activity and consequently on the real economy.

Figure a.1 – Level of NPLs in European countries (reference data: February 2018)



Source: Bloomberg, 2018

In this economic scenario, it is necessary to define which are the possible causes of such a level of doubtful loans. Indeed, the outline of determinants can have crucial policy implications. The confirmation of macroeconomic variables is important in terms of macroprudential policy while bank-specific indicators can be used by microprudential supervisors as predictors to prevent future non-performing loans.

The present work is organized as follows.

Chapter 1 provides a general theoretical overview of non-performing loans, with instances from Europe. It describes the European and Italian definition and classification of doubtful loans and, after a presentation of the level in Europe, it shows the impact that this phenomenon has on bank's profitability and on the whole economy. Furthermore, the second part of the chapter presents a summary of the guidance on non-performing loans provided by the European Central Bank and investigates all the possible alternatives a bank has to reduce the level of the NPL portfolio. Finally, the chapter ends with a brief presentation of structural impediments to easily resolve NPLs.

Chapter 2 focuses the attention on the Italian banking system. First, the thesis presents the general characteristics of the banking system and consequently leads the dissertation to the description of the non-performing loans in the sector. Once the presentation is completed, the research investigates the effectiveness of the NPL management in Italy, considering various impediments, and provides a description of the different strategies implemented by the three largest Italian credit institutions (Unicredit, Monte dei Paschi di Siena and Intesa Sanpaolo). In conclusion, the responses and reforms promoted by the government to address the issue are carefully clarified.

Finally, chapter 3 presents the empirical analysis on the determinants of non-performing loans in the Italian banking system. The research is conducted in according to a GMM dynamic panel model and the analysis studies the impact of possible determinants on the creation of toxic loans and attempts to confirm causes already verified for other banking sectors. The chapter presents and explains the results considering the country's peculiarities and it investigates possible regulatory implications of the study.

CHAPTER 1 – OVERVIEW OF NON-PERFORMING LOANS

1.1 DEFINITION AND CLASSIFICATION

1.1.1 EUROPEAN REGULATION ON NON-PERFORMING LOANS

Prior to 2013 there was not a comprehensive definition of non-performing and forborne exposures, but different classifications have been defined across European jurisdictions. In the specific, nine EU jurisdictions developed national definitions while other eleven countries assumed notations directly related to the concept of default and impairment.

Categorization of banks' exposure is fundamental for different entities as supervisors, banks and markets. Without a clear and comparable definition is difficult for the supervisory authority to assess credit risk based on a common benchmark and coordinate different intervention to mitigate possible risks when an EU-wide assessment of asset quality is conducted. Moreover, no harmonization in these concepts creates issues at the bank level as well, with a complex real assessment of individual credit risk.

In the classification of non-performing loans, banks had high level of discretion due to different accounting and reported standards and because of the implementation of these standards at the institutional level. In addition, institutions used to rely on their own definition of forbearance measures and had different practices in the classification of these exposures.

To reduce this discretion in the models validated by the banks of different countries, in 2013 the European Banking Authority (EBA)[1] published the first Implementing Technical Standards on Supervisory reporting on forbearance and doubtful exposures, consequently approved by the European Commission in the European regulation no. 227/2015.

The Implementing Technical Standards aims to create a harmonized framework and to provide a guidance on criteria for credit categorization across the European Union. This regulation, together with other tools, addresses supervisory authorities and single institutions to improve their capacity to

[1] The European Banking Authority is an EU authority that works to guarantee an effective prudential regulation and supervision in the European Banking sector and, together with the European Securities and Markets Authorities (ESMA), the European Insurance and Occupational Pensions Authority (EIOPA) and the European Systemic Risk Board (ESRB), is part of the European System of Financial Supervision.

carry out analysis, to facilitate more coordinated and consistent assessment of asset quality issues and finally to conduct the EU-wide asset quality assessments.

In literature, the commonly used term for these issues is "Non-performing loan", but the EBA proposes in this publication the term "Non-performing exposure" where "Exposure" includes all debt instruments and off-balance sheet exposures without taking into account held for trading exposures.

Specifically, debt instruments include loans and debt securities while off-balance sheet exposures comprise loan commitments, financial guarantees or other commitments given by the borrower.

According to subtitle 29, Annex V of Regulation (EU) No. 227/2015, an exposure should be considered non-performing when:

1) material exposures which are more than 90 days past due;

2) the debtor is assessed as unlikely to pay its credit obligations in full without realisation of collateral, regardless of the existence of any past due amount or of the number of days past due.

This definition is exactly associated with the Basel Committee's definition of default and it is different from the provisioning since it is regardless of the collateral. It is based on the "past due" criterion and the "Unlikely to pay" criterion, which are discussed below.

For this purpose of the template, an exposure is considered past due when any amount of principal, interest or fee has not been paid at the date it was due. Based on the EBA concepts, a loan can be defined as paste due only if the payment from the borrower is mandatory and defined by a legal contract. For instance, non-payment of discretionary interest on an additional Tier 1 capital instrument does not constitute a past due case. Once the mandatory obligation is confirmed the days that are past due can be started to be counted as soon as any principal or interest is not paid at the date it was due[2].

Instead, an exposure is considered unlikely to pay when the borrower is unlikely to pay without the execution of the collateral. The unlikeliness to pay is defined in paragraph 145(b) of Annex V of Commission Implementing Regulation (EU) No 680/2014 and rely less on quantitative criteria. Therefore, a bank has to define a homogeneous internal definition for all the parts of the group. A bank should repeatedly define the creditworthiness of borrowers and collect data regarding the

[2] When there is a delay in the payments, EBA does not define an order of priority but banks may usually use a specific criterion, as FIFO or LIFO, to set a priority and define a scheme for payment of interests or principal, but it must not contradict any other law or regulation. For further information see the ITS on supervisory reporting on forbearance and non-performing exposures.

customer. In case there is unreasonable delay in providing the information to the bank, this can be seen as a negative sign.

Moreover, exposures can be defined as non-performing on an individual basis ("transaction approach") or by considering the overall exposure of the borrower ("debtor approach"). Indeed, if a bank has on balance sheet exposures to a debtor that are past due by more than 90 days and the gross carrying amount of which represents more than 20% of the entire amount of all on balance sheet exposures to that debtor, all exposures to that debtor should be considered as non-performing, taking into account the off-balance sheet obligations.

Finally, the document considers when an exposure is no longer non-performing and can be reclassified as performing, differencing if a forbearance measure is extended or not.

In general, an obligation may be considered to have ceased being non-performing when all the following conditions are met:

1) the exposure meets the exit criteria applied by the reporting institution for the discontinuation of the impairment and default classification;

2) the situation of the debtor has improved to the extent that full repayment, according to the original or when applicable the modified conditions, is likely to be made;

3) the debtor does not have any amount past due by more than 90 days[3].

Furthermore, the subtitle 30, Annex V of Regulation No. 227/2015 covers the forborne exposures. Forborne exposures are debt contracts in respect of which forbearance measures have been extended, where forbearance measures are concessions towards a borrower facing or about to face financial difficulties in satisfying its commitments.

The main goal of these measures is to reduce the default probability of the non-performing debtors granting them concessions in order to restore a safe situation of their debt position.

[3] In addition, when forbearance measures are extended to non-performing exposures the exposures are no longer non-performing when all the following conditions are met:
1) the extension of forbearance does not lead to the recognition of impairment or default;
2) one year has passed since the forbearance measures were extended;
3) there is not, following the forbearance measures, any past-due amount or concerns regarding the full repayment of the exposure according to the post forbearance conditions. The absence of concerns has to be determined after an analysis of the debtor's financial situation. Concerns may be considered as no longer existing when the debtor has paid, via its regular payments in accordance with the post-forbearance conditions, a total equal to the amount that was previously past-due (if there were past-due amounts) or that has been written-off (if there were no past-due amounts) under the forbearance measures or the debtor has otherwise demonstrated its ability to comply with the post forbearance conditions.

A concession refers to either of the following actions:

1) a modification of the previous terms and conditions of a contract the debtor is considered unable to comply with due to its financial difficulties to allow for sufficient debt service ability, that would not have been granted had the debtor not been in financial difficulties;

2) a total or partial refinancing of a troubled debt contract, that would not have been granted had the debtor not been in financial difficulties.

In this case, in order to increase the probability of full repayment of the debtor, a concession includes special and more favourable contractual terms and conditions that other debtors with a similar risk profile could not obtain from the same financial institution.

Examples of concessions are, for instance, the reduction of the interest rate, the rescheduling of the repayments, the extension of the loan terms, the acceptance of lower levels of collateralization or the conversion of the debt to equity.

In the past, forbearance exposures were often classified as performing, but EBA reclassified them also as non-performing in certain cases.

In conclusion, the forbearance classification shall be discontinued when all of the following conditions are met:

1) the contract is considered as performing, including if it has been reclassified from the non-performing category after an analysis of the financial condition of the debtor showed it no longer met the conditions to be considered as non-performing;

2) a minimum 2-year probation period has passed from the date the forborne exposure was considered as performing;

3) regular payments of more than an insignificant aggregate amount of principal or interest have been made during at least half of the probation period;

4) none of the exposures to the debtor is more than 30 days past due at the end of the probation period.

1.1.2 ITALIAN REGULATION ON NON-PERFORMING LOANS

The definition of non-performing loans assumed by the Bank of Italy meets the European Banking Authority standards published in the Implementing Technical Standards on supervisory reporting.

In order to harmonize the Italian regulation to the European regulation, a new classification has been adopted by the Bank of Italy in 2015 no longer considering substandard (or *incagli*) and restructured loans (or *crediti deteriorati).*

NPLs can be now classified in the three following subcategories[4].

The first category is bad loans (or *sofferenze*) which represents all exposures to debtors that are insolvent or in substantially similar circumstances because insolvency has not been declared but the financial situation is comparable to the state of insolvency.

The second category is unlikely to pay exposures (or *inadempienze probabili)* which represents all exposures where the bank believes the debtor is unlikely to meet its obligation in full unless action such as the use of collateral is taken. The classification as unlikely to pay is extended to the gross carrying amount of all balance sheet exposure to a debtor, unless it can be defined as bad debts.

Moreover, the third category is overdrawn or past due exposures (or *esposizioni scadute o sconfinanti)* which represents exposures that are overdrawn or past due by more than 90 days and for above a predetermined amount.

Finally, considering forbearance measures the Italian regulation classifies forborne exposures as all exposures to any borrower who has agreed a renegotiation of all or part of the terms of their loan. These concessions are modifications of the initial conditions and can be classified as forborne performing exposures if are related to debtors with financial difficulties or non-performing exposures with forbearance measures if are related to borrowers that are non-performing.

[4] For further details please refer to: Bank of Italy, *Matrice dei conti: Circolare n.272 del 30.07.2008.*

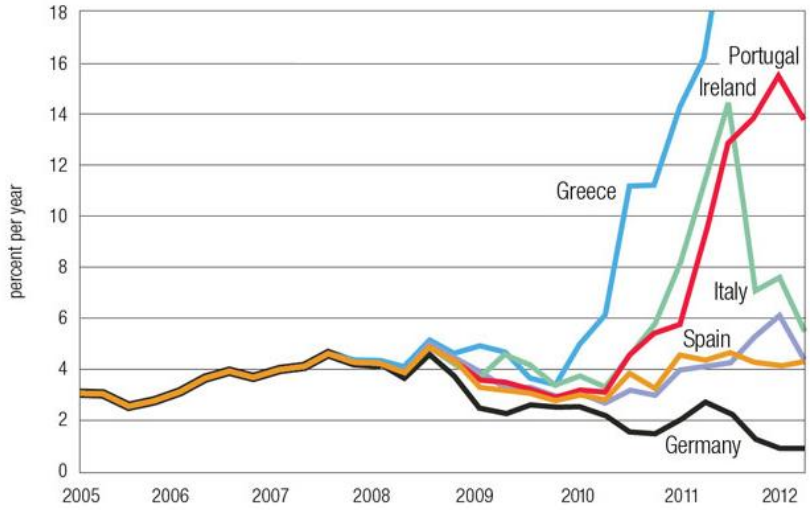
1.2 NON-PERFORMING LOANS IN EUROPE

After the financial crisis of 2007-2008 that affected the US financial system, the crash was transmitted to Europe due to the linkage that Europe and USA have in terms of financial sectors and strong dependencies on exports. During the crisis, liquidity shortage in the interbank market impacted banks creating a credit crunch framework. At the same time, precautionary savings increased while investments were postponed because of market uncertainty. World trade volumes declined in 2008 and a recession hit many developed countries all over the world.

European Union countries felt an incredible decrease of the Gross Domestic Product (GDP) with a real terms reduction by 4.4 per cent in 2009. In terms of unemployment, the rate increased from 6.9 per cent in 2008 to 8.8 per cent in 2009.

As a consequence, the financial and economic crisis had negative effects on national public accounts as well. Many countries in Europe which have already experienced high levels of public debt, increased this level again to cover public expenditures to address the crisis. Moreover, agency ratings worsened the framework downgrading their capacity to meet their obligations, creating problems for countries to finance that debt (Gentilucci, 2017). In that period, the cost of financing for these distressed countries rapidly escalated (see figure 1.1) and in Europe the economic crisis was followed by the European sovereign debt crisis in 2010-2011.

Figure 1.1 - Yields on 5-years government bonds



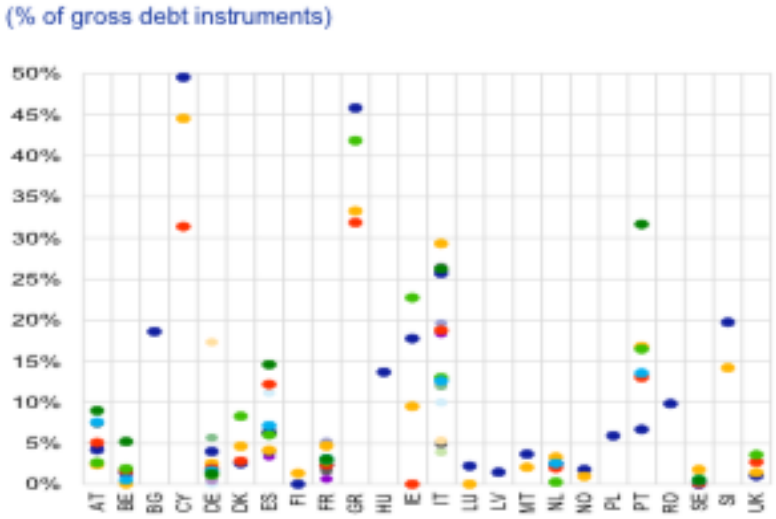
Source: Federal Reserve Bank of Minneapolis, 2013

The macroeconomic recession and bank-specific factors of European banks determined an increment of non-performing loans in the system. In Europe, the level of NPLs reached its peak in 2012 with a

gross NPL ratio[5] that increased from 2.80 per cent in 2008 to 7.48 per cent in 2012. The level of the European NPL ratio was considerable higher with respect other developed countries as US or Japan with respectively, 3.31 per cent and 2.42 per cent of NPL ratio (World bank database, 2012).

As already mentioned, this issue is pan-European[6], but the dispersion across member countries is relevant and goes from 1 per cent to circa 50 per cent (see figure 1.2). The highest level of NPL ratio is reflected in the countries most affected by the economic crisis and there is a strong presence especially in the southern countries.

Figure 1.2 - Distribution of NPL ratios within EU countries



Source: EBA Transparency exercise, 2017

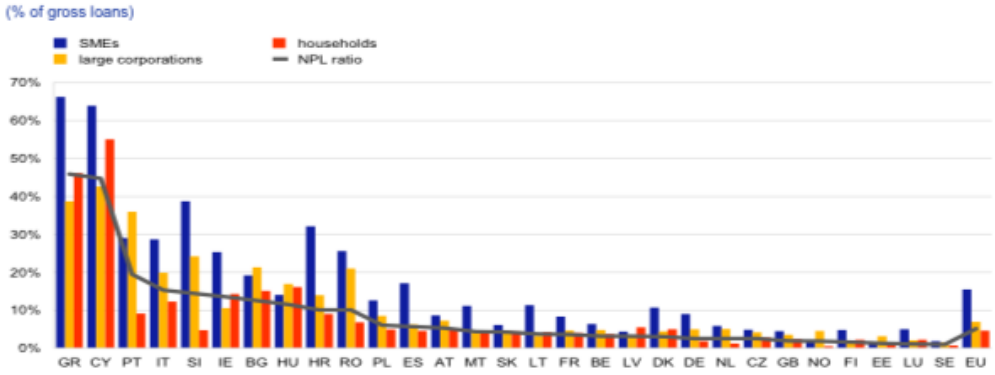
In 2017, the level of non-performing loans relevantly declined to 3.71 per cent of gross total loans, thanks to the initiatives promulgated by European Institutions in order to mitigate the problem and reflecting progress made by EU banks to clean up their balance sheets. In July 2017, the ECOFIN council agreed on an action plan to tackle non-performing loans in Europe. The plan invites different UE bodies to promote further measures to address the existing shock of NPLs and prevent future emergence and accumulation of NPLs[7]. At the European level, ECB implemented standard and non-standard monetary policies to avoid a complete meltdown of the financial system and the EU authorities acted with 40 legislative proposals, completely changing the regulatory framework with a new European supervisory authority and with new regulations as the Bank Recovery and Resolution

[5] The gross NPL ratio is the ratio between the gross level of non-performing loans over total loans. It does not include loans provisions.
[6] One-third of EU countries have a gross NPL ratio over 10 per cent. In order of descending NPL ratio: Greece, Cyprus, Portugal, Italy, Slovenia, Ireland, Bulgaria, Hungary, Romania and Croatia (ESRB, 2017).
[7] For further details please refer to "Council conclusions on action plan to tackle non-performing loans in Europe" (European Council of the European Union, 2017).

Directive (BRRD)[8]. However, the current improvement is mainly explained in an improvement of the total loans and in the decrease of impaired loans, even if the level is still unsustainable in peripheral countries where the level was high because of the prolonged economic recession and austerity. For instance, in Greece the level of NPLs continued to increase and it rose from 6.3 per cent of total loans in 2005 to 45.57 per cent in 2017. In 2017, in Italy the gross level of toxic exposures is 14.38 per cent while in Portugal is 13.29 per cent (World bank database, 2017).

Moreover, examining the distribution of toxic asset across sectors, toxic loans in the EU are mainly composed by corporate loans with SMEs (15.5 per cent) whit respect to other categories as larger corporates loans (7 per cent) or household loans (4.6 per cent)[9].

Figure 1.3 – Non-performing loan ratios by sector



Source: EBA, 2017

This data can be explained because small and medium firms are less resilient to crisis and are more bank dependent than larger corporates, which are more market oriented (ECB, 2017).

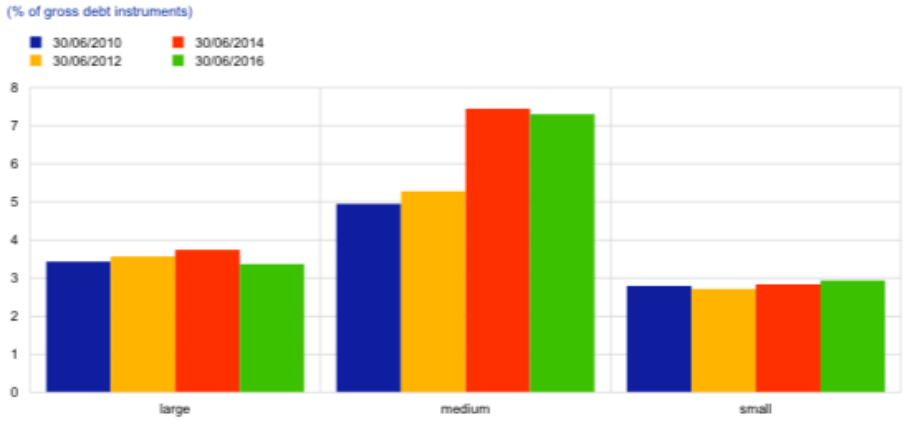
Moreover, considering improvements over the period 2014-2016, improvements for small and medium enterprises were considerably lower with respect to positive changes for larger non-financial companies. The main reason is probably explained by the higher capacity for bigger and more organized firms to adjust to recreated positive economic conditions or because they are well diversified, and they can benefit from positive developments in both the home country and abroad (EBA, 2016). In detail, according to 2017 data, the largest EU exposures are still towards the real estate sector (27 per cent of total loans), followed by the manufacturing industry (14 per cent) and wholesale and retail trade (12 per cent).

[8] The Single Supervision Mechanism (SSM) and Single Resolution Mechanism (SSR) are both pillars of the European Banking Union, which aims to create a more transparent, unified and safer European banking system (ECB, 2018).
[9] For further details, please refer to: ESRB, *Resolving non-performing loans in Europe*, July 2017.

Regarding household, the level did not significantly change in the period analysed in the EBA report and the reason could be related to the length of the recovery process for this kind of loans and the lack of an efficient legal insolvency procedure system.

Finally, as represented in figure 1.4, considering banks by size, the category of banks with the highest level of non-performing exposures are the medium-sized banks. Medium banks, which are banks for which total assets are between 0.5 per cent and 0.005 per cent of the total consolidated assets of EU banks, reached level of gross NPL ratio higher than 7 per cent, while larger and smaller banks contained the ratio around 3 per cent.

Figure 1.4 – NPL ratio by size of bank



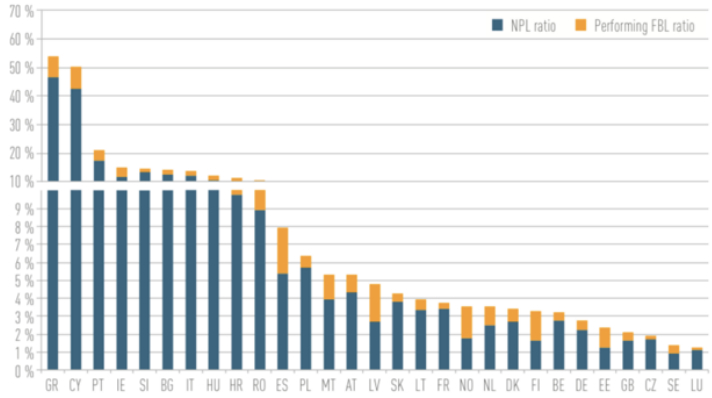
Source: ECB Consolidated Banking Data and ESRB Secretariat calculations, 2017

Data are clear even if should be considered that this pattern is not true for every single EU member and that in countries most affected by the crisis there is a very little number of large banks. Therefore, this data could be misleading due to the fact the distribution of banks is not equal across all the European countries.

In conclusion, in order to have a clear assessment of the level of NPLs in the European banking system, is important to look at the level of forborne loans, which are the performing and non-performing assets subjected to forbearance measures.

The level of this category of loans is equal to 2.8 per cent in June 2017. With the decreasing forborne loan ratio, the share on FBL classified as performing decreased by 5 percentage points. Across sectors, the highest stock of FBLs is towards SMEs with a level equals to 13.8 per cent in June 2017, but with higher levels across jurisdictions (EBA, 2017).

Figure 1.5 – A composite credit weakness ratio of non-performing and performing forborne loans by country



Source: EBA risk indicators, 2017

According to an EBA study, a positive relationship between the level of doubtful loans and forborne loans is shown in many countries, even if is not a significant result for all the countries[10]. Probably, since forborne loans include performing exposures, it could depend on different practises there are across country members.

[10] A clear correlation is presented in countries such as Germany, Great Britain, Sweden, Norway, Finland, while is not confirmed in countries as Cyprus, Greece or Italy (EBA, 2016).

1.3 THE IMPACT OF DOUBTFUL LOANS ON BANK'S PROFITABILITY

Banks, as is known, act as financial intermediaries, mediating the flow of funds between people who have surplus and units need funding (Saunders, 2011). The lending activity is still the most relevant banking activity and the bank's profitability is strictly related to this function. For this reason, monitoring the credit risk is a fundamental task for banks[11]. Indeed, several banking problems continues to be related to lax credit standards for borrowers and poor credit management.

Regarding the bank's performance, high level of non-performing exposures affects the bank's balance sheet. Indeed, some negative factors are the extra costs related to the management of NPLs portfolios or the higher reputational risk affecting the bank's credit rating. Among them, the main negative effect is the reduction in the bank's profitability, especially when NPLs are written off from the balance sheet and the provision level is low. High level of NPLs have an effect on the banking activity through three main channels (Aiyar et al., 2015):

- Banks' funding costs increasing;
- Banks' profitability reduction;
- Stock of capital reduction.

First, funding costs are higher because investors and other banks are less willing to invest in banks with high level of NPLs.

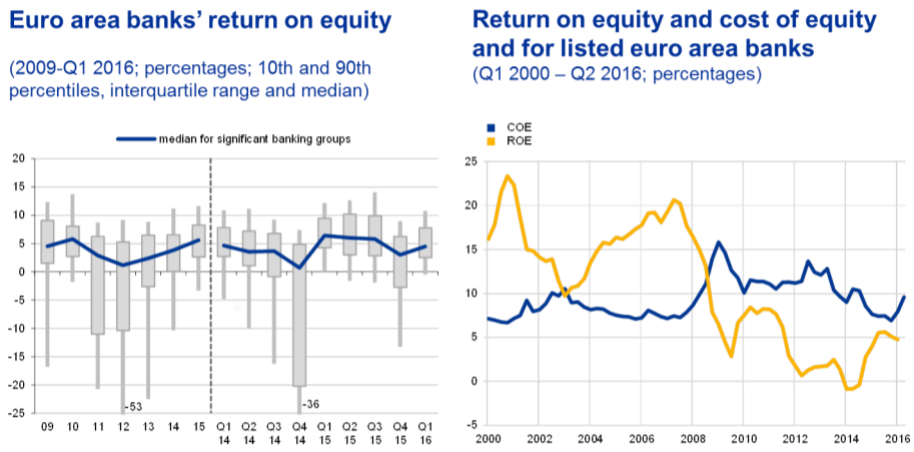
Moreover, the reduction of profitability is affected by factors mentioned before but mainly by the higher level of provision required to cover possible losses. Banks in order to keep an appropriate coverage ratio[12] have to increase the minimum level of lending rates maintaining the level of profitability constant. However, higher provisions depress the bank's asset return on asset and reduce the profitability of the bank (Accornero et al., 2017).

The effects on profitability and cost of funding are confirmed in the below chart representing the European banking system.

[11] Monitoring the credit risk, banks have to assess the default probability of borrowers and have to maximize the risk-adjusted rate of return keeping the risk exposure within acceptable parameters (BIS, 2000).

[12] The coverage ratio represents the amount of loan loss provisions in relation with the gross exposure (Bank of Italy, 2018).

Figure 1.6 - Bank profitability

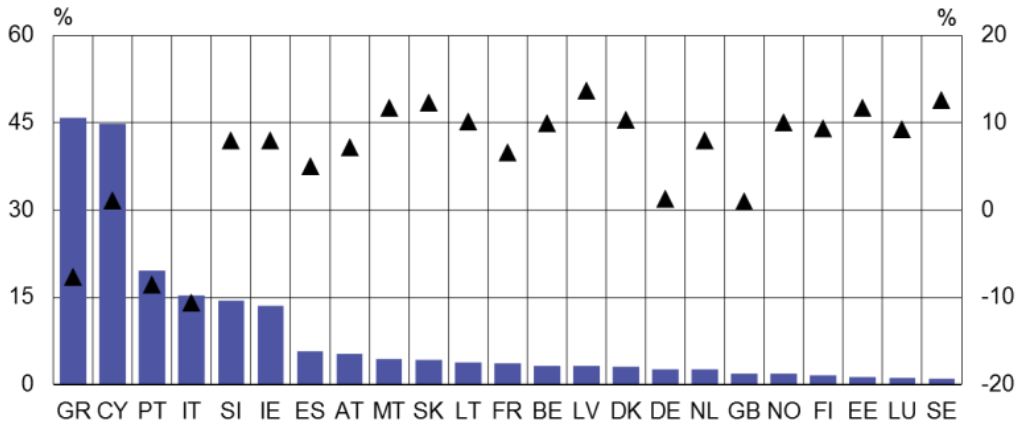


Source: ECB, 2017

Indeed, as described in the table 1.6, during the period the NPL stock increased there is a remarkable reduction of the Return on Equity (ROE), representing the profitability of the bank, and a relevant rise of the cost of equity, which represents the cost of funding.

This negative relationship is stronger in distressed countries with a higher level of NPLs (see figure 1.7).

Figure 1.7 – Relation between return on equity and non-performing loans



Source: EBA, 2017

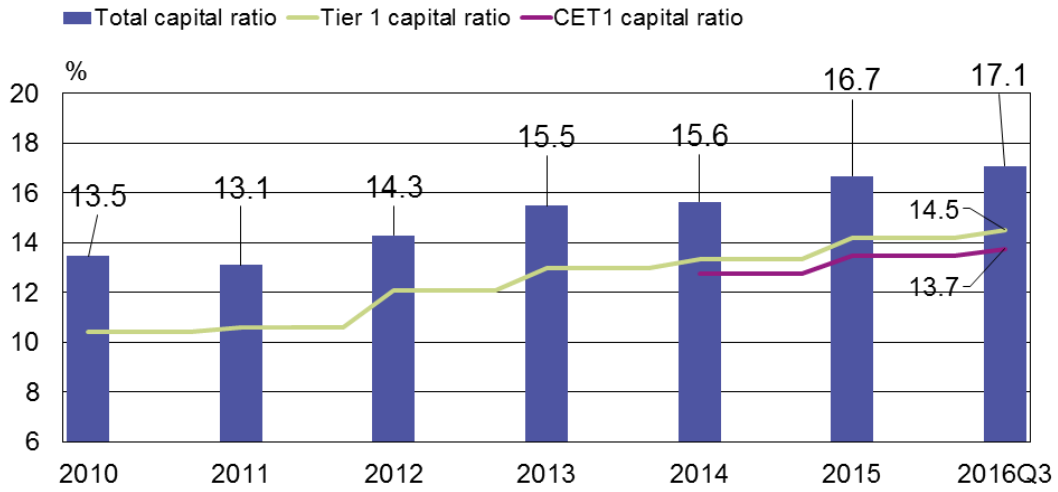
Moreover, even if there is an adequate level of provisions, if the level of NPLs is high there are losses the bank has to absorb and cover. The devaluation of banks' assets leads to losses because of the deterioration of the balance sheet. In order to absorb these losses, is required to the bank to have an adequate level of capital.

Bank's capitalization is another crucial factor to be studied in the credit risk management process. Indeed, since NPEs are risky assets, a high level of NPEs implies a high level of risk weights used to

compute the capital ratio that the bank has to comply with. Therefore, the higher the level of bad loans, the higher the level of capital requirements[13].

Regarding the current European banking crises, the reduction of capital is not actually present because of the supervisory and regulatory actions. Banks' capital adequacy improved through increasing capital and reducing the riskiness of assets. Indeed, the financial structure is more solid with respect to the beginning of the crisis. Deposits are the largest share of funding and market-based funding has a longer maturity (Koskinen and Laakkonen, 2017).

Figure 1.8 – Capital trends in the euro area



Source: ECB, 2017

Furthermore, based on what has been just explained, the deterioration of loans affects the balance sheet through these three factors as well:

- Loan portfolio quality reduction;
- Liquidity position deterioration;
- Lending activity reduction.

Firstly, the deterioration of the assets clearly affects the quality of the whole loan portfolio and this point is empirically proved by several indicators as:

$$Gross\ NPL\ ratio^{14} = \frac{Gross\ NPL}{Total\ Loans\ to\ Customers}$$

[13] The level of risk weights depends on the methodology adopted to measure the risk but, for instance, based on the Basel III Standardized Approach, the level of risk weight associated to NPLs is 150 per cent.

[14] The NPL ratio can also be computed net of provisions and specifically for each kind of category presented in the previous chapter (past due, unlikely to pay and bad loans).

$$NPL\ Coverage^{15} = \frac{Loan\ Loss\ Provision}{Gross\ NPLs}$$

$$Texas\ Ratio^{16} = \frac{Net\ NPLs}{Tangible\ Equity}$$

However, as already described in the previous paragraph on non-performing loans in Europe, the NPL ratio and the Texas ratio suddenly increased in many European banking systems reaching levels never obtained before. In 2015, 7 out of the 47 Euro area banks belonging to Euro STOXX 600 banks were above 100, where three of them were Italian, underlying how this crisis is tough especially for some countries.

Moreover, an unexpected increasing trend affected the coverage ratio in 2015, probably due to higher regulatory requirements. Instead, since 2015, the upward trend is mainly driven by a stronger reduction of NPLs rather than an increase of the loan loss provision. Indeed, the EU weighted average coverage ratio in 2017 reached around 45 per cent.

Furthermore, the deterioration of the balance sheet increases the funding costs and therefore the liquidity ratios. The worsening of the bank's health affects the investor risk and reduces resources available for new investment opportunities. This result is reflected in the reduction of liquidity ratios and efficiency ratios as the following:

$$Liquidity\ Cover\ Ratio^{17} = \frac{Stock\ of\ HQLA}{Total\ net\ cash\ out\ flows}$$

$$Cost\ to\ Income\ ratio^{18} = \frac{Operating\ expenses}{Operating\ income}$$

In detail, the cost to income ratio increased in the same period NPLs increased in many euro area banks, representing the close relationship between toxic assets and efficiency indicators.

Finally, the effect of a high level of NPLs is reflected in the sudden reduction of the level of loans granted, especially if the provisions and the capitalization is not sufficient. Banks are constrained in

[15] The NPL coverage ratio represents the risk provisions and collaterals for non-performing loans as percentage of non-performing loans (Erste Bank, 2013).

[16] The Texas ratio represents a comparison between the NPLs and the capital, in order to assure the bank can cover with tangible capital in case of losses. The ratio should be lower 100 per cent to demonstrate capital cushion is sufficient to cover potential losses (Borsa Italiana, 2016).

[17] The Liquidity Cover Ratio (LCR) refers to highly liquid assets held by credit institutions to meet short term obligations (BIS, 2013). Based on Basel III, banks are required to have a LCR higher than 100 per cent.

[18] The cost income ratio represents the ratio between operating costs and operating revenues and represents the efficiency of the operating activity.

their investment opportunities because of the risk capital requirements, leading to a reduction of financing to the real economy, with negative effect to the economic cycle.

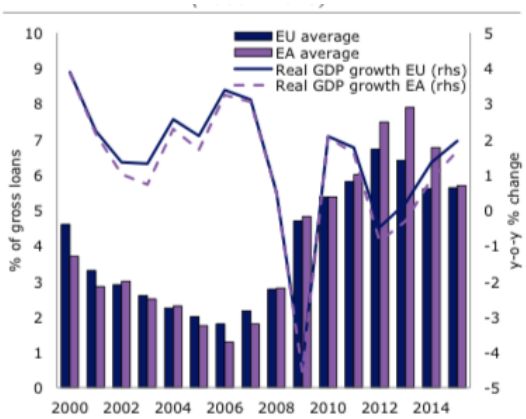
In the specific, a difference across distressed countries and other European states appears and the significance of the relationship for distressed countries is stronger, probably due to the fact that financial systems of these countries (Portugal, Ireland, Greece, Italy and Spain) are more bank related and the system is still strongly based on the traditional commercial banks. As already described, a high level of NPLs negatively affects the lending activity and leads to a credit crunch situation with a negative effect for all the real economy. In general, the credit crunch mainly affects SMEs, which are the majority of the firms in many European countries and has effects on the economic decisions of households and on the economic cycle.

Furthermore, this effect is amplified in case the NPL problem regards all the banking system and lead to a worsening of the economic conditions and affecting other factors as the monetary policy transmission mechanism which deeply depends on the banking credit channel to transfer the interest rate decisions to the real economy.

The effects described above can create a vicious circle in which a deterioration of asset quality, implies a reduction of bank's profitability, which leads to insufficient growth in capital and subdued new lending to the real economy, affecting macroeconomic indicators and increasing the level of non-performing loans because firms are no more able to meet their obligations due to a worsening of the real economy situation (European Commission, 2017).

As represented in figure 1.9, there is a negative relation between the NPL ratio and the GDP growth in the European countries.

Figure 1.9 - The evolution of the NPL ratio and real GDP growth, EU and EA



Source: World Bank and ECB calculations, 2015

As mentioned before, many authors studied the relationship between the level of doubtful loans and bank's profitability.

Diawan and Rodrik (1992) describes that if the level of provisioning is not adequate when the stock of NPLs is high then the capital position is weak, and it has negative effect on the credit channel. A similar result has been reached by Mohd et al. (2010) suggesting that a negative condition in the economic environment affect the credit supply.

The work of Espinoza and Prasad (2010) investigates a panel VAR model on a dataset made of 80 banks and finds that an increase in the NPL ratio by 2.1 per cent reduces the credit activity growth by 1.5 during the first year and by 2.2 in the second and third year.

Klein (2013) investigates the impact of NPLs from the banking system to the real economy in the CESEE over the period 1998-2011, confirming the negative effect on the credit-to-GDP ratio.

Balgova et al. (2016) argues there is a relationship between output growth and a variation in the NPLs stock, using a panel of 100 countries over the period 1997-2014.

Furthermore, the link relating the credit channel and the real economy has been explained by other several authors. Nkusu (2011) studies 26 advanced economies and analysing with a VAR model the effect of NPLs on macroeconomic determinants finds that an increase in NPEs from 0.6 to 1.4 can trigger negative macroeconomic developments.

De Bock and Demyanets (2012) investigated the emerging financial markets and confirmed through a panel VAR that a reduction of credit quality has negative effects on the GDP growth.

Cucinelli (2015) receives similar results for the Italian banking system, arguing that indicators of the credit quality as the NPL ratio or the loan loss provisions are negatively correlated with the supply of bank loans.

Bending et al. (2014) document that an increase in the NPL level negatively affects the net growth of corporate loans in the following year. They used dynamics regressions for banks of 16 European countries.

1.4 MANAGEMENT OF NON-PERFORMING LOANS

In the last decades, the rapid increase of non-performing loans in Europe had important effects on the European banking system mainly because almost all banks highlighted crucial deficiencies in setting up internal management recovery and external disposal of bad debts. Some banks, especially the biggest ones, tried to implement strategies to solve the problem through securitization processes or spin-off of entire business units, but the remaining smaller banks kept the traditional strategy having negative impacts on the cost of risk, profits and capitalization because of a not adequate capital and human resources to face a such high level of doubtful loans, enabling banks to exploit economies of scale.

In general, for a proper management of non-performing loans, an integrated solution should be adopted with a bottom-up portfolio analysis, with a segmentation of the portfolio and a valuation of the performance, and a top-bottom analysis of functioning model with the identification of the issue and an information system valuation.

Based on the fact that many banks were completely unprepared to face this problem, European Institutions promulgated several measures in order to help European banks to tackle the high level of doubtful loans.

European Authorities have implemented different strategies in terms of supervision in order to recreate a stable and sound banking system in Europe. Different steps have been adopted and the repair process of the banking sector can be summarized in the following key points:

- Capital strengthening;
- Asset quality improvements;
- Cleaning balance sheet.

First of all, regarding the capital and asset quality issue, in 2014 the European Central Bank introduced a comprehensive assessment based on two pillars: an asset quality review and a stress test. Through these valuations, the ECB and NCAs ensure that banks are sufficiently capitalized and they are able to bear possible financial shocks. The asset quality review (AQR) aims to enhance the transparency of bank exposures, including the adequacy of asset and collateral valuation and related

provisions while the stress test[19] valuates the resilience of financial institutions' balance sheet under hypothetical unfavourable economic scenarios.

After that, regarding the cleaning of banks´ balance sheets, the European Central Bank in 2017 has published a guideline presenting main aspects related to the NPL management. This guideline addresses all non-performing exposures, as defined by the European Banking Authority, and touches on performing exposures with an elevated risk to turn non-performing.

This guidance is not a regulation but a supervisory tool that clarifies the expectation of the supervisor in terms of NPL identification, management, measurement and write-offs. It is addressed to all significant credit institutions but especially to the financial organizations with a high level of bad loans and constitute, in the future, expectations for the European Central Bank. A bank is defined as high NPL bank if has at least one of these characteristics:

- High level of NPL inflows;
- High level of forbearance and foreclosed assets;
- Low levels of provision coverage;
- High Texas ratio.

With this guideline, a bank is considered responsible for its own strategy to solve this problem and it encouraged to take into consideration all the European environment and all the competitors. The ECB is observing at the entire NPL management process including not only the bank strategy but also other aspects like the forbearance treatment, the NPL recognition and the collateral valuation.

In accordance to this guidance, a high NPL bank has to define an NPL strategy with a presentation of targets in a period usually around one and three years. In order to reduce them in a realistic but sufficiently ambitious time-bound horizon, it should follow the following steps:

- Assessing the operating environment;
- Developing the NPL strategy;
- Implementing the operational plan;
- Embedding the NPL strategy.

In order to develop an effective strategy is essential to understand the full framework of the operating environment. Therefore, an assessment on the internal capabilities on managing these bad loans and external conditions is required. In the pre-assessment phase, discovering the causes of the high stock

[19] The stress test is performed in cooperation with the European Banking Authority (EBA) and the European Systemic Risk Board (ESRB).

on NPLs is fundamental to define a strategy. Then, the bank has to decide to implement either a recovery internal strategy or selling them in the market and it has to carefully examine several internal and external factors. From one side an efficient and quick reduction is demanded, but on the other hand, workouts could be more efficient, but they require more time and carry operational risk (PWC, 2017).

In conclusion, the strategy may involve different areas and it should be embedded in processes at all level of the organization. In order to do so, a strong and effective communication on non-performing loans is essential regarding the overall strategy and the vision. Each team involved in the operational plan has to be clearly defined together with its activities and goals, always taking into account the risk control framework documents as the Internal Capital Adequacy Assessment Process (ICAAP) and the Risk Appetite Framework (RAF).

Therefore, there are several options as possible strategies to address large-scale non-performing loans. There are different approaches with NPLs remaining in the bank's balance sheet, off-balance-sheet or a strategy in between. Moreover, these options do not necessarily have to be chosen singularly but rather complementary (ECB, 2017). The possible strategies are as follows:

- Internal management;
- Direct sale;
- Securitization;
- Asset Management Company;
- Write-off.

1.4.1 INTERNAL MANAGEMENT

The internal management is an active hold strategy where the credit institution rearranges existing loan agreements in order to optimize the recovery. The bank creates an internal non core division and it directly monitor the non core bad assets (PWC, 2017).

After a deep segmentation and analysis of loan portfolios, the bank can define the potential recovery ceiling. If the potential recovery is high, then the credit institution could implement an internal strategy and obtain a higher level with respect to the prices traded in the market.

The internal strategy might be the best option if some conditions are met. First, this strategy could be ad hoc for credit institutions that have good management and high skills and the main cause of the

high level of non-performing loans is mainly related to the bad economic cycle. Second, this option is especially viable is external conditions disincentive a sale option because the NPL secondary market is not efficient as should be.

Workout requires a detailed borrower profile, financial analysis, cooperation and a continuous and effective monitoring from the bank. Indeed, it is a good option only if there are proper capabilities, resources and trained staff.

Therefore, an internal workout action can create interesting recovery rates and it is a preferred opportunity if the bank's performance indicators are still not affected by the high level of NPLs and the credit institution has enough resources to wait for better economic conditions.

In conclusion, workout strategies related to keep the loan internally, without going into the court, can really worth because it has a high potential recovery and avoids lengthy and costly legal processes.

1.4.2 DIRECT SALE

The direct sale strategy is an off-balance sheet option in which the entire NPL portfolio is completely transferred to investors or to special purpose vehicles (SPV) which are totally owned by third parties.

High costs for internal management could incentivize the bank to sell their toxic assets directly to the market. Several quantitative and qualitative advantages are connected with this kind of operation. First of all, considering quantitative gains, selling NPLs allows banks to increase the liquidity and therefore investment opportunities, leading to higher profits. Moreover, there is also a positive impact on other aspects as capital requirements, because the risk of weighted assets is lower and banks can immediately free capital for other purposes, reducing the level of future provision required to absorb possible losses derived by doubtful loans (Sekowski, 2009).

From one side, qualitative gains are related to the direct sale of NPLs portfolios because banks can speed up the timing of recoveries selling an entire portfolio in one time increasing the level of reputation in the market.

From the other side, there are important disadvantages in directly selling non-performing loans portfolios. In general, define the transfer price, the bank has to study the expected future cash flows considering elements as the characteristics and the evaluation of a collateral. This decision is based on the real purpose of the bank and it is based on the characteristics and the size of the portfolio it

wants to sell. If the main objective is to reduce the highest possible volume of toxic assets, it will minimize the management costs with economies of scale and it gets better indicators for capital. Otherwise, if it is more focused on the timing of reducing bad loans it would conclude the deal as soon as it can try to reduce the economic costs related to the transaction.

But these are not the unique factors to be considered, because banks have to study the external market conditions as well. For instance, in Europe the NPL market is currently highly illiquid and underdeveloped and then, banks have to transfer their portfolios at lower prices with respect to their real economic value. This crucial difference is reflected in the level of bid and ask[20]. This structural impediment is explained by the fact banks do not take into account indirect costs related to the asset but more interesting are the reasons related to the buyer. Investors use a different methodology to evaluate an asset and it takes into account factors as the information asymmetries.

1.4.3 SECURITIZATION

Securitization is a financial mechanism that consists in the transformation of a financial asset in a tradable financial security. It pools several assets and groups these securities in tranches classified by the level of risk (senior, mezzanine and junior). This technique creates liquidity giving the opportunity to small investors to purchase participations in a larger asset pool.

The process of NPL securitization is composed by the following five steps (ECB, 2017):

- The bank sells the NPL securities to the SPV for a price which usually is lower than the face value of the asset;
- The SPV finances the purchase of the portfolios by issuing debt instruments until adequate cash flow is created by the NPL;
- The cash flow generated by the NPL is used to repay the interest and the principal of the notes and to cover the costs of the securitization structure;
- This cash flow is collected by a servicer, which is a third party and the originator bank could act as servicer;
- Structural features as liquidity, credit enhancement and hedging are put in place in order to reduce the risk that NPL portfolios are not able to generate sufficient cash flows.

[20] For further details please refer to: ESRB, *Resolving non-performing loans in Europe*, July 2017, pp. 16-19.

Securitization differs from the direct sale to the market because of different aspects. Indeed, the risk is not completely transferred, and this mechanism often involves private investors.

Advantages related to securitization are clearly related to two factors. Since the major part of the risk is shifted to the SPV, the bank can derecognize these assets from the balance sheet. The securities are packed in different tranches and they can attract different investor risk profiles.

Disadvantages are the costly scale of such schemes. Indeed, if a securitization process is compared to an Asset Management Company, economies of scale are minimized because an SPV is on average smaller than an AMC scheme. Investors have more problem to monitor the NPLs in comparison to the direct investment because all the assets are pooled in different tranches.

The success of a securitization strategy is defined by the following two indicators:

- The quality of the NPLs;
- The quality and the experience of the servicer.

Finally, the securitization market for NPL is Europe is very underdeveloped. The main problem is that there are not buyers for mezzanine and junior tranches and therefore the transfer of risk in these transactions is really low if the bank retains that kind of notes. A guarantee should be required for that group of securities in order to enhance the credit grade. Moreover, higher disincentive is created by EU regulation. Current regulation imposes high charges for funding instruments of similar credit risk.

1.4.4 ASSET MANAGEMENT COMPANY

An Asset Management Company (AMC) scheme is a well-established banking crisis management tool. It buys NPLs from banks and resolve them over a long period. It can take several forms, depending on the participation perimeter, the ownership and the mandate. For instance, the AMC can be public or financed by private funds. Most of them are public supported and it uses government capital remaining independent from the government (ECB, 2017).

The mechanism of the AMC consists in the separation of assets in good and bad assets, where the good assets are kept in the good bank while the bad assets are transferred to this AMC, also called “Bad bank”. It is not a real bank and managers are no more supervised by banking regulations.

The main goal of this instrument is to liquidate the troubled assets in better economic conditions with a lower bid-ask spread with a market value closer to the nominal book value.

In a positive scenario, the AMC sells the assets bought in the past at a higher price making profits for its investors. On the contrary, in a negative scenario, the purchase price is not covered, and AMC investors are not repaid.

In case there is a public AMC there are also some advantages. The government buys the loans at the real economic value, which is lower than the nominal book value, but it is higher than the market value. Then the public intervention is justified from less information asymmetries due to the public guarantee.

The main advantage of this strategy is to alleviate all the problems related to the secondary market described in the previous paragraph. As it is already mentioned in the Securitization, the AMC is a big scheme and can exploit economies of scale. Its internal organization is more flexible and not being subject to creditors and shareholders pressure it can takes a longer horizon to resolve bad loans avoiding fire sales in the secondary market. Furthermore, an Asset Management Company can bring a professional recovery management and help banks where some specific skills lack.

Historically, a bad bank was more successful when it traded assets as commercial real estate or assets related. The main reason is that these loans are relatively easy to assess and their future value depends mainly on the economic recovery. More difficult seems to solve corporate loans. These loans are less homogeneous. The future value is more difficult to be assessed and it has been subject to a higher political pressure.

From the other side, disadvantages in creating a bad bank are principally associated to costs. The cost to fund an AMC could be so high to render it unattractive to banks and authorities that have to participate. The principal disadvantage is that an AMC does not really remove the risk of NPLs from the banks´ balance sheet because the risk remains on the book as long as the asset is sold or written off.

1.4.5 WRITE-OFF

With the write-off strategy the bank writes-off all bad assets that are recognised as not recoverable and directly remove them from the balance-sheet. The impact is immediate and avoids future risk and potential losses (PWC, 2017).

Certainly, advantages related to this kind of option are that is really quick and requires very low effort. The position is immediately removed from the balance sheet and goes 100 per cent to profit and loss.

From the other side, is without any doubt the strategy with the highest cost and can be considered applicable only for small and really old items with a probability of recovery close to zero. The same applicability could have items that would require a such high effort to be managed and monitored that is economically better to delete from the balance sheet with a write-off if there is not any possibility to sell that.

Once the loan is written off from the bank's balance sheet, it is not possible to reverse the adjustment, differently from the impairment provisions, which can be written-back through the caption of profit and loss where there are modifications in the valuation. Then, write-offs should not be retaken and in case a sort of income is collected, this should be recognized in the statement of profit and loss (ECB, 2017).

In conclusion, even if banks prefer never to have to write-off bad debts, since they are their primary source of future income, loans are charged-off is they are really without any possible recoverable future value.

1.5 IMPEDIMENTS TO SOLVE NON-PERFORMING LOANS

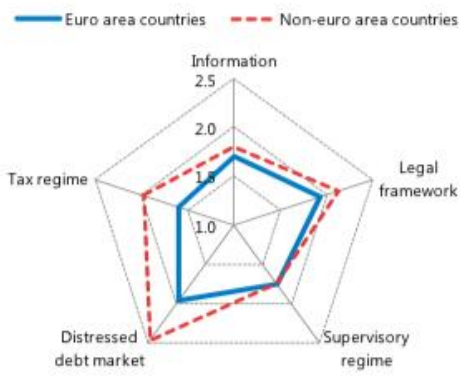
Despite of the implementation of the above described strategies, banks continue to have a significant level of doubtful loans and this is in part explained by the weak economic recovery, but other aspects are influenced by the relevant presence of structural obstacles to solve the problem.

Without any doubt, a major impediment is the choice of a wrong strategy with negative consequences on the cash recovery and revenues. Indeed, omitting some important variables while the management is defining the strategy could be crucial. For instance, omitting to assess the business viability or the credit score of the counterparty of an exposure can have fundamental impacts on the effectiveness of the chosen strategy as happened for Greek banks or in the Balkan regions[21] (PWC, 2017).

Furthermore, the following structural impediments influence the slow recovery of banks' balance sheets (Aiyar et al., 2015):

- Supervisory regime;
- Legal obstacles;
- Distressed debt markets;
- Information obstacles;
- Tax and other obstacles.

Figure 1.10 – IMF survey-based scores on obstacles to NPL resolution: Euro Area vs. Non-Euro Area



Source: IMF, 2015

The figure 1.10 is the result of the IMF survey on the recent experience of European members with a level of NPLs above 10 per cent that reveals how they have common structural impediments to NPL resolution. Relevant takeaways from this analysis are the crucial deficiencies in the legal framework

[21] For further details, please refer to: *PWC, Non-performing loans: Leveraging the right strategy to optimise your company's balance sheet,* September 2017, pp. 11-12

and in the debt market condition, followed by the other three factors listed above (information, supervision and taxation). Moreover, the results show that the gravity of this impediments is stronger in non euro area countries, especially in the area of distressed debt market (Aiyar et al., 2015).

1.5.1 SUPERVISORY REGIME

European accounting rules do not create incentives to resolve NPLs. IFRS 9[22], effective from 2018, should address some of the problems related to accounting standards. Specifically, weak capital buffers and difficulties in realizing collateral increase banks´ reluctance to address the problem. Thin capital buffers provide disincentive to banks to increase provisions and to recognize the credit loss.

Based on this evidence, a stringency of the supervisory activity is needed in order to have a higher level of provision, increasing the write-off of these assets.

Despite formal supervisory guidelines on NPL management, European credit institutions do not have the necessary capacity, experience or tools to really address NPLs problem on a large scale. Moreover, an IMF survey presents how specialized skills in real estate servicing and corporate turnarounds are lacked.

Finally, also regarding the collateral valuation, the principal part of guarantees is real estate and in many member countries the real estate market is underdeveloped. This is a problem because collateral values are based on the market prices although in many states, markets for foreclosed properties are thin and illiquid. Therefore, based on a IMF survey, the problem of the real estate market is deeper with respect to the capital buffer problem and a severity from the supervision authority is required.

1.5.2 LEGAL OBSTACLES

An efficient insolvency scheme is essential for debt resolution since it enables creditors to enforce their claims against debtors in a transparent way.

Most European countries have a slow and inefficient insolvency regime and some of them are renovated or upgraded their regimes in accordance with international best practices.

[22] IFRS 9 includes a new principles-based approach for the valuation of financial assets and liabilities, including an model based on the single, forward-looking "expected loss" impairment (Aiyar, et al. 2015).

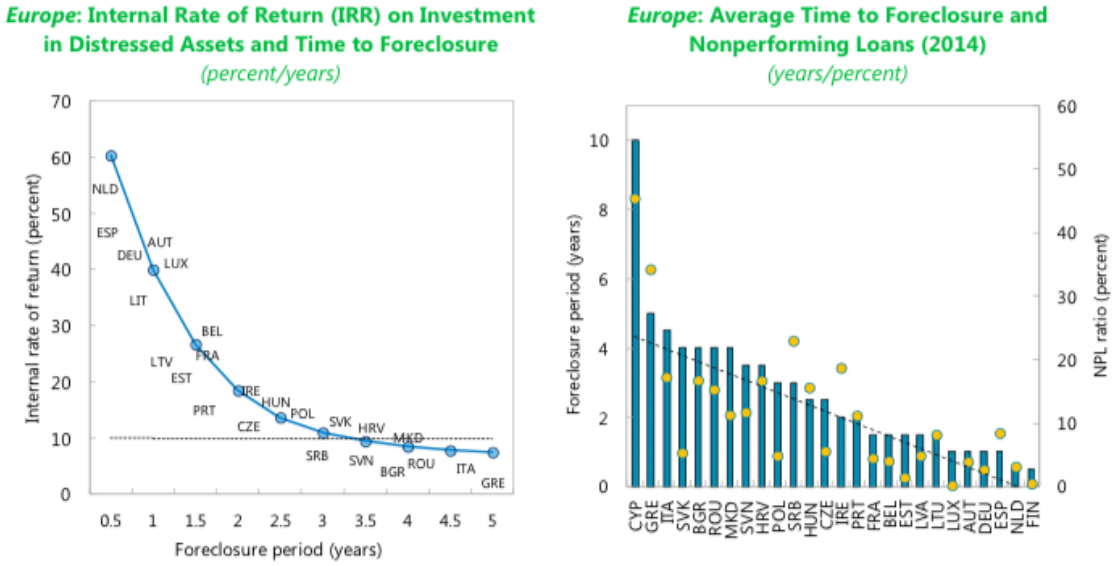
Moreover, this regime is not equal for all debtor types. Processes for corporations are better developed with respect to household insolvency regime. Personal insolvency regimes are not present in many countries, especially non-euro area members, and a framework does not exist or information is not available. Regarding corporate regimes, almost all EU countries developed and improved corporate insolvency schemes even if deficiencies are still present as the lack of simplified and cost effective frameworks for small and medium firms which are the largest and most relevant segment of the corporate area (Aiyar et al., 2015).

Additionally, a crucial and more serious shortcoming is the inconsistent implementation of insolvency laws. Legal processes are too slow and in many countries there are not time limits for insolvency processes, while in other countries, even if a time limit exists, it is not respected.

Actually, it is important to underline that foreclosure and debt enforcement practices vary across countries in terms of effectiveness and duration. For instance, the average length of foreclosure proceedings in Europe ranges from three to five years, while in other countries as Cyprus or Greece, they take between 10 and 20 years. Moreover, the lengthy proceedings are important also from the debtor's point of view because can significantly increase moral hazard, with borrowers less leaded to pay their obligation in a timely manner (ECB, 2017).

In conclusion, as the figure below shows, NPLs tends to be lower in countries where foreclosure periods are lower. Weak debt enforcement increases the legal cost of debt recovery and decrease the banks' ability to reduce the percentage of bad loans on the balance sheet in a timely manner.

Figure 1.11 – Insolvency regimes and recovery rates



Source: Aiyar et al., 2015

1.5.3 DISTRESSED DEBT MARKETS

The European market for bad loans is small, underdeveloped and illiquid if compared with the high level of doubtful loans in balance sheets of European banks.

A liquid secondary market is essential to boost recovery rates and allow banks to NPLs off of their balance sheets, especially for small banks that are not able to keep the bad loans internally and manage them effectively.

The bid-ask spread[23], in the non-performing loans' market, is still too high and there is no incentive for demand and supply to move as first mover. For instance, based on ECB data, for a fully secured non-performing loan, investors require a discount rate of above 40 per cent (ECB, 2017).

From one side, the bank evaluates the asset based on (Cauda, 2017):

- The real economic recovery amount, including the existence of collaterals;
- The real recovery time horizon;
- Direct costs for the management of toxic loans.

While, from the other side investors evaluate assets based on different perspectives. Indeed, they include in the price:

- Indirect costs;
- Information asymmetries;
- Risk premium.

Based on that, shortcomings related to this market are essentially structural and are related to:

- Lack of borrowers´ credit information;
- Lack of licensing to allow non-banks to manage non-performing loans;
- Lack of liquid real estate markets;
- Low recovery values related to lengthy court procedures.

Then, in order to solve this problem, it is important, for example, to implement a more complete and transparent analysis of the portfolio providing a more accurate and timely information about the characteristics of the loans (Cauda, 2017). Moreover, to overcome and solve this problem, some

[23] The bid-ask spread is the difference between the price (bid) the buyer is willing to buy and the price (ask) the seller is willing to sell. The highest bid is called best bid while the lowest ask is called best ask and the bid-ask spread in the market is equal to the difference between the best ask and the best bid (Morningstar, 2018).

countries have implemented a public Asset Management Company to incentivize the sale of these loans as in Hungary, Ireland, Slovenia and Spain[24].

1.5.4 INFORMATION OBSTACLES

As already mentioned in the previous paragraph, information asymmetries hamper an effective resolution of non-performing loans.

Presently, the transactions about doubtful loans are characterized by a low perception of transparency and information. Credit agencies do not include certain relevant information regarding debt restructuring as social security contributions or tax payments. Moreover, in the IMF survey mentioned at the beginning, credit registers for more than the half of sample do not produce credit scoring for individuals and SMEs.

Finally, another important problem is the absence of debt counselling. In many countries, institutions do not provide any form of credit management training and just a small number of countries offers a legal advice services for retail clients (Aiyar et al., 2015).

1.5.5 TAX AND OTHER OBSTACLES

Tax treatment can result crucial to incentivize banks to have an adequate provisioning or to write-off loans (Aiyar et al., 2015).

In many countries, provisions are not deductible for income tax purposes. Moreover, tax deductions for loan losses provisions are subject to a cap, that for instance in Italy is 0.3% of outstanding loans. Moreover, tax deductions for loan write-offs are not allowed in many countries, but some countries are moving on with tax reforms. For example, Spain recently abolished taxes on debt-to-equity swaps to encourage banks to derecognize loans.

[24] The experience of SAREB in Spain is interesting. It was set-up as a centralized vehicle for the purchase of assets from Spanish banks at relatevely conservative prices and the ownership was composed by 45 per cent shares by the public sector, while the remaining shares were private-owned. At the announcement of the program, other banks, fearing a massive upcoming asset sale, started to sell NPLs (Aiyar et al., 2015).

Additionally, problems are posed by the privileged role of public creditors, since they have (Aiyar et al., 2015):

- Priority of public creditors' claim;
- Limits on debt relief by the public sector;
- Information asymmetries sharing between public and private creditors.

In conclusion, in order to reduce all mentioned obstacles, a structural reform is necessary to increase the net present value of bad loans in the banks' balance sheet, providing a fundamental buffer to absorb further losses and increase the opportunities to reduce non-performing exposures.

For example, the following structural reforms could be really helpful for this aim (ECB, 2017):

- Reduce duration and cost of debt enforcement;
- Improve range of insolvency options;
- Increase judicial and out-of-court capacity;
- Improve access to financial information.

CHAPTER 2 - NON-PERFORMING LOANS IN THE ITALIAN BANKING SYSTEM

2.1 OVERVIEW OF THE ITALIAN BANKING SYSTEM

The Italian banking system is a bank-oriented system. In a bank-based system, banks are important providers of loans to non-financial companies and they are really strong in collecting household savings. Banks account for almost 85 per cent of the total financial sector and total assets represent around 220 per cent of GDP. In Italy, domestic credit provided by the banking sector is equal to 166 per cent of the Gross Domestic Product, that is relatively higher with respect of 127 per cent of Germany and 157 per cent of France[25]. Furthermore, from the other side of the balance sheet the level of deposits is considerably elevated and represents around 69 per cent of total liabilities, with respect to 54 per cent of France and 62 per cent of Germany[26]. These are indicators of a bank-oriented system in which the banking sector is important and powerful and capital markets are less developed.

Moreover, a bank-oriented system is characterized by (Schmidt, 2017):

- Banks are the most important players in the financial sector;
- Savers use banks as their main investment option;
- Firms fund investments with bank debt;
- Strong relationship banking;
- Banks are involved in the governance of other firms;
- Banks have strong influence on other financial companies as stock exchange;
- Insider control system[27];
- Organized capital markets are not important as source of funding;
- Banks are mostly universal banks.

Historically, the financial system of most European countries has always been bank-based while the Anglo-Saxon countries were capital market-based. After the financial crisis many historically bank-oriented banking systems as Germany are moving towards a more capital market-based system. This is not really happening in Italy probably because of the size of Italian firms. Indeed, the Italian

[25] Source: World Bank Data.
[26] Source: ECB Statistical Data Warehouse. Data are referred to the second quarter of 2018.
[27] They are based on internal mechanisms for adopting influence and private or non-public information available to those who are in charge to encourage management decisions (Hackethal et al., 2006).

economy is mainly characterized by a huge number of small and medium companies which prefer to finance their investments through bank loans.

Therefore, for the above explanation, the Italian banking system is one of the less concentrated banking sectors in Europe with 538 banks and 27.374 branches distributed over the Italian territory (Bank of Italy, 2018). In detail:

Figure 2.1 – Total amount of banks distributed over the Italian territory

	Banks		Branches	
	Units	Percentage to total	Units	Percentage to total
Public limited banks	147	27%	21.333	78%
Cooperative banks	23	4%	1.619	6%
Mutual banks	289	54%	4.257	16%
Branches of foreign banks	79	15%	165	1%
Total	538	100%	27.374	100%

Source: Own elaboration on Bank of Italy data.

Reference data: 31 December 2017

Since 1990, the structure of the banking framework has developed because of liberalization of branching and the rise of merger and acquisitions (De Bonis et al., 2011). Despite this change, Italy still has a high fragmentation of the sector. In the last period the sector has become more slightly concentrated, but the level is still really low and the share of total assets of the five largest credit institutions is considerably low (43.4 per cent). The Herfindahl index[28] for Italy for Italian bank assets slightly over 500, while the HI accounts to 965 and 574 for Spain and France, respectively (ECB, 2017). The low concentration can be mainly justified by a large number of cooperative banks representing 289 banks out 538 banks composing the Italian banking sector, even if the sector is making significant changes to the industrial organization, where all the mutual banks are going to be grouped in three large banking groups (Panetta, 2018). After this reform, the fragmentation of the sector is going to be substantially reduced.

In addition, as already previously mentioned, a bank-based system is characterized by a large stock of loans for non-financial corporations and a high level of deposits because savers use banks as main form of investment (see below table).

Figure 2.2 – High level on loans and deposits

[28] The Herfindahl index (HI) describes the concentration of the banking business (based on total assets). The HI is computed by summing the squares of the market shares of all banks in the banking sector (ECB, 2017).

	Loans / Total assets			Deposits / Total liabilities		
	2015	2016	2017	2015	2016	2017
Germany	59%	60%	64%	60%	59%	62%
Italy	62%	62%	67%	61%	63%	69%
Spain	60%	60%	62%	69%	69%	70%
France	56%	57%	60%	52%	51%	54%

Source: Own elaboration on ECB data.

Regarding the asset side, firms are bank-dependent and credit institutions are crucial for the financing of small and medium enterprises especially. The evolution of the system has been influenced in the specialization in lending to small businesses (Cetorelli and Strahan, 2006). As represented in the previous table, a relatively large share is represented by loans to firms while the proportion of loans to households as home mortgages is considerably lower. Possible explanations to this phenomenon are that as a consequence of the crisis, the credit demand has been reduced by increasing a high propensity to save, together with the mechanism of intergenerational transfers both of money and of home ownership (De Bonis et al., 2011).

Symmetrically, the liability side reveals the importance of the retail business in Italy. The level of deposits in Italy in 2017 accounts for the 69 per cent of total liabilities, compared with lower numbers for the French and German banking systems. In detail, this ratio increased in the previous three years from 61 per cent to the current level.

Furthermore, as already briefly mentioned, the banks are still powerful because capital market is not really developed.

In Italy, there is a low number of listed companies and the market capitalization is not adequate. 339 firms are listed on the Italian stock exchange, in comparison with 465 listed on Euronext or 450 listed on the Frankfurt stock exchange. Moreover, with € 644.3 billion, Borsa Italiana has a low level of market capitalization if related to similar competitors.

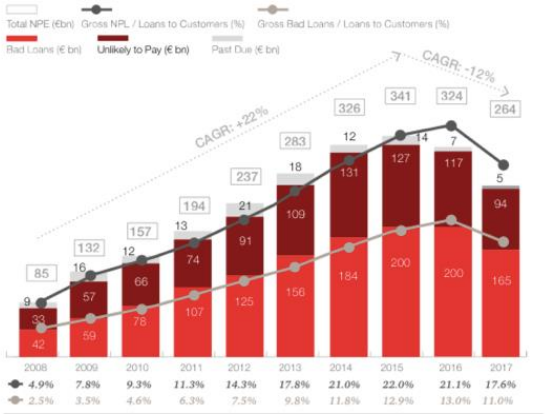
In conclusion, another important aspect shall be considered is the corporate governance system in Italy. Many companies adopt the traditional corporate governance system where shareholders appoint executives and supervisory board. As represented in the below table, the majority of Italian companies are family-owned and they are typically small firms, while listed companies are very few. According to 2017 data, 54 per cent of Italian firms are family owned, counting only for the 30 per cent of the total amount of revenues because of the small size. Moreover, these types of companies are characterized by a strong presence of executives with family linkage.

Based on that, the composition of the Italian companies and the respective corporate governance system are an explanation why the Italian economy is still so much related to banks and are not developing the stock exchange, transforming the banking system to a more capital market-based system.

2.2 NON-PERFORMING LOANS IN ITALY

According to the World bank data, in the Italian banking system the banks' non-performing loans to total gross loans have grown at around 20 per cent annually since the beginning of the crisis and reached the peak in September 2015 at 18.64 per cent and, after that, slightly decreased accounting at the end of 2017 to 14.38 per cent. In December 2017, the stock of banks' NPLs amounted to €264 billion (PWC, 2018). In detail, €165 billion were bad loans[29] while the level of past due loans and unlikely to pay showed the same trend standing at €5 billion and €94 billion. Moreover, the 75 per cent of these doubtful loans are marked as exposures to non-financial corporations and only the 25 per cent to households (Bank of Italy, 2018).

Figure 2.3 – Gross NPE and Bad loans trend



Source: PWC data

In the last decade, this rapid rise is mainly due to the prolonged economic recession which created difficulties to borrowers to repay their obligations. At the same time, other factors as the illegal or the inadequate banks' lending policies, the judicial inefficiencies and therefore the disincentive to write-off loans prevented the NPL resolution.

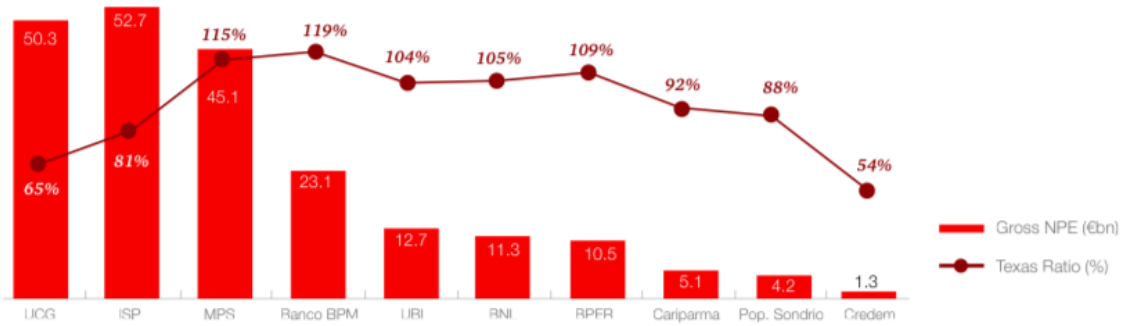
Currently, the outlook of NPLs in Italy shows a downward trend that latest estimations indicate is continuing. Causes of this reduction are related to the economic recovery and the initiatives promoted by the government and by single banks to reduce the stock of toxic assets. At the end of 2017 the flow of new doubtful loans fell near to 2 per cent, reaching the lowest level since 2008. Specifically, in March 2018 significant Italian banks with high levels of non-performing loans presented their strategic plan 2018-2020 with the aim to reduce the stock of NPLs by 38 per cent. New strategies and

[29] The estimated value of real guarantees for bad loans is €92 billion (Bank of Italy, 2018).

operational plans are going to be required also to less significant banks by the end of 2018 (Bank of Italy, 2018).

In detail, the largest Italian banks present different severity. For instance, the two largest Italian banks, Intesa Sanpaolo and Unicredit, have the highest stock of NPEs but a lower level of Texas ratio because the highest level of capital and provisions to absorb losses (see figure below).

Figure 2.4 – Gross NPE and Texas Ratio for the Top 10 Italian banks

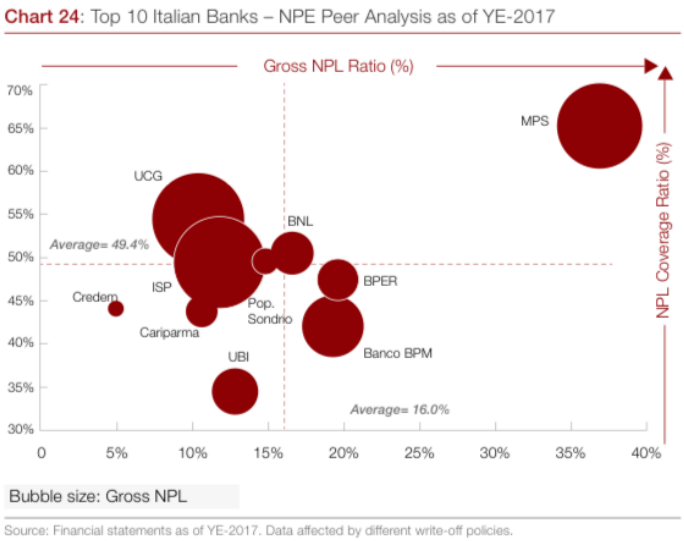


Source: PWC data

Nevertheless, 2017 was a turnaround year for almost all the banks in the Italian banking sector in terms of mergers, capital strengthening and aggregate results with a fundamental reduction of the stock of NPLs. In 2017, all largest banks deleveraged their balance sheets with further reductions expected for 2018.

In detail, figure 2.5 describes the NPE coverage and the gross NPE ratio for the 10 largest Italian banks. The average ratio of the sample is 16 per cent for the NPL ratio and 49.4 per cent for the coverage ratio. Actually, as mentioned before, the level relevantly varies across banks and, considering the NPL ratio, the highest value is represented by MPS with 37.3 per cent while Credem has the lowest level with 5.2 per cent. Similar deviation from the average is present for the NPL coverage with MPS showing a ratio around 37.2 per cent while the lowest level is UBI with 35.4 per cent. The coverage ratio is not very comparable because of different factors affecting this level as policies on write-offs, vintage of the portfolio and level of collateralization of the loan (PWC, 2018).

Figure 2.5 – Top 10 Italian banks – NPE peer analysis as of 2017



Source: PWC data

In addition, as evidenced before, the NPL problem evidences a considerable heterogeneity across borrower categories. Loans to the public administration are very low (0.1 per cent) as towards financial firms (2 per cent). Additionally, the households default is much lower than firms. In 2017, 25 per cent of NPLs is towards retail clients while 75 per cent is to non-financial firms. This phenomenon could be explained by extremely weak profitability, together with the high level of indebtedness of the Italian corporate sector at the aggregate level due to the difficulties after the financial and economic crisis (Jassaud, 2015).

Furthermore, figure 2.6 shows the distribution of NPLs stock by institutional bank category while figure 2.7 represents the geographical distribution of toxic loans. The phenomenon is equally distributed across bank categories, except to foreign subsidiaries which have an NPE ratio equals to 12.5 per cent. The other table shows that the severity of the problem is higher in the southern regions (25.8 per cent) and are very similar for Center and North with 18.4 and 18.9 per cent, respectively.

Figure 2.6 – NPE by bank institutional category (data in billions of Euro)

	Total	Joint stock companies	Popolari	Cooperative credit banks	Subsidiaries of foreign banks
Loans	1,616.4	922.3	394.6	132.7	166.9
Bad Loans	190.6	116.8	45.5	14.6	13.7
Other	120.9	66.3	36.6	10.8	7.2
Total NPLs	311.6	183.0	82.1	25.5	20.9
NPLs ratio	19.3%	19.8%	20.8%	19.2%	12.5%

Source: Bank of Italy, 2017

Figure 2.7 – NPE by geographical area (data in billions of euro)

	Total	North	Center	South and islands	Foreign
Loans	1,616.4	887.1	404.8	251.8	72.6
Bad Loans	190.6	99.7	46.5	43.1	1.3
Other	120.9	68.3	27.8	21.9	2.9
Total NPLs	311.6	168.0	74.4	65.0	4.2
NPLs ratio	19.3%	18.9%	18.4%	25.8%	5.8%

Source: Bank of Italy, 2017

Regarding provisions for loan losses, the coverage ratio decreased from 54 per cent in 2007 to 39 per cent in 2012. After that year, provisioning coverage increased to 45 per cent in 2014 as a result of the Bank of Italy's special loans inspection and in preparation for the European Asset Quality Review (AQR). Further explanations are the changes in the template used to recognise the NPLs with the implementation of the EBA definitions[30]. At the end of 2017, the coverage ratio is equal to 52.7 per cent (Bank of Italy, 2018).

Figure 2.8 – Credit quality: amounts and shares of non-performing loans and coverage ratios (billions of euros and percentage)

	Significant banks (2)					Less significant banks (2)					Total (2)				
	Gross exposures	Net exposures	Gross percentage share	Net percentage share	Coverage ratio	Gross exposures	Net exposures	Gross percentage share	Net percentage share	Coverage ratio	Gross exposures	Net exposures	Gross percentage share	Net percentage share	Coverage ratio
Customer loans (3)	**1,463**	**1,343**	**100.0**	**100.0**	**8.2**	**308**	**280**	**100.0**	**100.0**	**9.0**	**1,965**	**1,807**	**100.0**	**100.0**	**8.1**
Performing	1,251	1,245	85.5	92.7	0.5	254	252	82.5	90.1	0.6	1,681	1,672	85.5	92.5	0.5
Non-performing (4)	212	98	14.5	7.3	53.8	54	28	17.5	9.9	48.5	285	135	14.5	7.5	52.7
Bad loans	133	46	9.1	3.4	65.3	33	13	10.7	4.5	61.3	178	63	9.1	3.5	64.4
Unlikely to pay (lt. definition)	76	49	5.2	3.7	34.7	19	13	6.1	4.7	31.0	101	67	5.1	3.7	33.9
Past-due (lt. definition)	3	2	0.2	0.2	28.3	2	2	0.7	0.7	9.8	6	5	0.3	0.3	21.4

Source: Bank of Italy, 2018

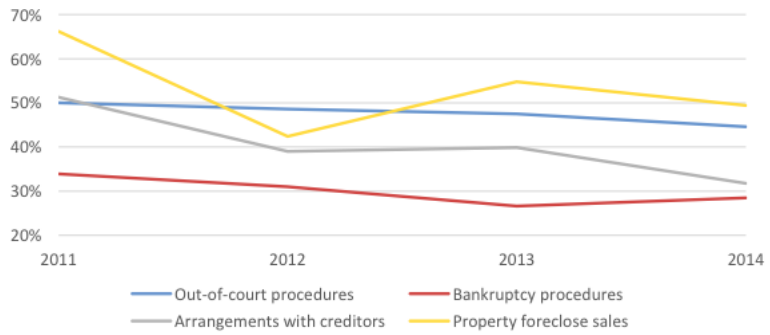
In addition, even if the provision is increasing, the level of write-offs is not really influenced and the pace of that has slowed. The write-offs activities are crucially induced by prudential considerations and fiscal and judicial requirements. The Italian case is actually in contrast with other countries experienced an increase of NPLs. For instance, after the crisis, in US and Japan, aggressive supervisory policies induced banks to write-off bad loans, derecognizing these types of loans from their balance-sheets. Differently, in Italy and in the European countries the write-offs and sales rates are not so relevant.

As already described in the previous chapter, one of the principal obstacles to resolve NPLs is the inefficiency of the judicial system.

[30] For further details, please see section "1.1 Definition and classification".

A survey was promoted by the Bank of Italy in 2015 on the effectiveness of the process for managing non-performing loans and specifically on the credit recovery rates and the use of different procedures over the period 2011-2014. As described in the table below, the recovery rate for bankruptcy procedures is around 30 per cent, slightly above 30 per cent for arrangements with creditors, 45 per cent for out-of-court procedures and 50 per cent for property foreclose sales (Bank of Italy, 2016).

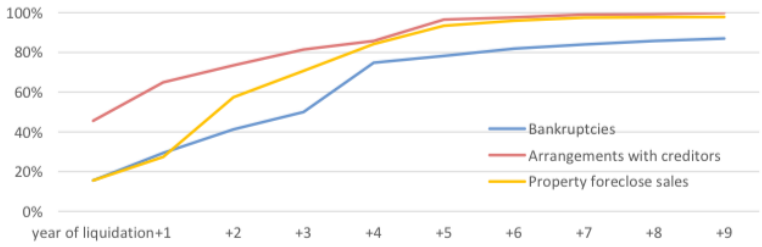
Figure 2.9 – Overall Recovery Rate



Source: Bank of Italy, 2016

The ineffectiveness is due to the lengthy of these judicial processes. In the following table a cumulative share of overall recovery is described related to the Bank of Italy's survey. The average period for the liquidation is around 3.5 years.

Figure 2.10 – Cumulative share of overall recovery (December 2014)



Source: Bank of Italy, 2016

In addition, a European and Italian obstacle to solve NPEs is that the secondary market for non-performing loans is not sufficiently developed to sustain corporate and financial restructuring. In the period 2012-2014, sale transactions were really limited and equal to €17 billion of NPLs, of which €11 billion of bad loans and the bid-ask spread was too wide to sustain the market. A relevant difference was marked among the book value, the real economic value and the current market price. Aligning the book value would mean to impair the value of bad loans by around 55-60 per cent, contracting prices lower than the real economic values of the loans.

The limited NPL market in Italy and the difference between the market value and the real economic value have to be explained based on demand-side and supply-side impediments. As already explained

in the previous chapter, principal possible impediments for banks to less incentivize the disposal of toxic loans are as follows (Crociata, 2016):

- Banking relationship;
- Servicing costs;
- Not favourable tax regime for provisioning and write-offs;
- Favourable accounting rules for holding NPLs;
- Priority claim of public creditors.

While main impediments for investors are driven by:

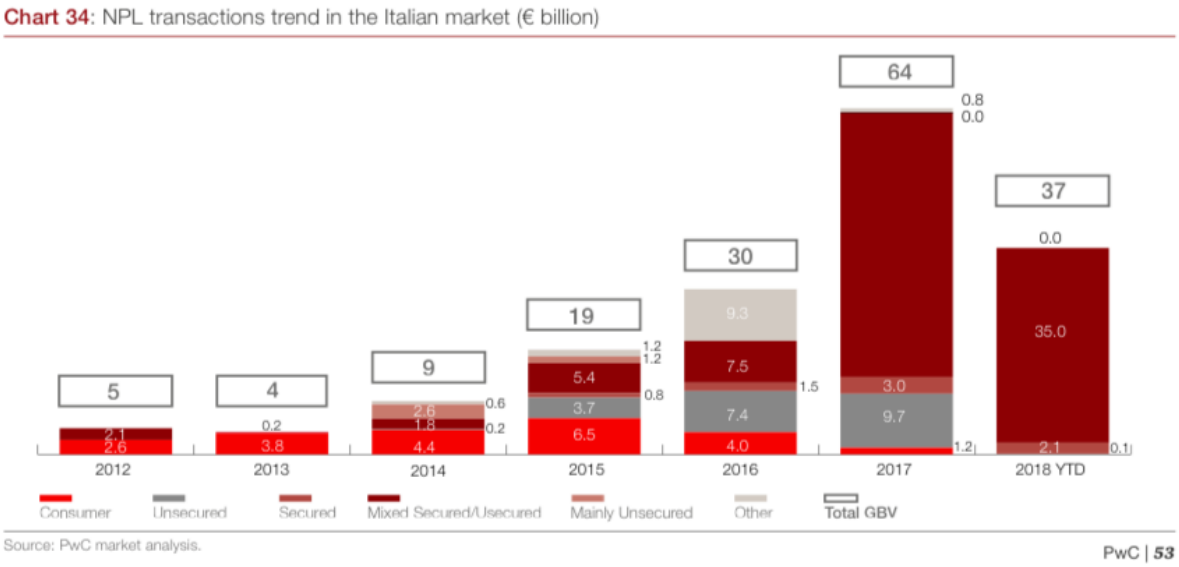
- Information asymmetry between banks and investors;
- Inefficiency of insolvency procedures;
- Macroeconomic and market conditions;
- Limited investor base.

In general, banks are subject to obstacles to voluntarily resolve NPLs without any external pressure from authorities. In detail, a qualitative impediment is that in Italy mutual banks base their business on the relationship with clients and a massive sale of doubtful loans should reduce the reputation and the trustworthiness of the bank in the territory. Moreover, important quantitative impediments are taken into account by credit institutions as the tax regime and deducibility of write-offs. In Italy, prior to 2013 they were not deductible in the absence of a court declaration of insolvency while IAS39 allows interest on impaired loans to be accumulated, encouraging banks to maintain NPLs on their balance sheets.

In Italy, after a set of initiatives adopted by banks and the government, de-risking activities started increasing the NPLs transactions in the secondary market. The NPLs transaction trend is represented in the table below and shows an increase registering doubtful loans transactions equals to €64 billion in 2017 and €37 billion in the first two quarters of 2018. The majority of the loans disposals is about mixed secured and unsecured loans while a considerable portion is also driven by disposals of unsecured loans, accounted to €9.7 billion in 2017. Based on the economic literature, unsecured loans seem to be easily transferable due to the less limited losses related to the sales. Additionally, in 2016 and 2017 an increase in secured loans disposals was driven by the recovery in the real estate market[31] (PWC, 2018).

[31] In 2017 the Italian Real Estate market increased by 2.1 per cent in comparison 2016, driven by transactions related to residential assets. In 2017 investments in Real Estate reached €11.1 billion. For further details, please refer to "PWC, Italian real estate market" (2018).

Figure 2.11 – NPL transactions trend in the Italian market (in billions of Euro)



Source:

PWC data

2.3 MANAGEMENT OF NON-PERFORMING LOANS

The Italian banking system is revealing high inclination to actively manage the stock of non-performing assets existing on banks' balance-sheets and to promote credit recovery. The recent regulatory changes and the increasing NPL transactions in the market confirm that the general attitude tends to resolve the problem and to recreate a safe and sound banking system.

A study proposed by Carpinelli et al. in 2016 presented the results of a survey on the 25 largest Italian banks on the efficiency of credit recovery procedures and in general on the management of non-performing loans.

The results show that the liquidation recovery rate over the period 2011-2014 is slightly above 40 per cent on average while the complementary rate of loss is in line with the average impact of the provisions applied by banks to the gross value of bad loans. As described in below figure, almost 80 per cent of loans under liquidation have a lifetime of five years or below. On average the ongoing liquidations is around 3.5 per cent, with 3.8 and 2.9 for bankruptcies and arrangements with creditors respectively (Carpinelli et al., 2016).

Figure 2.12 – The age of loan liquidation proceeding at the end of 2014 (in percentage)

	Total of judicial liquidation proceedings	*of which:*		
		bankruptcy proceedings	*arrangements with creditors*	*foreclosures*
	(a.1) Distribution based on the number of positions			
< 1 year	13.9	11.4	18.8	15.8
1-3 years	33.9	30.2	41.1	38.0
3-5 years	22.2	24.0	19.1	20.4
5-8 years	16.7	17.1	13.3	17.6
8-10 years	4.9	6.2	2.7	3.4
> 10 years	8.3	11.1	5.0	4.7
	(a.2) Distribution based on the amounts			
< 1 year	16.0	13.2	20.7	17.6
1-3 years	40.5	38.3	45.5	40.9
3-5 years	22.5	24.5	18.6	22.1
5-8 years	14.0	14.8	12.0	14.5
8-10 years	2.2	2.8	1.2	1.8
> 10 years	4.6	6.4	2.0	3.1

Source: Carpinelli et al., 2016

On average the recoveries are all achieved within five years without making any distinction in terms of type of legal procedure or duration. Restructuring processes requires a relatively long period with respect to the economic banking activity requirements. In detail, after four years around 62 per cent of recoveries are still on-going. In detail, the average age of the procedure is 1.8 years, that is almost half of the liquidations. Specifically, the age of loan restructuring varies across the different categories (see figure below).

Figure 2.13 – The age of loan restructuring at the end of 2014 (in percentage)

	Total	Out-of-court agreements	Legal proceedings			
				arrangements with creditors	*restructuring agreements*	*recovery plans*
(a.1) Distribution based on the number of positions						
< 1 year	34.6	34.0	37.8	48.4	40.4	32.1
1-3 years	53.7	56.2	41.0	28.9	41.2	46.4
3-5 years	8.2	7.0	14.8	15.9	9.7	16.2
5-8 years	2.0	1.3	5.5	4.4	7.9	5.2
8-10 years	0.4	0.5	0.2	0.5	0.3	0.1
> 10 years	1.0	1.1	0.6	1.9	0.4	0.0
(a.2) Distribution based on the amounts						
< 1 year	36.9	39.6	34.5	44.6	33.5	33.5
1-3 years	50.1	53.1	47.6	47.0	48.0	47.5
3-5 years	8.9	5.1	12.1	7.1	9.9	14.1
5-8 years	3.8	1.7	5.7	1.2	8.6	4.9
8-10 years	0.1	0.2	0.0	0.0	0.0	0.0
> 10 years	0.1	0.2	0.0	0.0	0.0	0.0

Source: Carpinelli et al., 2016

Specifically, a difference between liquidation and restructuring occur in terms of duration and in the average share of secured loans. In terms of guarantees, almost 50 per cent of the restructured loans are secured, with respect to 42 per cent of liquidations. This means that debtors which have significant guarantees are more willing to reach agreements with credit institutions.

From the bank's point of view, the management of non-performing loans accounts for 2.8 per cent of total operating costs. The relevant impact of NPLs' management is due to the previously described inefficiencies. In general, the organizational set-ups of banks to manage doubtful loans varies across banks. While some groups still have fragmented structures, some larger groups have implemented specialized organizational units, with separations between restructuring and liquidation processes.

For instance, three different methodologies and strategies have been implemented by the three largest Italian banks to resolve non-performing loans. Specifically, Intesa Sanpaolo decided to focus more on an internal strategy while UniCredit and Monte dei Paschi decided to put more attention on disposals to the market.

Key factor in the strategy decision is the timing of the NPL reduction. From one side, a massive disposal of doubtful loans has advantages for the asset quality realizing a rapid deleveraging, but it is costly for shareholders due to strong impairments covered capital. From the other side, an internal strategy to recover loans does not immediately affect the asset quality represented in the bank's balance sheet, but it creates higher revenues and better conditions in the income statement.

In this case, UniCredit had an higher level of toxic assets and needed to reduce this level more rapidly than Intesa, that decided to implement an internal strategy distributing dividends for €3.4 billion to shareholders avoiding large impairments in the balance sheet. In 2016, UniCredit's losses accounted

to €11.8 billion due to urgent write-offs to reduce NPLs by around 25 per cent and to the FINO project[32]. With this operation UniCredit has now less NPEs with respect to Intesa but it required a capital increase to shareholders equals to €13 billion. Moreover, the differences between Intesa and UniCredit are shown in the geographical diversification as well. The geographical distribution of UniCredit's activities across Germany, Austria and Central and Eastern Europe can create a stronger shield to the weak Italian economic condition, while Intesa is more focused on the Italian market but it has a better credit profile due to higher profitability in Italy, wealth management diversification and a better cost-to-income ratio (Ninfole, 2017).

Regarding Monte dei Paschi, the situation is quite different because the bad management and political influences negatively impacted the business operative efficiency of the bank and a massive disposal was the unique method to avoid the bankruptcy and recreate a sustainable level of profitability. This is also due to the fact that Intesa and UniCredit faced the problem in the early times reaching a strong reduction of toxic assets in the balance sheet, while Monte dei Paschi di Siena has not managed the problem properly in time.

In the following three paragraphs, the thesis presents a detailed description of the three different strategies for UniCredit, Monte dei Paschi di Siena and Intesa Sanpaolo.

2.3.1 UNICREDIT

UniCredit is a real pan-European bank with important branches all over Europe with 25 million customers and well-integrated commercial banking activities with Corporate and Investment Banking model. It covers 14 strategic markets in 18 countries with a strong presence in the continental and eastern Europe with a market share higher than 10 per cent in Austria, Bosnia and Herzegovina, Bulgaria, Croatia, Italy and Serbia[33].

In December 2017, the net exposure of non-performing loans for UniCredit was €21.191 million, representing the 4.2 per cent of the total loans to customers (with respect to the 5.62 per cent of 2016). The coverage ratio increased to 56.2 per cent with respect to 55.6 per cent of the previous year.

[32] For further details, please refer to following the section "2.3.1 UniCredit".
[33] Market share based on the number of outstanding loans. (data at November 2017)

Specifically, at the end of 2017, the net level of bad loans is €9.498 million, down by 13.1% compared to end 2016. Moreover, in this period the unlikely to pay (UTP) loans were €11.028 million, down by 16% with respect to the previous annual report. In addition, past due loans declined during the annual business period from €902 million to €665 million in net terms[34].

In 2016, the UniCredit's strategy was principally focused on large sales and disposals to the market in order to speed-up the conclusion of the bank's de-risking, recreating a safe environment and a pre-crisis level of profitability.

Moreover, UniCredit promoted a project called "FINO", which means "Failure Is Not an Option". The project FINO is a two-phased de-risking of €17.7 billion of gross bad loans through a securitized portfolio.

Phase 1 consisted in initiating market transactions issuing asset backed securities by special purpose vehicles, that are transferees of the receivables included in the FINO portfolio. In this phase, they are subscripted by UniCredit for the 49.9 per cent while the majority is subscripted by third-party investors. The third investors are as follows:

- Pimco (€3.5 billion);
- DoBank (Fortress Group) (€13.5 billion).

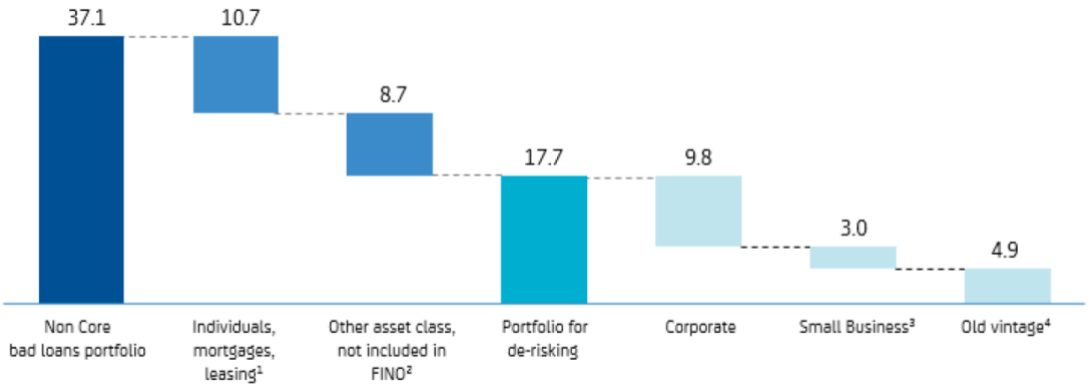
This phase was successfully completed in July 2017.

In phase 2, UniCredit aimed to use the application of the GACS[35] for senior securities and to reduce the risk profile through gradual sale to third parties of the subscribed securities, to reduce the amount held below the 20 per cent through several transactions.

UniCredit as first step selected the classes of loans to be part of the portfolio for this de-risking operation. Small business and old vintage[36] loans (see figure below) while mortgages and leasing, for instance, are excluded. The main reason why these two classes are not part of this project is that mortgages value is strongly dependent to political uncertainty and leasing requires too long time to release the assets, extending too much the operation.

[34] Source: UniCredit annual report 2017.
[35] For further details, please refer to the section "2.4.2 Garanzia Cartolazizzazione delle Sofferenze (GACS)".
[36] Old vintage loans are bad loans earlier than 2009 (UniCredit, 2016).

Figure 2.14 – Non core bad loans portfolio for FINO transaction by asset class (in billion of Euro)



Source: Unicredit, Tranform 2019 presentation

The average price of the portfolios sale corresponds to the 13 per cent of the gross book value, a price considerably below the average price of the Italian market. The average value from 2006 to 2015 is around 43 per cent of the gross book value, even if it is reduced to 37.5 per cent over the period 2014-2015. However, the recovery rate is clarified considering different factors. The average recovery rate for corporate loans is below the average of recovery rates and amounts to 33.4 per cent, but the portfolio of €4.9 billion of old vintage loans has to be considered as well. These loans have a lifetime of around 12 years, on average, and their recovery rate should be around 7.1% (Ciocchetta et al., 2017). In conclusion, the FINO portfolio is almost entirely composed by unsecured loans that have a lower recovery rate compared with guaranteed loans.

Furthermore, UniCredit additionally aimed to reduce the stock of NPEs through the strengthening of the origination and monitoring activities and through small sales of NPLs' portfolios. Specifically, through the PORTO project, the bank introduces several innovative measures related to the implementation of operational practices to create a new managerial approach in the management of the impaired loans. In addition, in the period 2016-2017 several transactions have been finalized for a total amount of around €3.7 billion regarding secured and unsecured NPL portfolios.

In conclusion, strategies promoted by the Group considerably improved the bank's asset quality. In 2015 the level of the net NPE ratio was 8.6 per cent while in 2017 declined to 5.0 per cent, down by around the 40 per cent.

2.3.2 MONTE DEI PASCHI DI SIENA

Founded in 1492, Monte dei Paschi di Siena is the world's oldest banking group still in operation. The bank, with 240 specialist centers and 1.600 branches, provides services to more than 4 million clients. It combines traditional banking activities with specialized centers with innovative activities and the Group is specialized in activities as leasing, factoring, corporate finance and investment banking.

After the European Sovereign Debt Crisis, the bank was in trouble and was very close to declare bankruptcy but was rescued by the Italian government. Already in 2013, the bank received the support from the state with €5.4 billion. But the problem was not solved after this recapitalization and in 2016 MPS was again really close to failure.

In July 2017, the burden sharing option was pursued in order to restore the core banking activities. In detail, the conversion of the junior bonds in equity was made for €4.473 million with an emission of new 517.1 million of new shares. The remaining part was covered by a public intervention for €3.863 million that bought shares at a discounted price equal to €6.49. After this really important operation, the state became the major shareholder of the bank with a quote of 53.45 per cent.

Furthermore, economic recession and bad management created a high level of non-performing loans. In December 2017, the net exposure of non-performing loans for MPS amounts to €10.352 million, representing 16.3 per cent of the total loans to customers (with respect to the 19.0 per cent of 2016). The coverage ratio increased from 55.6 per cent at the end of 2016 to 67.2 per cent at the end of 2017.

Specifically, at the end of 2017, the net level of bad loans is €3.114 million, down by 13.1 per cent compared to end 2016. Moreover, in this period the unlikely to pay (UTP) loans amounts to €11.028 million, decreasing by 16 per cent with respect to the previous annual report. In addition, past due loans declined during the annual business period from €902 million to €665 million in net terms[37].

According to the business plan 2015-2018, MPS aimed to recreate a sustainable level of profitability due to operational improvements and a normalization of the cost of credit.

Therefore, in order to normalize the cost of credit and to reduce the level of non-performing exposures several activities have been implemented (MPS, 2015):

- Focus on the internal organization on the recovery for the most important positions;

[37] Source: Monte dei Paschi di Siena annual report 2017.

- Multiannual program for the disposal of non-performing loans portfolios for around €5.5 billion, with €2 billion realized in 2015;
- Reorganization of the Real Estate Owned Company (REOCO) in order to avoid the impairment of mortgages properties as collateral.

Therefore, the main strategy was the disposal of a relevant stock of NPLs. Over the period 2015-2016 MPS bank sold unsecured loans equals to €2.2 billion to different buyers as Banca Ifis, Epicuro SPV and Kruk Group. However, disposal of non-performing assets were not executed as planned, because after the EBA stress test and the bad result obtained by the credit institution, a new business plan was created, based on a required capital increase.

In July 2017, a restructuring plan for the period 2017-2021 has been approved to aim the return of the bank to a sustainable level of profitability[38].

The plan is based on the following four pillars:

- Full leveraging of retail and small business consumers;
- Renewing operating model (e.g. cost/income ratio lower than 51%);
- Strengthening capital and liquidity position with a CET1 higher than 14% within 2021;
- Improving the credit risk management.

In order to improve the credit risk management, different initiatives have been promoted. For instance, a new Chief Lending Office (CLO) structure is implemented in order to improve the early warning processes and improve the recovery rate, with the objective to reduce the gross NPL ratio below 13% within 2021.

The internal strategy is an option implemented by the bank, but the plan to reduce bad loans is principally based on the disposal of these assets through a securitization. Indeed, the restructuring plan includes the sale of €28.6 billion NPLs, which represents almost the entire portfolio of toxic assets.

On 14 May 2018, the official announcement of the acquisition of the MPS's NPL platform ("Juliet") was made. MPS announced that a binding contract was reached with Cerved and Quaestio for the outsourcing of the NPL platform. The transaction presents the consolidation of the platform to a vehicle company specifically established by Banca MPS, which would be transferred to Cerved and Quaestio, with the subscription of a long-term servicing agreement between the vehicle company and

[38] A sustainable level of profitability can be marked, for instance, by a positive ROE higher than 10% (MPS, 2016).

the Group's Italian banks for the management of future cash flows of doubtful loans. The servicing agreement does not include loans classified as doubtful as at 31 December 2016 and subject to the disposal plan for a total of €28.6 billion. The consideration for the equity investment is €52.5 million. In addition, a potential total earn-out of up to €33.8 million, payable in two tranches, will be subject to the achievement of certain economic results, following the approval of Juliet financial statements as of 31 December 2020 and 31 December 2025 (MPS, 2018).

Finally, on May 2018 the securitization vehicle was completed and the SPV issued the following tranches (MPS, 2018):

- Senior notes for EUR 2,918 million, which have been assigned an A3/BBB+/BBB rating by Moody's Investors Service, Scope Ratings GmbH and DBRS Ratings Limited, respectively. The notes, which will be assisted by GACS, will be initially retained by BMPS, which may subsequently consider their partial placement on the market. The senior notes' tranching exceeds Restructuring Plan expectations, which contemplated a class of Non-Investment Grade notes for approximately EUR 500 million that will therefore not be issued.
- Mezzanine notes for EUR 847.6 million, unrated, which were sold on 22 December 2017 to the Italian Recovery Fund managed by Quaestio Capital SGR.
- Junior notes for EUR 565 million, unrated, which will be sold to the Italian Recovery Fund managed after having obtained GACS on the senior notes.

2.3.3 INTESA SANPAOLO

Intesa Sanpaolo with a market capitalization of €53.1 billion is among the European leaders in the banking sector and is ranked as the first bank in Italy by market capitalization. The bank has its leadership in business areas as retail, corporate and wealth management. It provides services to 12 million customers and has 4,600 branches distributed all over the Italian territory, with a share above 12% in 18 out of 20 Italian regions and a strong retail presence in the wealthiest regions where the credit institution covers more than 70% of the household wealth.

In December 2017, the net exposure of non-performing loans for Intesa Sanpaolo accounted to €25.464 million, representing the 6.2% of the total loans to customers. This data, compared to the 2016 results states a decrease by €4.303 million, which means by the 16.2% with respect to the previous year.

Specifically, at the end of 2017, the net level of bad loans is €12.625 million, down by 15.9% compared to the end of 2016. Moreover, in this period the unlikely to pay (UTP) loans amounts to €12.460 million, decreasing by 17% with respect to the previous annual report. In addition, past due loans decreased during the annual business period from €437 million to €379 million in net terms[39].

In order to resolve the NPL problem, Intesa Sanpaolo adopted a primarily internal workout strategy. The principal aim of the Group was to optimize the use of capital and liquidity, de-leveraging non-core assets avoiding clearance sales in an underdeveloped NPL secondary market. The credit institution decided to not affect the balance sheet with relevant impairments and write-offs but in 2014 created an internal specialized division to manage non-core toxic assets, called Capital Light Bank.

The Capital Light Bank is focused on the management of portfolios including all doubtful loans, equity stakes, repossessed assets and other non-strategic assets. The division operates with internal and external operations and is structured as follows (Intesa Sanpaolo, 2014):

- Loan Recovery;
- Real Estate Owned Company (REOCO);
- Intesa Sanpaolo Provis;
- Investment;
- Strategies and Solutions;
- Planning and control.

The main idea related to the loan recovery department is to rely not only on external debt recovery companies, which are involved in case of small unsecured loans, but to exploit the knowledge and expertise of the department, where units are divided in specialized type of loans. For this reason, the department has assigned to manage around €27 billion of doubtful loans and take care of the new NPLs inflows.

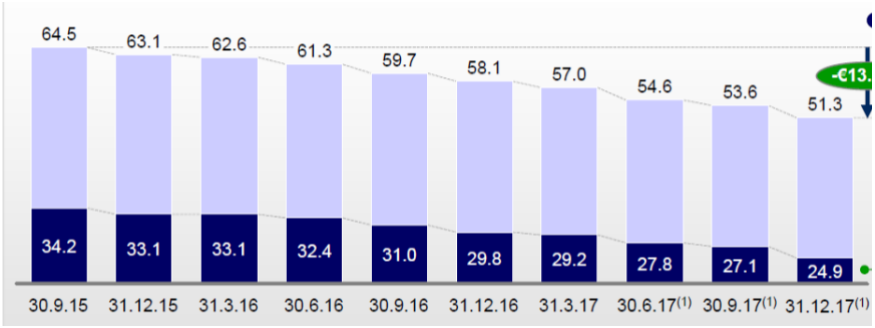
Moreover, Intesa Sanpaolo Provis is a corporate vehicle and focuses on managing all non-performing assets derived from leasing activities, for a total of around €3 billion. Additionally, REOCO is an investment company, part of Intesa Sanpaolo group, whose mission is to extract the highest value from repossessed properties and to protect the bank´s assets, managing real estate collaterals in a more proactive manner.

[39] Source: Intesa Sanpaolo annual report 2017.

Furthermore, Intesa in order to be more efficient and effective in the reduction did not only focus on the internal recovery but the "Strategies and Solutions" department finalized particular selling operations in the market as the "Beyond the clouds"[40], "Sherazade", "Rep" and "Hemera" operations.

Results of the strategy are relevant. Since the creation of the Capital Light Bank in 2014, the total deleveraging accounted to €23 billion, reducing the gross NPL ratio from 17.2 per cent in September 2015 to 12.7 per cent in December 2017 (see figure below).

Figure 2.15 – NPL stock



Source: Intesa Sanpaolo, 2018

Despite the considerable reduction of the non-performing exposure stock over the period 2014-2017, new European requirements led a new different strategy for Intesa to speed-up the reduction of doubtful loans. In according to the new 2018-2021 business plan, a significant de-risking at no cost to shareholders is based through the implementation of the following activities:

- Carve-out of the loan recovery platform, increasing the recovery rates;
- Readiness for future NPLs disposal at a price in line with the book values;
- "Pulse" for early retail delinquencies;
- Scale-up of proactive credit portfolio management, reducing the level of unlikely to pay loans.

Specifically, in 2018 Intesa and Intrum created a strategic partnership for the recovery and resolution of NPLs. The agreement is based on two transactions. First, the creation of a lending servicer in the Italian NPL market with the following characteristics:

- The platform is 51% owned by Intrum and 49% held by Intesa Sanpaolo;
- Around €40 billion serviced;
- Commercial development plans for the new platform in the domestic market;

[40] The "Beyond the clouds" operation was the largest operation promoted by the Intesa Sanpaolo Group. On May 2017, Intesa sold a portfolio of €2 billion of NPLs to Christofferson, Robb & Company and Bayview Asset Management Fay at the price in line with their book value. The portfolio was composed of around 9.000 loan positions, including a relevant portion of unsecured and long past due loans. For further details on this operation and all other mentioned projects, please refer to the Group's annual reports.

- A 10-year contract for the servicing of Intesa Sanpaolo´s bad loans portfolios;
- Around 1.000 employees involved.

Second, the agreement is based on the sale and securitization of €10.8 billion non-performing loans.

In conclusion, this operation can have a considerable impact on the entire Italian banking system. First, the sale price for the bad loans portfolios is at 28.7 per cent of the nominal book value. The price is relatively high if compared to the rates of the main competitors' operations[41]. Obviously, operations and prices are not really comparable because they always depend on the portfolios' composition and on the related collaterals, but after the Intesa-Intrum agreement the reference benchmark for future transactions is certainly going to stay no longer at 15-20 per cent but closer to the 25 per cent of the nominal value. Second, a new pressure on small and medium banks is created after the sale of non-performing loans platforms from the three most important banks and it is going to entirely change the bad debts market in Italy.

[41] Unicredit through the FINO operation sold bad loans at the 13 per cent of the nominal book value, while MPS at the 21 per cent (Graziani, 2018).

2.4 INITIATIVES IMPLEMENTED BY THE ITALIAN GOVERNMENT

A general deficiency on how Italian laws are applied to financial operations has always been a great concern for foreign investors and has been a source of inefficiency for the banking activities. The government implemented further steps to approve new laws with the aim of modernizing and simplifying the whole framework of the Italian legal system in terms of the financial sector, increasing the investment efficiency for banks and investment firms (Willkie Farr & Gallagher, 2016).

According to the European guidelines, the Italian government faced the problem proposing a three-pronged strategy composed by:

- Structural reforms to improve the corporate insolvency and fiscal regimes;
- A state guarantee scheme, called GACS (Garanzia sulla Cartolarizzazione delle Sofferenze);
- The launch of the Atlante fund.

2.4.1 STRUCTURAL REFORMS

Structural measures have been implemented by the Italian government with the two aims of facilitating the recovery of bad loans and leading banks to write-offs their doubtful loans, through a more favourable tax regime for provisions (Crociata, 2016). A strategy for developing a market of NPLs should aim to remove regulatory impediments to debt restructuring encouraging out-of-court workouts (Marcucci et al., 2015).

In detail, in order to speed up the judicial procedures and to create more efficient available restructuring tools, in June 2015 the government approved Law No. 132/2015, revising some codes as the Civil Procedure Code and the Bankruptcy Law.

In detail, the above mentioned reform includes:

Figure 2.16 – Structural reforms

Reform's highlights	Description	Aim of the new rule
A new scheme of restructuring agreement	New mechanism to overcome common delays for companies generated by opportunistic behaviour by minorities of creditors. Companies must want to conclude out-of-court restructurings with a financial debt towards banks not lower than the half of the entire liabilities are entitled to sign restructuring plans with financial creditors holding at least the 75 per cent of the overall financial liabilities.	In the previous framework, even if the majority accepted the debtor's proposal, the objection of a single creditor could delay the whole process. With the reform, banks can have a more proactive role in the implementation of projects for distressed companies.
A new regime for insolvency administrators	For each insolvency procedure an online database with all relevant data has to be introduced containing all revelant information for administrators and liquidators as the length of previous assignements . In addition, administrators have to present the liquidation plan within 180 days and terminate the entire procedure within two years.	The rule aims to increase the transprency among different parts and to influence the incentives for administrators, with the final goal of reducing the length of sales proceedings.
Competing plans and competing bids in concordato	Creditors of a firm that have filed for a 'concordato preventivo' are enabled to submit to the court a restructuring plan in competition with the one presented by the firm itself.	Prior of the reform, the firm had the exclusive power to submit a restruturing plan to the court and they were often forced to approve suboptimal plans. Now, competition is promoted, enhancing the likelihood of successful turnaround.
Improvement to procedures for the sale of collateral	The efficiency of insolvency proceedings is improved by imposing best practises on courts and interested parties. For instance, the court cannot take more than 90 days for conducting the hearing of creditors and other interested parties. Moreover, the rule reduces some hurdles that make unprofitable to get collateral assigned to creditors for them. With multiple actions, creditors can offer a price equal to the last offered in a unsuccessful auction.	In general this new rule should improve the efficiency of forced sales procedures and increase the probability of early bids to be accepted.

Source: Marcucci et al., 2015

In addition, in 2016 a new Law Decree (No. 59/2016), called "Decreto Sofferenze" has been introduced to implement European directives regarding legal and regulatory requirements. In detail, the initiatives implemented are as follows:

- "Pegno mobiliare non possessorio": in line with the floating charge present in other jurisdictions as well, the pledge right is extended on instrumental movable assets as machinery and inventories, in addition to the real estate guarantees. Furthermore, companies have the possibility to dispose of the assets included in the pledge.
- "Patto Marciano": According to the credit agreement, if the debtor is in default[42], the bank can automatically repossess the real estate collateral and in case the value of the collateral is higher than the outstanding value of the debt, the creditor should be the difference to the debtor.
- "Compulsory expropriation": Art.596 of the Civil Procedure Code presents new rules on some credit recovery procedures as the provisional execution for an injunction older for the portion of the claim not challenged by the debtor, the possibility to hold creditors' hearings using electronic tools and the provision that no oppositions are allowed if the disposal process has already started.

[42] A debtor is considered in default if it is not meeting its obligation for more than 8 months. In case the debt is already covered for at least the 85 per cent of the total oustanding debt, the default period is elevated to 12 months (Bonolis, 2016).

Moreover, in the Law No. 132/2015 important amendments to the taxation of loans provisions are introduced. As already described in the previous chapter, the taxation regime was not favourable for resolving NPLs, but with the institution of the reform, write-downs, disposals and write-offs can be completely deducted from IRAP and IRPEF. In detail, in 2014 a transition period of ten years has been introduced where:

- Prior of 2025, banks will deduct only 75 per cent of provisions and related losses in the year of derecognition while the remaining 25 per cent is going to be distributed over next business years[43];
- After 2025, all provisions are losses are going to be completely deducted in the year in which they occur.

Based on the above described reforms, the bankruptcy and foreclosure proceedings should be significantly reduced, increasing the level of restructuring processes and making early arrangements in case of crisis. Once the new framework is going to have full effect, a preliminary assessment indicates that the average extent of the judicial foreclosure should be reduced from four to three years. Moreover, the average length of the bankruptcy process[44] should fall from six years to three years in a favourable scenario or to less than five years in a less positive scenario (Marcucci et al., 2015).

2.4.2 GARANZIA SULLA CARTOLARIZZAZIONE DELLE SOFFERENZE (GACS)

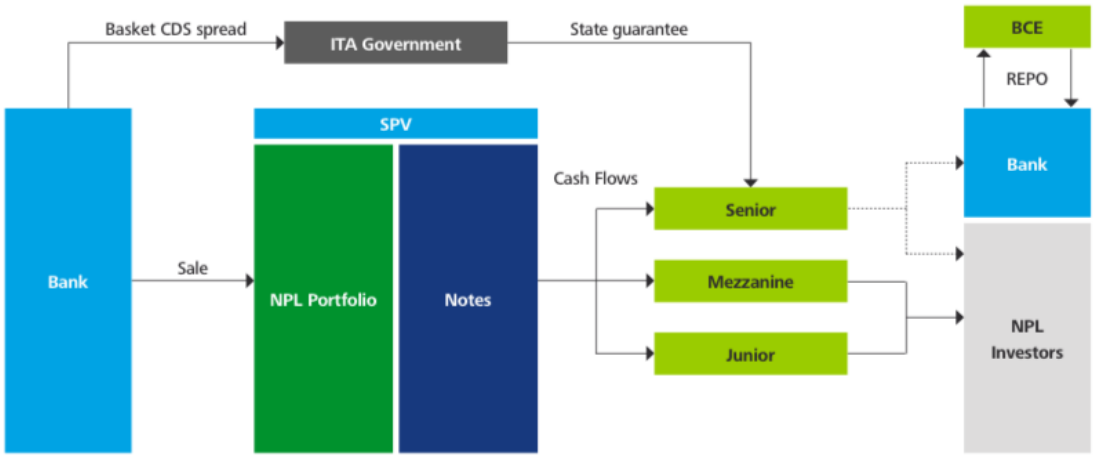
The GACS is the Italian scheme for the senior tranches of non-performing loans asset backed securities (ABS). It is a state guarantee scheme designed to assist Italian credit institutions in securitization processes to resolve NPLs from their balance sheets and to increase the liquidity in the secondary market.

In November 2015, after the resolution of the four Italian regional banks[45], the Italian government started to discuss with the European Authorities in order to analyse alternative solutions for the creation of a systemic bad bank, based on the restrictions imposed by the Bank Recovery and

[43] This is not applicable to losses on disposals, because they are completely deductible in the year in which they occur.
[44] It starts from the declaration of insolvency to the distribution of proceeds resulting from the liquidation (Marcucci et al., 2015).
[45] On November 22, 2015 the four Italian banks Banca Popolare dell'Etruria, Banca delle Marche, Cassa di Risparmio di Ferrara and Cassa di Risparmio di Chieti have been rescued by the Italian Decree "Salva Banche", with the creation of four new bridge-banks to ensure the banks' business continuity of essential units (Banca d'Italia, 2015).

Resolution Directive[46]. In February 2016, Rome and Bruxelles reached an agreement and in April 2016 the GACS scheme has been introduced by the Law No. 49/2016 and a fund equals to €100 million has been established for the purposes of the Decree.

Figure 2.17 – GACS scheme



Source: Deloitte, 2016

Banks can clean up their balance sheets by transferring bad loans through a securitization process, which means transferring loans to a Special Purpose Vehicle (SPV). The special purpose vehicle consequently issues asset backed securities, creating different tranches as senior, junior and mezzanine tranches. The tranching is based on the quality of non-performing loans and senior notes have the highest priority while junior notes have the lowest.

In detail, the GACS covers senior tranches, which are risk-lower notes, and the payments provided in respect of interests and capital in favour of the senior noteholders. The GACS becomes effectively only when the selling bank has transferred more than 50 per cent of junior notes and mezzanine notes if issued (Fiscale et al., 2016). Specifically, only senior notes received an investment grade can be used as guarantee by the government, to be sure they are not classified as junk (Spadaro, 2016) and the servicer has to be independent.

If the SPV fails to meet the payments, the GACS can be enforced by noteholders within 9 months. In detail, in case of payment failure for more than 60 days from the date of payment, the noteholders should notify the SPV a request to complete the payment. In case the payment does not occur, after 30 days but within 6 months, they can request the intervention of the state guarantee and within 30

[46] The Bank Recovery and Resolution Directive (BRRD) is a European directive to regulate the recovery and resolution of credit and investment institutions. Based on the regulation, the state aid is permitted only if specific circumstances occur as an extraordinary systemic stress or in case the bank's shareholders have borne losses equal to 8 per cent of the bank's liabilities (Banca d'Italia, 2015).

days the Italian Ministry of Economics and Finance (MEF) should pay the relevant amount to the senior noteholders. Finally, the MEF is subrogated to the rights of the senior noteholders and is authorized to receive the amount paid by the GACS, the interests and the costs incurred for the recovery (Fiscale et al., 2016).

The guarantee is offered at market conditions and for this reason cannot be classified as state aid. The guarantee pricing is based on a basket of credit default swaps (CDS) on Italian issuers with similar rating assigned by a rating agency based on the mid-prices simple average of the previous six months. For instance, for the initial three years, the pricing is based on a three-year CDS and after that it requires the use of a five-years CDS, which becomes a seven-years CDS at year 6 (Deloitte, 2016).

Summarizing, the implementation of the state guarantee scheme requires that (Natixis, 2016):

- For derecognizing the securitized assets, the originating credit institution has to sell at least the 50 per cent of the junior notes or mezzanine notes if issued;
- The servicer must be external and independent, without any kind of affiliation with the selling bank;
- The generated cash flow should pay interests as priority and after that should repay the principal after the repayment of interests of mezzanine tranches;
- The bank has to pay to the government a fee at the market level in the form of an annual commission proportional to the guaranteed outstanding asset;
- The price of the guarantee is increasing in case senior notes are not fully repaid in order to speed up the recovery.

In conclusion, the main purpose of the initiative is to attract new investors in the secondary market increasing the creditworthiness of the senior asset backed securities. Moreover, it reduces the funding costs of the special purpose vehicle and incentivize banks to dispose NPLs, facilitating the sale of NPLs and improving the liquidity indicators of banks (Fiscale et al., 2016).

Based on a Cerved analysis, the implementation of the state's guarantee should increase by around 10-20 per cent with respect to the price investors are willing to pay without the guarantee. Basic hypothesis of the investigation is that the senior tranches are the 50 per cent of the whole total value of secured portfolios. According to this assumption, if the basic price ranges between 15 and 30 cents[47], then with the introduction of GACS the market value should rise by 2-3 percentage points with respect to the gross value of the secured portfolio. Therefore, the price may increase to 18-36

[47] The price varies across different categories of portfolios. If the portfolio is secured, then the price is going to be higher with respect to unsecured or mixed portfolios.

cents[48] in a positive scenario or in alternative to 16.5-33 in a negative scenario. Moreover, the study shows the total amount of NPLs transactions on the secondary market is going to increase by about €70 billion of bad loans in the long-run (Peveraro, 2016).

In August 2016, the first operation with GACS was positively operated by the Banca Popolare di Bari regarding the assignment of €480 million non-performing loans and the issue of a senior tranche with a BBB rating, granted by the GACS. In detail, €304 million were exposures secured by residential and commercial properties. For the securitization, the special purpose vehicle issued the following three tranches of securities (Aloisi, 2016):

- €126.5 million of senior tranches with investment grade equals to BBB by DBRS;
- €14 million of mezzanine tranches rated B by DBRS;
- €10 million of junior tranches with no rating.

This operation reached a successfully results both in terms of tranching and transfer price, with a selling price equals to the 31 per cent of the gross book value of loans, considerably above the 20 per cent obtained on average by selling doubtful loans through securitization. In conclusion, the first operation with GACS has outperformed market expectations and it has been a test for much bigger future transactions as the Monte dei Paschi's operation.

2.4.3 THE ATLANTE FUND

Atlante is an Italian private equity fund managed by Quaestio Capital Management dedicated to recapitalize banks of the Italian banking sector as well as purchase the junior tranches of securitized non-performing loans. The fund was created and supported by the government and it is owned by several large credit institutions, insurance companies, the public owned Cassa Depositi e Prestiti and other institutional investors[49]. The fund was created in April 2016 and it has raised €4.25 billion with an investment timeline of five years, that can be extended every year for three years more, and an internal recovery rate (IRR) target of around 6 per cent per year[50] (Siano, 2017).

[48] A gross value of 100 cents is assumed.

[49] The shares of the fund are composed as follows:

- Credit Institutions - €3.000 million;
- Banking foundations - €500 million;
- Cassa Depositi e Prestiti – €500 million;
- Other institutions - €250 million.

[50] The internal recovery rate is lower than the average rate required by specialized investors, that is equal to around 15 per cent per year.

The main objective of the fund is to promote the creation and development of an efficient market of non-performing loans in Italy[51]. Specifically, it aims to realize the objective through the following two functions:

- Investing up to 70 per cent in Italian banks that are required by the European Central Bank to increase capital;
- Investing at least 30 per cent in non-performing loans.

First, the fund acts as a back-stop facility for future capital increases that cannot be secured by the market or can impact with risk of bail-in and consequent systemic risks. In detail, the resources invested have to respect limits defined in the supervisory review and evaluation process (SREP) framework in Basel III and the rise of capital has to be required from the supervisory authority. Moreover, the fund is allowed to buy a maximum share equal to 75 per cent for each single issue if it not essential for the successful completion of the operation and the fund does not exercise any management activities in the invested bank but can set-up operations with other investors.

Second, the remaining resources can be used to purchase the riskiest tranches of NPLs securitizations, with the aim of stimulating competition and reducing the wide bid-ask.

Since its creation, Atlante operated different operations to rescue banks. On April 2016 closed the entire subscription of the capital increase of Banca Popolare di Vicenza after the capital increase failure in the market and became major shareholder with the 99.3 per cent of the bank's equity. Similar procedure was pursued to rescue the other Venetian bank: Veneto Banca[52].

After these operations, other investments occurred in order to reduce the NPL stock in the system as happened for Banca Marche, Banca Etruria, CariChieti and Monte dei Paschi di Siena. Specifically, the Atlante fund was involved in the purchase of junior and mezzanine tranches from a special purpose vehicle that purchased the entire portfolio of €28.9 billion of non-performing loans from Monte dei Paschi di Siena[53].

On April 2016, the launch of the Atlante fund was positively welcome by the financial market with the average rise of Italian banks' shares by 20 per cent, representing the reactions of the market to the government initiative. Moreover, Italy received other encouraging messages from European

[51] Source: Quaestio Capital Management SGR (2016).
[52] Despite the resources injected by the fund, in June 2017 the ECB determined the two Venetian banks as insolvent and after this, the good bank was bought by Intesa Sanpaolo for the symbolic prince of €0.50.
[53] For further details, please refer to the section "2.3.2 Monte dei Paschi di Siena".

Authorities. Mario Draghi welcomed the initiative stating that is a small step, but it is in the right direction (Longo, 2016).

Certainly, the fund has contributed to create liquidity in the Italian banking sector and to avoid the bail-in procedure, but many weaknesses became evident over time. First of all, the size of the fund shows considerable limits and for this reason, after the rescue of the Venetian banks, a second fund "Atlante II" has been created to have new resources to invest on securitized non-performing loans. Second, the participation of Italian banks in the fund can create different disadvantages and problems in the long term. For instance, a lack of impartiality and the risk of a possible domino due to the increased participation of largest banks in weaker institutions[54]. In conclusion, the Atlante fund showed to be a good solution to solve singular cases, but not to resolve the systemic problem of doubtful loans.

In conclusion, in 2017 non-performing loans considerably reduced by 18.5 per cent and initiatives promoted by single banks and those sustained by the government evidenced important results, but many initiatives have still to be implemented through standard and non standard operations. Through these initiatives, a higher awareness is now present in the Italian banking system and all the parts are operating to resolve the problem. Banks with a strong effort in the management of doubtful loans through restructuring and liquidation procedures could reduce the bad debt stock by around €50 billion, while non standard operations as initiatives promoted by the government could decrease the level by €80 billion (KPMG, 2018).

[54] Intesa Sanpaolo and UniCredit participated to the fund with almost €1 billion each (Di Biase, 2015).

CHAPTER 3 - EMPIRICAL ANALYSIS: DETERMINANTS OF NON-PERFORMING LOANS IN THE ITALIAN BANKING SECTOR

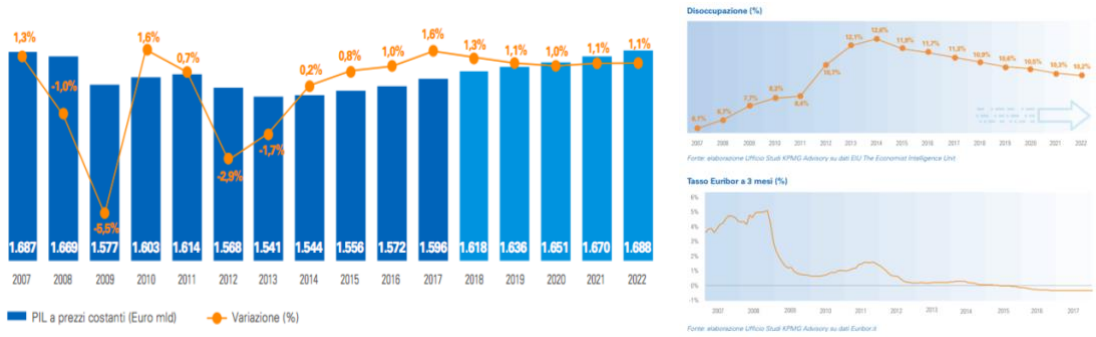
After a theoretical presentation of the non-performing loans issue and a wide economic description of the situation in Italy, this chapter presents an empirical analysis to determine causes of doubtful loans in the Italian banking system.

Investigation of the determinants that created non-performing loans in the Italian banking system and in the other European countries is of a relevant importance for European authorities to recreate a systemic financial stability and to incentivize an effective banks' management.

Regarding the Italian case, as preliminary considerations the rapid growth in toxic debts is possibly driven by a severe economic contraction during the financial crisis equal to almost 10 percentage points of the GDP. The emergence of bad loans occurred continuously over the crisis and the peak of doubtful assets happened in concomitance of the two recessions. Specifically, in Italy the first shock did come from the international trade after the financial crisis and the sovereign debt crisis. The latter crisis affected the funding costs for banking, restricting the ability for banks to lend (Angelini et al., 2017). Moreover, as consequence of the crisis, almost 25 per cent of the industrial production collapsed and the number of firms in failure rapidly increased over the period 2012-2014 from 12.325 to 15.346, with a reverse trend in the subsequent period 2015-2017 (KPMG, 2018).

In the below figure, some macroeconomic indicators are shown to represent the possible negative impact they had on the financial sector.

Figure 3.1 – Macroeconomic indicators trend



Source: KPMG, 2018

The negative turnaround of the economic environment dictated an increase in the level of toxic exposures, finding banks unprepared to face this substantial stock. In addition, in some banks the increase of bad loans was also caused by inadequate or illegal lending policies.

A relevant example is what occurred to Monte dei Paschi di Siena. Two main factors are explanatory of the Tuscanian bank´s crisis. First, the Governance structure, which overstated the connection between the bank and the Siena´s territory. Business strategies and activities were deeply influenced by external subjects. Second, the bad management was characterized illegal financial operations in order to clean the bank's balance sheet (Bilotta, 2017).

In detail, the relationship between the bank and the institutional framework of the city is completely explained by different aspects:

1) Political control of Fondazione Monte dei Paschi di Siena[55];
2) Till 2012, the foundation owned the 51% of the total shares of the bank;
3) Every year the bank invests funds in the local territory.

The consequent meaning is that who governs the foundation, governs the banks. For that reason, the bank does not really maximize profits, but all the strategies are really distorted by political influences. Specifically, the Banca Antonveneta acquisition is important evidence of the bank's bad management. In detail, in 2007 Banca Antonveneta was bought by Banco Santander and, after just three months, MPS bought it from Santander for €9.25 billion, indicating an increase by 39 per cent with respect to the Banco Santander's price of the previous three months. Moreover, MPS had to cover debts for the acquired venetian bank equals to €10 billion. This was a completely unreasonable acquisition and Italian prosecutors are still investigating on the operation. The regional investigative commission said that the operation was not characterized by an overpayment, but it stated that MPS did not even perform the prior analysis to assess the real economic value of Antonveneta bank. This was a clear and relevant evidence of bad management and it contributed to decrease the value of efficiencies indicators in the bank's balance sheet, since it was not a decision based on business pursues but distorted from political influences.

In conclusion, the study examines the role of different macroeconomic and bank specific factors in the creation of toxic assets in the balance sheet of Italian banks. Specifically, the research investigates if the NPEs are explained by macroeconomic variables (GDP, unemployment, interest rates, public

[55] In 2013, the executive body of Fondazione Monte dei Paschi di Siena was nominated as follows (Bilotta, 2017): 7 by the council of Siena; 1 by the council of Siena in accordance with the Camera di Commercio; 5 by the province of Siena; 1 by the Tuscany region; 1 by the University of Siena; 1 by diocesis of Siena-Colle Val d'Elsa-Montalcino.

debt) and by other managerial factors. Finally, the study adopts a dynamic panel data method to perform the analysis.

3.1 DETERMINANTS OF NON-PERFORMING LOANS

3.1.1 MACROECONOMIC FACTORS

In the banking literature, several researches investigate the relationship between the macroeconomic environment and the quality of loans. The basic idea is that if the economy grows then a lower level of bad loans occurs, due to the fact that households and corporates have a sufficient level of income and profits to face their debt obligations. Moreover, empirical studies affirm that if the booming period continues, loans are granted also to lower quality borrowers and, when the recession break out, the level of doubtful loans naturally increases.

Regarding this relationship, Quagliarello (2007) provides an empirical evidence that the business cycle affects NPEs in the Italian banking sector over the period 1985-2002. Salas and Saurina (2002) find the negative significant relationship between the GDP growth and the level of NPLs. Klein (2013) performing an analysis for Central, Eastern and South-Eastern Europe finds NPLs are affected by higher unemployment, exchange rate reduction and higher inflation. Moreover, Louzis et al. (2010) investigates the same relationship for the Greek banking system over the period 2003-2009. The results show an increase in GDP and unemployment rate have a negative effect on NPLs, while an increase in lending rates have a positive impact. Finally, Cifter et al. (2009) affirms, studying the Turkish financial system, there is a significant impact of industrial production on NPLs.

Therefore, based on the papers mentioned above and further literature, the macroeconomic variables used in this analysis are the GDP growth, the unemployment rate and the lending interest rates. Furthermore, in the following sections 3.1.2 and 3.1.3 other explanatory variables, used as regressors, are presented.

3.1.2 PUBLIC DEBT

As Louzis et al. (2012) affirms the relationship between sovereign debt crisis and banking crisis is strong and have been recognized during the European Sovereign Debt crisis of 2010-2011. Indeed, Reinhart and Rogoff (2010) find an empirical evidence that banking crisis do often coincide with

sovereign debt crisis. This is what happened in 2010-2011 to some countries as Greece, Italy, Spain, Portugal and Ireland. In that case, public debt obligations were strongly present in the banks´ balance sheet and when the cost of debt became really high due to political uncertainty and an high level of public debt, the banking crisis broke out. With the crisis the value of the bond reduced and therefore the value as warranties diminished lowering the productivity of the bank and increasing the risk. Especially in 2011, the cost of funding for banks was so high that banks had no opportunity to get funds in the market and the European Central Bank introduced non-standard monetary policies to inflate liquidity in the market at a low price.

Specifically, two channels of diffusion have been recognized. Firstly, Reinhart and Rogoff (2010) explain that a downgrade of public finances ratings increases the pressure on liquidity to banks due to a consequent downgrade of credibility of national banks. In this case, banks have to cut lending and therefore the borrower cannot refinance its debt. Secondly, Perotti (1996) affirms that if the national public debt is high, there are fiscal measures to reduce social expenditures and this has a negative consequence on the households´ income, that cannot repay their debts.

Therefore, the following hypothesis is tested:

1 – Sovereign debt hypothesis: There is a positive relationship between an increase in sovereign debt and an increase in non-performing loans.

3.1.3 BANK SPECIFIC FACTORS

Macroeconomic variables are exogenous to the banking sector and cannot be the only reasons for an increase in NPLs. For this reason, bank specific factors have to be included as regressors and tested. Banks´ performances are mainly related to the business model chosen by each single bank and by the features of the individual banking system. Therefore, the way each single bank puts effort to increase the efficiency and have an effective risk management model is crucial for a future creation of non-performing loans.

Regarding these variables, in the banking literature several papers investigates the relationship between a set of bank specific factors and the increase of toxic assets.

Certainly, the most relevant paper is the study written by Berger and Young (1997). In their work, they investigate the presence of reverse causality among cost efficiency, loan quality and bank capital.

From this paper, the thesis defines three further hypothesis it can be tested in the Italian banking sector:

2 – Bad management hypothesis: A low cost efficiency is positively associated to an increase in non-performing loans. The cost efficiency is a proxy of quality management, considering poor skills in credit scoring and monitoring.

3 – Skimping hypothesis: High level of cost efficiency is positively associated to an increase in NPLs. Differently from the bad management hypothesis, banks, cutting costs, decrease their efficiency in assessing and monitoring the loan quality.

4 – Moral hazard hypothesis: Low capitalization of banks tends to increase the NPLs. When the bank is thinly capitalized, managers have a moral hazard incentive to increase the riskiness of loan portfolios, increasing the level of bad loans.

Berger and Young (1997) finds an evidence supporting the bad management hypothesis. Popdiera and Weill (2008) also affirm a strong evidence for the bad management hypothesis while Salas and Saurina (2002) provides a statistically significant relation between the loan quality and the capitalization of banks, supporting the moral hazard hypothesis.

The majority of previous studies are focused on the above discussed bank specific variables, but other variables and hypothesis could be tested in order to have a more complete and satisfactory analysis. For instance, another channel to be considered in the analysis, as presented from Louzis et al. (2012), is the moral hazard of too-big-to-fail. Indeed, since creditors expect government protection in case of bank´s failure, banks increase their leverage ratio and take excessive risk activities, granting loans to borrowers with a low level of creditworthiness. In Europe, this incentive has been reduced due to the Bank Recovery and Resolution Directive, promoted by the European Commission in 2014. With this new regulation the bail-out is no more possible and in case of failure shareholders and subordinated bondholders have to participate to the failure. Actually, as already discussed in Chapter 2, presenting the Monte dei Paschi case, the bail-out is still possible if the failure of that bank can have a strong negative impact to the entire financial system.

Moreover, this hypothesis has already been tested in previous studies. For example, regarding the US government´s TBTF policy, Boyd and Gertler (1994) affirm that the high level of leverage of US banks in the 1980s was stimulated by the US government' policies while Ennis and Malek (2005) concludes that this relationship is not definitive and cannot really be proved.

Then, summarizing, the following hypothesis is studied:

5 – Too-big-to-fail hypothesis: The leverage ratio positively affects the increase in NPLs.

Finally, other two hypothesis are presented. Hypothesis 2 and 3 (Bad management and Skimping) are mainly based on cost efficiency, while there is probably a relationship also between the bank´s performance and the NPLs. This relationship is ambiguous and the following two hypotheses are tested:

6 – Bad Management II hypothesis: Performance is negatively associated with an increase in NPLs. As for the bad management hypothesis, the performance indicator is used as a proxy for the quality management.

7 – Procyclical credit policy hypothesis: Performance is positively associated to an increase in NPLs. This hypothesis reflects a liberal credit policy, where the bank, increasing revenues and profitability in the short term, try to persuade the market regarding its performances without considering the future high expenses and problem loans.

In conclusion, in the table below are listed all variables used to test the hypothesis previously described. In parenthesis the expected coefficient signs are shown.

Figure 3.2 – Summary of the hypothesis

Variable	Definition	Hypothesis tested
Debt	$\frac{Central\ governement\ debt_t}{National\ GDP_t}$	Sovereign debt (+)
Return on Equity	$\frac{Profit_t}{Total\ equity_t}$	Bad Management II (-) Procyclical credi policy (+)
Solvency ratio	$\frac{Owned\ Capital_t}{Total\ assets_t}$	Moral hazard (-)
Cost-to-Income ratio	$\frac{Operating\ expenses_t}{Operating\ income_t}$	Bad Management (+) Skimping (-)
Leverage ratio	$\frac{Total\ liabilities_t}{Total\ assets_t}$	Too-big-to-fail (+)

As presented in the table, different balance sheet's indicators are used as proxies to test the above described hypothesis. For instance, the solvency ratio is used in order to measure the level of capitalization of the bank or the cost-to-income ratio is indicated to refer the level of operating efficiency of credit institutions.

The empirical analysis is mainly based on the analysis performed by Louzis et al. in 2012 for the Greek banking system and relies almost on the same hypothesis and has the same variables used as proxies. The Italian and the Greek banking system were both deeply affected by the Sovereign Debt crisis in 2010-2011 and they present some criticalities in common. Therefore, would be interesting also to compare the results Louzis et al. obtained with respect to the outcome obtained in this analysis adopting the same methodology.

3.2 DATA

The dataset consists of a balanced panel of 22 Italian banks observed over the period 2007H1-2017H2. The considering sample is a good representation of the Italian banking system and the 22 largest banks[56] account for almost the 75 per cent of the total assets of the sector. Indeed, the Italian sector is composed by 538 banks, but most of them are small mutual banks and their weight on the banking system total assets is not really significant.

The list of the banks belonging to the tested sample is as follows:

Figure 3.3 – List of banks in the sample

No.	Name of the bank	Total assets	No.	Name of the bank	Total assets
1	UniCredit	836.790	12	Credito Emiliano	41.584
2	Intesa Sanpaolo	739.985	13	ICCREA Banca	38.127
3	Banca Monte dei Paschi di Siena	139.154	14	Banca Popolare di Sondrio	38.022
4	UBI Banca	127.376	15	Banca Popolare di Vicenza	34.424
5	Banco Popolare	117.411	16	Veneto Banca	28.078
6	Banca Nazionale del Lavoro	78.933	17	Credito Valtellinese	24.956
7	Banca Popolare Emilia-Romagna	71.338	18	Banca Carige	24.919
8	Mediobanca	70.445	19	Unipol Banca	13.955
9	Credit Agricole Cariparma	66.712	20	Banca Sella	13.797
10	Banca Popolare di Milano	51.131	21	Banca Popolare di Bari	13.458
11	Banca Mediolanum	43.266	22	Cassa Risparmio di Asti	11.603

Source: Own elaboration on individual banks' financial reports

Notes: Data in millions of Euro.

Data per semester are used for the analysis and comprise the period 2007-2017, which then includes the outbreak of the financial crisis till the most recent data presented in the financial reports. This period reflects an interesting testing window because represents the period in which Europe and specifically Italy faced two contiguous crises with strong effects for the banks' performances.

The micro and macroeconomic variables analysed in the model have been chosen mainly because of the past literature, that used same factors as proxies and discovered significant evidences of effects on the creation of non-performing loans.

In detail, the variables are:

Figure 3.4 – List of variables

Variable	Description

[56] The sample is composed by the 22 largest Italian banks in terms of total assets. Source: Bank of Italy.

NPL ratio (NPL)	The amount of non-performing loans over total loans expressed as percentage.
GDP growth (GDP)	The rate at which a nation's GDP varies across one period to another.
Real lending rates (RLR)	The rate of interest the bank receives or expects to receive after adjustments for inflation.
Unemployment rate (UN)	Percentage of total workforce who are unemployed and are looking for a paid job.
Public debt (DEBT)	Debt owned by a government as percentage of the gross domestic product.
Return on Equity (ROE)	The amount of net income returned as a percentage of shareholders' equity.
Solvency ratio (SOLR)	Measure of the enterprise's ability to meet its debt and other obligations in the short and long term.
Cost-to-income ratio (CTI)	The ratio between the company's costs in running the business and the income the business produces.
Leverage ratio (LR)	Financial ratio that indicates the level of debt incurred by a business entity other accounts as equity or capital.

The data relies mostly on the following sources:

- The Eurostat dataset;
- The statistical database, called Base Dati Statistica (BDS), provided by the Bank of Italy;
- Bank's financial reports offering semester and annual data.

In detail, macroeconomic variables[57] are provided in the Eurostat dataset, with the exception of the lending rates that are offered on the statistical database of the Italian central bank. In the specific, the interest rate for mortgages is used as bank rate for loans.

[57] As already mentioned, the macroeconomic variables are the real GDP growth, the unemployment rate, the lending rates and the public debt ratio.

Instead, microeconomic variables are collected based on each single consolidated first-half and annual reports of each single bank over the period 2007-2017. In detail, some adjustments have been adopted for some credit institutions in the sample. The dataset takes into account important strategic operations among banks as the merger of Banco Popolare and Banca Popolare di Milano or the acquisition of Veneto Banca and Banca Popolare di Vicenza operated by Intesa Sanpaolo. Specifically, since the two operations occurred in 2016-2017 a distinction of the merged and purchased banks is activated as described in the financial reports.

The below table reports the summary statistics relative to variables included in the model. For each variable the number of observations is 484 and the panel dataset includes 22 semester observations for each of the 22 Italian banks composing the sample.

Figure 3.5 – Summary of variables

Variable	Obs	Mean	Std. Dev.	Min	Max
Non-performing loans (NPL)	484	.08123905	.05882845	.00434274	.29458790
GDP growth (GDP)	484	-.00236363	.01014838	-.0290000	.00900000
Real lending rate (RLR)	484	.03437273	.01160714	.0189000	.05840000
Unemployment rate (UN)	484	.09840909	.02227501	.0600000	.12800000
Public debt (DEBT)	484	1.2112272	.11947893	.9980000	1.3500000
Return on Equity (ROE)	484	.00702454	.16945282	-1.369000	.32030000
Solvency ratio (SOLR)	484	.02892768	.02193440	.0019560	.11416999
Cost-to-Income (CTI)	484	.63687664	.16659620	.2136882	1.8873239
Leverage ratio (LR)	484	.92655629	.02015529	.8385000	.99958015

Source: Own elaboration with STATA 15

Data used in the research are processed using statistical program STATA 12 (xtabond2 command).

3.3 ECONOMETRIC METHODOLOGY

3.3.1 DYNAMIC PANEL DATA ESTIMATOR

As already mentioned before, this analysis follows a dynamic panel data methodology.

According to the previous literature, a dynamic panel data specification is displayed as follows:

$$y_{it} = \alpha y_{it-1} + \beta(L)X_{it} + \eta_i + \varepsilon_{it}\,, \quad |\alpha| < 1, \quad i = 1, \dots, N,\ t = 1, \dots, T, \qquad (1)$$

Where t and i indicate the panel sample dimension and denote time and cross-sectional dimensions, respectively. y_{it} is the variation of NPLs, $\beta(L)$ is the 1xk lag polynomial vector, X_{it} is the kx1 vector of explanatory variables other than y_{t-1}, η_i are the unobservable bank specific individual effects (unobserved heterogeneity) and ε_{it} are the error terms.

Specifically, the decision to implement a dynamic GMM is based on the following econometric factors (Roodman, 2009):

- Autocorrelation problem due to the dynamic process, with realization of the dependent variable NPL influenced by its own past values;
- The error term contains a time invariant bank specific individual effect (η_i) that may be correlated with the bank-specific variables;
- The idiosyncratic part of the error term could be affected by heteroskedasticity and serial correlation;
- The panel dataset considered in the study has a time dimension (T=22) not higher than the cross-sectional dimension (N=22).

Regarding the estimation method, since Y_{t-1} is correlated with bank specific effects η_i, a consistent estimation can be obtained only utilizing the GMM as proposed by Arellano and Bond (1991) and generalized by Arellano and Bover (1995) and Blundell and Bond (1998). Otherwise, with no resolution for correlation between error terms to induce the exogeneity of the variables, an OLS estimation method would obtain biased and inconsistent parameters estimates[58].

[58] OLS method gives consistent and biased estimators if the following conditions are met (Sandrovschi, 2014):
- Linearity in the model;
- Exogeneity in explanatory variables;
- Full rank of matrix X;
- Homoskedasticity and non-autocorrelation;
- Asymptotically normal distribution of error terms.

The GMM estimation method is constructed on the first difference transformation of equation (1) and the resultant elimination of bank specific effects. The form of the transformed equation is as follows:

$$\Delta y_{it} = \alpha \Delta y_{it-1} + \beta(L)\Delta X_{it} + \Delta \varepsilon_{it} \qquad (2)$$

Where Δ represents the difference operator.

With this new equation form, three orthogonality conditions are required to avoid biased and inconsistent estimations of parameters (Louzis et al., 2010).

The lagged dependent variable Δy_{it-1} is in relation with the error term and this implies a bias in the estimation of the model. A possible solution to this biased estimation is to use y_{it-2}, which is not dependent to the error term, as instrument to estimate the equation. Based on this, it is required the following moment condition for the dependent variables:

$$E[y_{it-s}\Delta\varepsilon_{it}] = 0 \; for \; t = 3, \dots, T \; and \; s \geq 2 \qquad (3)$$

Second possible bias problem is related to the possible endogeneity of the explanatory variables and the correlation with the error term. For that reason, this second moment condition is required:

$$E[X_{it-s}\Delta\varepsilon_{it}] = 0 \quad t = 3, \dots, T \; and \; for \; all \; s. \qquad (4)$$

Which means that strictly exogenous variables are needed. Moreover, in case of reverse causality the above assumption is completely invalid. Therefore, in case of a set of weakly exogenous or predetermined explanatory variables, only current and lagged values of X_{it} are valid instruments and the third moment condition has to be used:

$$E[X_{it-s}\Delta\varepsilon_{it}] = 0 \; t = 3, \dots, T \; and \; for \; s \geq 3 \qquad (5)$$

The validity of the moment conditions and therefore the validity of the instruments is crucial to obtain consistent parameters estimates. For this reason, according to the related literature[59], the Sargan specification test is performed to test the overall validity of the instruments (Sargan, 1958). Specifically, the hypothesis tested with the Sargan J test is that the instruments are exogenous and therefore uncorrelated with residuals. In case the p-value is higher than the significance level, then it is not possible to reject the null and the instruments are considered as good instruments. Furthermore, the Sargan test can have disadvantages when applied to a finite sample because if the number of groups is lower than the number of instruments, the test could be weaker.

[59] Arellano and Bond (1991), Arellano and Bover (1995) and Blundel and Bond (1998).

In conclusion, in order to test the assumption that errors are serially uncorrelated is crucial to prove that differenced errors $\Delta\varepsilon_{it}$ are not second order autocorrelated. Then, beside the Sargan test, Arellano and Bond invented an analysis to discover serial correlation in the idiosyncratic component of the error term. Rejection of the null hypothesis of no second order autocorrelation of the differenced errors means that GMM estimates are not consistent (Louzis et al., 2010).

3.3.2 ECONOMETRIC SPECIFICATION

In the specific case, the equation below takes the form of the baseline model:

$$\Delta NPL_{it} = a\Delta NPL_{it-1} + \sum_{j=1}^{2}\beta_{1j}\Delta GDP_{t-j} + \sum_{j=1}^{2}\beta_{2j}\Delta UN_{t-j} + \sum_{i=1}^{2}\beta_{3j}\Delta RLR_{it-j} + \eta_i + \varepsilon_{it} \quad (6)$$

Where $|a|$ <1, i=1,…, 22 and t=1,…,22.

Specifically, ΔNPL_{it} represents the change of the NPL ratio over the period, ΔGDP_{it} is the real gross domestic product growth rate, ΔRLR_{it} is the variation in the interest rate for loans and ΔUN_{it} is the variation of the unemployment rate. Moreover, each of the bank specific variables previously described are added to the baseline model in order to assess their explanatory power.

In order to have a not misleading solution, not only the time is not lower than the cross-sectional dimension, but just one microeconomic variable is included at a time, reducing the need of a higher number of instruments. In the specific, using the Arellano-Bond method, a higher number of instruments with respect to the cross-sectional units is required. Therefore, to cope with this problem, a limited number of instruments is prudently determined (Louzis et al., 2010).

In order to test the previously defined hypothesis, the baseline model presented in equation (6) is extended as follows, taking into account the bank-specific variables:

$$\Delta NPL_{it} = a\Delta NPL_{it-1} + \sum_{j=1}^{2}\beta_{1j}\Delta GDP_{t-j} + \sum_{j=1}^{2}\beta_{2j}\Delta UN_{t-j} + \sum_{i=1}^{2}\beta_{3j}\Delta RLR_{it-j} + \sum_{i=1}^{4}\beta_{4j}\mathrm{X}_{it-j} + \eta_i + \varepsilon_{it} \quad (7)$$

Where the added factor X_{it} indicates one of the bank-specific variables listed in the table 3.4.

In conclusion, macroeconomic indicators in equations (6) and (7) are defined as strictly exogenous while microeconomic variables are considered predetermined variables[60]. Thus, macroeconomic variables are instrumented following condition (4) and bank specific regressors follow condition (5) with only current and lagged values of the regressors are valid (Louzis et al., 2010).

[60] Predetermined variables are variables determined prior to the current period, which implies that the current period error term is not correlated with current and lagged values of the predetermined variable.

3.4 EMPIRICAL RESULTS

Empirical analysis into the quality of loans portfolios have fascinated several researchers, academicians and policy makers. Previous literature has already studied the determinants of credit risk and suggested that microeconomic and macroeconomic variables are significant causes of doubtful loans.

According to the methodology presented in the above paragraph, the model is estimated and results are presented in the below figure. Every table contains both the baseline estimation and the additional model when an extra bank-specific variable is included as explanatory variable. Moreover, for each estimated model, the test of second order serial correlation and the Sargan test for overidentifying restrictions are presented.

Figure 3.6 – Results of the analysis

	Baseline		Model 1		Model 2		Model 3		Model 4		Model 5
ΔNPL_{it-1}	0.032 (0.000)	ΔNPL_{it-1}	0.583 (0.000)	ΔNPL_{it-1}	0.601 (0.000)	ΔNPL_{it-1}	0.666 (0.000)	ΔNPL_{it-1}	0.750 (0.000)	ΔNPL_{it-1}	0.684 (0.000)
ΔGDP_{it-1}	-0.323 (0.000)	ΔGDP_{it-1}	-0.142 (0.089)	ΔGDP_{it-1}	-0.211 (0.003)	ΔGDP_{it-1}	-0.186 (0.015)	ΔGDP_{it-1}	-0.203 (0.007)	ΔGDP_{it-1}	-0.210 (0.005)
ΔUN_{it-1}	0.179 (0.000)	ΔUN_{it-1}	0.158 (0.542)	ΔUN_{it-1}	0.626 (0.000)	ΔUN_{it-1}	0.555 (0.001)	ΔUN_{it-1}	0.479 (0.007)	ΔUN_{it-1}	0.541 (0.001)
RLR_{it-1}	0.116 (0.103)	RLR_{it-1}	0.433 (0.009)	RLR_{it-1}	0.098 (0.376)	RLR_{it-1}	0.115 (0.286)	RLR_{it-1}	0.116 (0.302)	RLR_{it-1}	0.127 (0.327)
		$DEBT_{it-1}$	0.049 (0.258)	ROE_{it-1}	-0.006 (0.696)	$SOLR_{it-1}$	0.689 (0.124)	CTI_{it-1}	-0.001 (0.918)	LR_{it-1}	0.083 (0.709)
		$DEBT_{it-2}$	0.098 (0.023)	ROE_{it-2}	0.019 (0.127)	$SOLR_{it-2}$	-0.614 (0.098)	CTI_{it-2}	-0.025 (0.193)	LR_{it-1}	-0.055 (0.789)
AR (1)	0.000		0.000		0.000		0.000		0.000		0.000
AR (2)	0.008		0.005		0.085		0.011		0.024		0.195
Sargan test	0.645		0.811		0.793		0.894		0.793		0.596

Notes: Regarding the variables' estimations, p-values are reported in parenthesis. For the Sargan and autocorrelation tests, the p-values are reported.

The empirical results indicate that in general the estimated coefficients are in line with the theoretical expectations showed in section 3.1. In the estimated baseline model all macroeconomic variables are in line with the literature and they are significant, with the exception of the interest rate. Moreover, it is necessary to remark that macroeconomic indicators remain stable across different models. In particular, the hypothesis that a contraction of the economy leads to a rise of doubtful loans is confirmed. Furthermore, an increase by 1 per cent of the GDP results in a decrease of 0.323 in the non-performing loans ratio during the first semester. Thus, the NPL ratio is negatively affected by an

economic recession and this demonstrates a strong dependence of the Italian business sector on the phase of the economic cycle. As already described in chapter 2, the Italian firms are most of them small and medium enterprises and they are more vulnerable to adverse macroeconomic shocks.

Result for the unemployment rate is as expected. The unemployment rate positively affects the borrowers to repay their debts. This macroeconomic indicator can have two different interpretation. First, an increase of the unemployment rate leads to a reduction for production of goods and services due to a lower demand in the market, with a consequent reduction of the firms' profitability and a lower ability for the companies to service their debts. Second, the households losing their job have lower purchasing power since the unemployment negatively affect their income and the households have more difficulties to meet their obligations (Cavaliere, 2016). In detail, in Italy the unemployment rate rapidly increased after the crisis and especially the youth unemployment reached 31.8 per cent, against the European average equals to 19.3 per cent (Magnani, 2018)

The correlation with the real lending rates is in line with the literature but it is not significant in all the estimated models, with the exception of model 1. Based on the literature, an increase in the interests paid on the debt stimulate the decrease of the asset quality affecting the borrower's ability to service the debt, especially for loans with floating rates. In detail, borrowers with no-fixed rates are affected by a change of the obligation's amount and accentuate the monthly repayments burden, contributing to a higher level of non-performing loans. Therefore, this result shows how households are sensitive to changes in the interest rate and that most of these loans are varying rate loans.

Furthermore, as expected, a positive correlation with the rise of sovereign debt is showed. This is completely in line with the theory because a downgrade of the government's rating increases the pressure on liquidity for bank and they have to cut loans creating credit crunch and increasing the level of non-performing loans. Specifically, in Italy the level of public debt accounts to €2.256 billion, the second highest level in Europe in terms of percentage to the gross domestic product. Thus, the consequences this huge debt had on the banking system are relevant due to the increase from 99.8 per cent to 132.6 per cent over the period 2007-2017.

Regarding the estimation of bank specific explanatory variables, a significant existence relationship between banks' indicators and the quality of loans transpires in the analysis.

The performance indicator as the return on equity of the previous semester is negatively related to the doubtful loans' rise and this provides evidences of the "bad management II" hypothesis. This result shows that bad management and low levels of profitability are causes of an increase of toxic assets. Banks with poor economic results tend to bear riskier activities, creating more non-performing assets.

In addition, considering the second lag, the correlation between the two variables is ambiguous and it is not possible to exclude the second hypothesis of a procyclical credit growth hypothesis in the Italian banking system. A liberal credit policy to increase the profitability in the short term could additionally explain the level of NPEs showing that aggressive lending could match with low level of quality loans.

Moreover, to define the bad management hypothesis, not only performance indicators are considered but cost-efficiency variables as well. The analysis shows a negative relationship between cost-to-income and the credit risk. According to Louzis et al. (2010) a possible explanation is the skimping hypothesis. In according to this hypothesis, banks decrease the operating costs related to the due diligence in the administration of loans, reducing the efficiency in assessing and monitoring the loans quality, consequently increasing the stock of bad assets.

The bank's risk attitude as revealed in the solvency ratio reflects a different result with respect to the theoretical hypothesis for the first lag. According to the theory, when the bank is thinly capitalized, managers have a moral hazard incentive to increase the riskiness of loan portfolios, increasing the level of bad loans. Then, there should be a negative relationship between the level of NPLs and the solvency ratio. However, this result is not always supported by similar analysis. Indeed, the analysis promoted for the Italian banking sector demonstrates a positive correlation in the first lag between the level of capitalization and bad loans. In this case, the reasons are probably reflected in the supervisory initiatives promoted by European authorities as the European Central Bank or the European Banking Authority, which required higher level of capital in order to absorb losses connected to the economic recession. Thus, the latter effect had major impact rather than a higher risk's attitude and prevailed across Italian banks, minimizing the moral hazard incentives.

In conclusion, the moral hazard of too-big-to-fail hypothesis is confirmed if the first lag is considered, with a positive relationship between the leverage ratio and the level of bad assets. The result seems to be in contrast with the result obtained for the solvency ratio. Specifically, this result describes that banks increase their liabilities to take excessive risk activities, that is almost the opposite of what the relationship with the level of capitalization shows. Actually, the result for the too-big-to-fail hypothesis cannot really be considered because the p-value is incredibly high and reflects that this result is not significant. Thus, combining the two results is possible to declare that moral hazard is not a crucial determinant of non-performing loans.

The above results are all approved by the validation tests performed on the different models. Both the Sargan and the second order autocorrelation tests show the validity of the instruments and of the

model in general. Specifically, in all the performed Sargan tests, the null hypothesis is rejected affirming that instruments are rationale. Moreover, the test for the second order autocorrelation of errors accept the null hypothesis ensuring the consistency of the results.

In conclusion, from 2007 to 2017, non-performing loans in Italy have been caused to a great extent by the macroeconomic indicators such as the GDP reduction, the unemployment rate and the high level of public debt. This is certainly emphasized in the period under investigation that is the period of the two crises in Europe. Furthermore, the return on equity, the solvency ratio, the cost to income ratio and the leverage ratio as bank-specific indicators, turned out to have influences on the doubtful loans created in the Italian credit institutions.

The final result is therefore that the global crisis left legacy of severe consequences in the Italian banking sector, but the creation of non-performing loans was also determined by non-correct management evaluations. Thus, the banking sector in Italy necessitates further enhancements of the decision-making process to reduce the creation of new doubtful loans and increase the overall quality of the management decisions.

In the scope of enhancing the decision-making process, regulatory innovation should be considered with the implementation of new legal acts to address the management of existing stock of NPLs and to prevent the future creation of bad loans.

3.5 REGULATORY IMPLICATIONS

The results of the research may have interesting policy and regulatory implications. European macroprudential and microprudential supervisory authorities should monitor and consider these elements as significantly related to the accumulation of new NPLs and therefore to enhance the supervision of the banking asset quality.

The definition of systemic and bank-specific indicators as determinants of doubtful loans is studied not only in this research for the Italian case, but there are similar results also for other European countries, raising the necessity of a pan-European response to the issue. In the specific, several analyses for Greece and Balkan countries have been executed with similar outcomes[61].

Furthermore, while banks are primarily responsible for restructuring their business strategies and resolving their issue with NPLs in timely manner, further measures to tackle existing NPLs and avoid the accumulation of new stocks are required to the EU with the implementation of legal acts that could enhance growth and reduce the financial fragmentation.

Thus, possible implications of the analysis may be the application in the regulatory context of the empirical results of this study as early warning indicators that banks and supervisors should monitor to prevent the collection of new doubtful loans. Analysed macrovariables and bank-specific variables (e.g. unemployment rate, ROE, cost-to-income ratio) may be used as early warning indicators that are an essential component for the implementation of macro and microprudential policies. Indeed, they not only have a strong statistical forecasting power, but they may also meet several additional requirements such as that the signal has to arrive early enough, so that the policy measure can have positive impact on the bank's asset quality level.

This proposal may be included in the current regulatory framework. In 2017 the European Council has invited different European authorities (e.g. EBA, ECB, ESMA and European Commission) to adopt a mix of complementary policy actions, at national and European level if appropriate, stressing that a comprehensive approach is the most effective way to address the existing stocks of NPLs as well as the emergence of new doubtful loans in credit institutions. In detail, the specific actions cover the following areas[62]:

[61] For instance, see Louzis, D., Vouldis, A., Metaxas, V., 2012. "Macroeconomic and bank-specific determinants of non-performing loans in Greece: A comparative study of mortgage, business and consumer loan portfolios", Journal of Banking & Finance, vol. 36, issue 4, 1012-1027 and Pop, I., Chicu, N., Radutu, A., 2018. "Non-performing loans decision making in the Romanian banking system", Management & Marketing. Challenges for the Knowledge Society, Vol. 13, No. 1, 761-776.

[62] For further details please refer to the Council conclusions on Action plan to tackle non-performing loans in Europe.

- Supervision;
- Structural reforms of insolvency and debt recovery frameworks;
- Development of secondary markets for distressed asset; and
- Fostering restructuring of the banking system.

Regarding the supervisory aspects, one of the action points is that the European Commission should consider, within the framework of the on-going review of the CRR/CRD IV, potential backstops addressing potential under-provisioning which would apply to new non-performing loans.

In this context, the definition of early warning indicators to predict the creation of new non-performing loans may be introduced in the European action plan and, specifically, in a document similar to the article that the European Commission has to prepare in the context of the NPL action plan[63].

The definition of thresholds is already promoted in the Banking Recovery and Resolution Directive (BRRD)[64], published on May 2014. The directive aims to establish a framework for the recovery and resolution of credit institutions and investment firms.

The directive requires that institutions prepare and regularly update recovery plans that set out measures to be taken by institutions for the restoration of their financial position following a significant deterioration[65].

Thus, as stated in article 27 of the Directive, when an institution infringes, due to a rapidly deteriorating financial position, recovery indicators (e.g. liquidity, capital, profitability and asset quality indicators), as assessed on the basis of a set of triggers, the competent authorities have a their disposals several actions as require the management body of the institution to implement one or more of the measures set out in the recovery plan or require the management body to examine the situation, identify measures to overcome any problems identified and draw up an action programme to overcome those problems and a timetable for its implementation[66].

[63] Another document included in the NPL action plan where the proposal could be implemented is the guideline that EBA has to issue on banks' loan origination, monitoring and internal governance based on existing national experiences.

[64] For further details, please refer to Directive 2014/59/EU.

[65] A recovery plan shall include as minimum content the following items (EBA/RTS/2014/11):

- A summary of the key elements of the recovery plan;
- Information on governance;
- A strategic analysis;
- A communication and disclosure plan; and
- An analysis of preparatory measures.

[66] For further details please refer to article 27 of the Directive 2014/59/EU.

In detail, article 9 of the directive states that competent authorities shall require that each recovery plan includes a framework of indicators established by the institution which identifies the points at which appropriate actions referred to in the plan may be taken. The indicators may be quantitative or qualitative variables and shall be capable of being monitored easily[67].

The regulatory proposal of the thesis is that a similar approach shall be introduced in the specific monitoring activity of loans. Indeed, the macro and bank-specific variables that turned out to be significant for the creation of non-performing loans may be used as recovery indicators.

For instance, in case of multiple breaches of the indicators, a special operational plan to monitor and prevent the creation of new toxic assets shall be triggered. As for the recovery plan, this plan might be defined by each single credit institution and consequently assessed by the competent supervisory authority, considering the proportionality manner of the institutions[68].

In conclusion, the introduction of new early warning signals in the action plan to tackle NPLs may have a relevant positive effect in the management of loans, avoiding the creation of future toxic assets in the banking system. Certainly, different aspects and possible limitations have to be considered in the definition and implementation of the proposal. For instance, the introduction of further regulation may increase certain costs[69]. However, the aim of the paragraph is merely to suggest eventual further steps and regulatory implications to the analysis presented in the thesis.

[67] Competent authorities shall ensure that institutions put in place appropriate arrangements for the regular monitoring of the indicators (see article 9 of the BRRD).

[68] The supervisor in assessing the plan shall propose different expectations considering the size and the level of complexity of the institution.

[69] Guiso, Sapienza and Zingales (2006) demonstrates that an increase in banking regulation creates higher cost of credit, but reduce the level of bad loans. For further details please refer to the paper "Guiso, L., Sapienza, P., Zingales, L., 2006. "The cost of banking regulation", NBER working paper No. 12501".

CONCLUSION

The high level of non-performing loans is a matter of concern for the financial stability of the European banking system. In recent years the problem broke out in Europe and especially in weaker and less prepared countries as Italy, Greece, Portugal or Spain. A solution is required not only to recreate a stable and safe financial system but also to sustain the economy negatively affected by the credit crunch. In detail, in Italy the problem is serious and several structural impediments hamper the resolution of NPLs. Most of them are associated with the lengthy of judicial procedures and with the wide bid-ask spread in the secondary NPL market. For this reason, the government has to promote reforms to improve the general framework, allowing banks to implement strategies to reduce bad loans on their balance sheets.

Understanding the factors that affect European credit risk is essential to create a sustainable economy. This thesis reflects the empirical evidence that the correlation between non-performing loans and the economic and bank-specific factors are observable in the Italian banking system. The research is conducted in according to a GMM dynamic panel model.

The research finds evidence in favour of several hypothesis tested. A summary of the obtained results is as follows:

Figure c.1 – Summary of the results

Hypothesis	Expectation	Result
Sovereign debt	+	+
Bad Management	+	-
Skimping	-	-
Moral hazard	-	+
Bad Management II	-	-
Procyclical credit growth	-	-
Too big to fail	+	+

As described in the table, not all hypotheses are confirmed and few correlations are not in line with the previous literature, but explanations for divergences have been shown in section 3.4.

Particularly, all macroeconomic variables are significant and may be used in stress tests to estimate future variations in asset quality of credit institutions. In addition, bank-specific factors turned out to

be possible predictors of the level of doubtful loans. The results suggest that there are problems with the management of Italian credit institution. Indeed, microeconomic variables as cost efficiency or performance indicators can be used as early signals of future asset quality problems. In the specific, evidences in favour of the bad management and skimping hypotheses are confirmed, signalling that bank managers had a relevant role in the creation of bad assets due to their not satisfactory management quality.

Results have important policy and regulatory implications. First of all, since macroeconomic variables are important for the banking sector, benefits from the macroprudential policy are expected. Moreover, microprudential supervision can have positive results to increase the management quality, signalling the important role of the European authorities that through their supervisory activity can reduce these issues. Within the scope, the thesis introduces a possible proposal that shall be considered in the NPL action plan on the definition of these variables as early warning indicators for the creation and accumulation of future non-performing loans.

In addition, the evidence of macroeconomic and bank-specific variables as determinant of non-performing loans is presented not only for Italy but also for other European countries that obtained similar results, motioning the importance of a pan-European response to the problem.

A possible limitation to this analysis is that, differently from the Louzis's study, the research does not adopt a comparative study across different loans categories (corporate, consumer and mortgage loans), but it studies non-performing loans at the aggregate level. It might be supposed that macroeconomic and bank-specific variables have a different effect on NPLs depending of the category of loan. Thus, a possible extension to the research could include a differentiation across loans categories and could investigate supplementary hypothesis. For instance, Louzis et al. (2012) affirms that loan quality is also related to banks´ diversification opportunities. If a bank is well diversified and is not completely connected to the economy of one single region, they have a lower credit risk and therefore a lower probability to have a future inflow of non-performing assets. Specifically, the total amount of assets is used as proxy to test the hypothesis.

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