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MSc in Management Engineering

ITALIAN NPLs, A MACROECONOMIC CHALLENGE

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ABSTRACT

Italian version:

A fine 2016, l'ammontare dei crediti deteriorati (meglio noti come Non-performing loans/NPLs), presente nei bilanci delle banche Europee ha superato la quota di €1 trilione, pari circa al 9% del Prodotto Interno Lordo cumulato dei paesi membri dell'Unione Europea.
Tale fenomeno ha attirato l'attenzione della Banca Centrale Europea (BCE) e dell'Autorità Bancaria Europea (EBA) che già nel 2013, tramite l'Asset Quality Review e gli stress test, avevano messo al vaglio i bilanci dei principali gruppi bancari del Vecchio Continente con particolare attenzione verso i crediti deteriorati.
Gli NPLs sono il lascito della grande crisi che nel 2008 ha investito il mercato dei capitali e che si è trasmessa in breve tempo all'economia reale.
Nel tempo, questa trasmissione ha azionato un effetto domino che ha travolto anche le economie di quei Paesi che, come l'Italia, meglio avevano reagito inizialmente alla crisi per via delle contenute esposizioni ai prodotti di finanza strutturata che l'avevano scatenata.
Il congelamento del capitale delle banche per fronteggiare i NPLs, ha contribuito allo sviluppo del "credit crunch" generando un effetto a catena che è culminato nell'aumento del tasso dei fallimenti delle piccole medie imprese, componenti fondamentali del tessuto industriale/produttivo dell'economia del bel Paese.
Il sistema bancocentrico italiano, le pratiche di erogazione del credito a volte inadeguate o illecite e la lentezza delle procedure di recupero crediti (a sua volta correlata con i ritardi della giustizia civile) hanno contribuito ad aggravare negli anni la questione Italiana dei crediti deteriorati.
Ad oggi le banche Italiane registrano infatti crediti deteriorati per un ammontare pari a circa il 30% (più di 300 miliardi di euro) del totale presente nei bilanci delle banche Europee.
La risoluzione di tale problema non può più essere lasciata alla responsabilità del singolo paese ma rappresenta una sfida macroeconomica con implicazioni sovranazionali, poiché la portata del fenomeno può avere effetti sulla stabilità finanziaria a livello sistemico.
Dopo aver analizzato l'inefficacia dei - seppur interessanti - tentativi promossi in Italia per fronteggiare il problema dei NPLs (in primis Atlatante e la GACS), l'inefficienza del mercato secondario dei distressed asset, le misure adottate dal 2008 dal governo Americano per lo smaltimento degli asset tossici (in primis il TARP) e la recente proposta dell'EBA riguardo una bad bank Europea (meglio nota come ACM), questo scritto tenterà di formulare una proposta teorica per lo smaltimento dei NPLs, mettendo a fattor comune quanto di positivo è emerso dall'analisi delle precedenti e senza dimenticare le politiche economiche in essere promosse dalla BCE.
La risoluzione del tema degli NPLs Italiani è un tema di estrema attualità, oggetto di studio e dibattito, da parte dei maggiori esperti economici mondiali ed ha assunto recentemente, proprio per le sue implicazioni, sfumature di politica internazionale.
Non è ovviamente pretesa di questo elaborato proporre una soluzione definitiva quanto piuttosto far riflettere sulle possibilità che una manovra macroeconomica potrebbe offrire, mettendo in luce la necessità di un intervento studiato e cercando, seppur nel campo della teoria, di sviluppare una proposta che possa contribuire in maniera costruttiva al dibattito in essere.

English version:

At the end of 2016, the amount of Non-Performing Loans (NPLs) that burdens the European banks' balance-sheets reached €1 trillion equal to around 9% of the whole Euro area Gross Domestic Product.
Such phenomena attracted the attention of the European Banking Authorities (EBA) and of the European Central Bank (ECB) that yet in 2013, through the Asset Quality Review and the stress tests, started to assess the balance-sheets of the old Continent's main banking groups with exceptional attention towards the NPLs situation.
The NPLs are one of the main legacies of the 2008 crisis that, born within the financial markets, quickly moved and affected the real economy.
Over time, this transfer from the financial market to the real economy generated a domino effect that infected even those Countries' economies, such as Italy, that have initially better reacted to the financial crisis thanks to their limited exposure towards the structured financial products.
For facing the large stock of NPLs, banks locked up their capital, contributing to the development of the "credit crunch" and generating a chain effect that culminated into the raise of the bankruptcy rate of the small and medium enterprises, that represent the core components of the industrial/productive Italian industry.
The "bank-centric" feature of the Italian banking system, the banks' lending policies in some cases inadequate or illegal and the lengthy credit recovery procedures, (mostly attributable to the slow pace of civil justice) contributed to worsen over the years the issue of the Italian NPLs.
Nowadays Italian banks account an amount of non-performing loans equal to around 30% (more than 300 billion euros) of the whole European NPLs stock.
Since the magnitude of the phenomena may have financial stability implications at systemic level, the resolution of this issue shouldn't be in charge of the single Country anymore, but represents a macroeconomic challenge with supranational implications.
After having analyzed the ineffective – even if interesting – attempts promoted within Italy for handling the NPLs issue (in particular Atlante and the GACS), the inefficiency of the distressed asset secondary market, the measures adopted since 2008 by the American government for the disposal of the toxic assets (in particular TARP) and the recent EBA's proposal of a European bad bank (better known as ACM), this paper will try to formulate a theoretical proposal for the disposal of the NPLs, summing up the positive findings of the precedent analysis and keeping into consideration the ongoing economic measures leaded by the ECB.
The resolution of the Italian NPLs is a matter of topical, object of study and debate by the main world economics experts and recently assumed, because of its implications, importance at international political level.
Clearly this paper has no claim to propose a definitive solution rather it is intended to make the reader reflect on the possibilities and impacts that a macroeconomic measure may offer, highlighting the necessity of a studied and organized intervention trying, even if by a pure theoretical perspective, to develop a proposal that may contribute constructively to the ongoing debate.

INTRODUCTION

Almost ten years after the "global financial crisis", European banks still seem to be far from seeing the end of the tunnel and reaching the pre-crises performances.

One of the main legacies of the 2008 crisis is the huge stock of non-performing loans (NPLs) that weakens European banks' balance-sheets and slows the EU credit growth.
At the end of 2016, the European NPLs reached €1trillion gross of provisions representing around 9% of the whole Euro area GDP and a matter of concern and debate among world macroeconomists and European policymakers.

As recently pointed out by European Systemic Risk Board (ESRB) a large stock of NPLs on the balance sheet of banks is not only a micro-prudential supervisory problem, but an issue with broader macroprudential and financial stability implications.

The issue is especially acute in those Countries (such as Italy), where the NPE (Non-performing exposure) ratios are at two digit levels.
In particular, the Italian banks with a stock of €325 billion NPLs cover around 30% of the aggregate European NPLs stock.
For this reason, besides having attracted the attention of the European Banking Authorities (EBA) and of the European Central Bank (ECB), Italian NPLs represent an interesting case study for economists and financial analysts.

Many papers have focused their attention in investigating the causes and the consequences of the Italian NPLs yet.
The goal of this paper is to contribute to the ongoing debate trying, after having analyzed the attempts made in Italy and the solutions adopted and/or proposed both in Europe and overseas so far, to formulate a new theoretical proposal for the NPLs management.

What's an NPL and where did NPLs come from? Do Italian NPLs really represent a problem for the Country's economy and why did they grow so much?
Is the market able to digest such large NPLs stock or a State intervention is needed?
How has Italy handled the NPLs issue so far? What can be learnt from overseas and how the European authorities may handle the European NPLs?

These are some of the main questions this papers will try to answer, whose interest should go even beyond the Eurozone border, as they have significant macroeconomics implications.

After having clarified the definition adopted for the NPLs, the paper illustrates the magnitude of the European NPLs stock as well its evolution starting from the 2008 crises to our days and its current distribution among the EU members states.

Focusing on the Italian banking system, the NPLs stock is broken down among its main components and deeply analyzed.
Giving an updated overview of the Italian banking system and of the Italian servicing industry, comprehensive of the recent largest NPLs transactions, the paper tries to give an high level picture of the Italian NPLs and of the Italian banking industry in general, underlining the M&A phenomena and the revolutions that are mutating the financial context as well as the different strategies adopted by the largest banks for facing the asset quality constraints "imposed" by the European authorities.

The second part of the paper is then dedicated to the analysis of the causes and the consequences of a large NPLs stock on the economic system, with a particular focus on analyzing and explaining the interactions and the impacts between an high stock of NPLs and the real economy.

As by the analysis of the literature, one of the main findings is that NPLs stock has a consistent relationship with the macroeconomic context and such relationship has been identified as two-sided and highly non-linear.
This increases the complexity of the study of the NPLs phenomena, since causes and consequences of high stocks of NPLs are linked within a potential vicious circle.

After having given to the reader the basic needed instruments for the comprehension of the NPLs issue, the third part of the paper is dedicated to the analysis of possible solutions for the NPLs issues.

Despite, involving third parties investors in either directly purchasing NPLs or working with banks to restructure distressed borrowers may be helpful for banks to reduce their NPL stock over time, the analysis of the secondary market done within this paper, shows that such market is affected by imperfections that make it inappropriate to digest the large NPLs stock.
In particular, because of the presence of an asymmetric information issue, the NPLs market can be compared to the "the market for lemons".
The asymmetric information that characterizes the market for lemons, together with different risk profiles and related interest returns compose the main cause of the bid-ask gap that affects the effectiveness of the NPLs secondary market itself.

As the market is inefficient, it arises the necessity of a public/State intervention.
Since the object of this paper is Italian NPLs, the main measures adopted by the Italian government such as GACS and Atlante are deeply analyzed.
Despite the good premises, so far the results of these interventions seem to be poor if compared to the growing NPLs stock they should face and, by the analysis done in this paper, the need of a supranational and coordinated intervention clearly arises.

For this reason, the paper will explore different viable systemic and supranational alternatives.
At European level noteworthy initiatives have been promoted; among all, the paper focuses on the recent EBA's proposal of a European Asset Management Company (ACM) – also known as European Bad Bank - highlighting strengths and weaknesses.
Besides the interesting mechanism illustrated by the EBA, the analysis also reveals that an important critical issue that has to be handled when proposing a supranational solution for the NPLs within the European context is the "mutualization" of losses.
In fact, most efficient EU Countries may be contrary to the idea of using European funds for healing less efficient countries' banking systems.
This moves the NPLs issue from an economic to a political field adding even more elements of complexity.

Making a step back, the paper brings the reader overseas, to the origin of the 2008 crises and of this legacy called NPLs, for better understanding how the US have faced similar issues.
The Troubled Asset Relief Program (TARP), a program of the United States government to purchase toxic assets after the subprime mortgage crisis, is then analyzed and an high level overview illustrates its main pillars.
Since its beginning in 2008 around $455bn have been invested within this program, making TARP being one of the main examples of systematic purchase of toxic assets and banking refinancing.

Concluding, after having understood the necessity and the importance of a systemic and supranational (Euro area level) intervention for the management of the NPLs issue and after having analyzed pros and cons of the EBA's proposal for a European ACM and of the US Legacy Loan Program within the TARP scheme, the paper will finally try to formulate a theoretical proposal using the Italian NPLs stock as a case study.

The proposal tries to sum up and replicate the magnitude and the framework of TARP program within the European environment keeping in mind the non mutualization/burden sharing of losses issue among the EU members.

The core idea is to involve the ECB together with private investors in a systematical and organized purchase of NPLs portfolios that would allow the full disposal of illiquid assets from banks in a short time.
The proposal, will replicate the investment structure similar to the one applied within TARP, where private investors would be in charge of the operational management of the acquired portfolio and would co-invest together with the ECB that would also keep the role of supervisor for the entire operation.
In addition the ECB would be in charge of filling the bid-ask gap (Investors' price – bank's Net Book Value) within a structure that simulates the clawback clause of the EBA's proposal with the involvement of both the sellers and the State guarantees.

In conclusion, by the analysis of the LTROs (Long Term Refinancing Operations) promoted by the ECB, that lent around €1tn to EU banks in need between 2011 and 2012, a further development of the proposal hypothesizes that the losses generated by the bid-ask gap may be covered by a financing to banks from ECB under special conditions, that would be bonded to the purchase of sovereign debt that would act as a guarantee.
Since, as a consequence of the QE (Quantitative Easing) measures, Italy owes around €364bn to the ECB, always within a pure theoretical environment, the same ECB could be also one of the sellers of the sovereign debt that would act as a collateral for the additional ECB's financing to banks.

1. THE NPLs DEFINITIONS AND CLASSIFICATIONS

1.1 An heterogeneous definition

Before going into the details of the main subject of this paper, it is important to define and clarify the adoptions made for the purpose of this research about the Non-performing loans (NPLs from now on) or Non-performing exposures (NPEs from now on) definitions.
This chapter indeed has the goal of clarifying and justifying the definition of NPLs adopted in this paper and to analyze the possible classifications of such NPLs mostly recognized by the market itself and by the main financial operators.

NPLs data is notoriously difficult to interpret and hard to compare across countries.
Often comparisons and analysis end to be unreliable for the different standards of classification adopted by the numerous subjects that operate within the market as banks, regulators and financial institutions.
The above phenomena affects both the quality and the reliability of the data available in the market with material and even costly consequences for all the operators that deal with NPLs around the world.
This issue makes this chapter necessary, as well relevant, since it clouds the assessment of the financial sector by investors, regulators, and other policy makers, with the potential for costly mistakes.
It's also important to underline that there is no yet internationally accepted standard for NPLs measurement and national supervisors often tend to follow different definitions for loan classification (Barisitz, 2011, Moody's Investor Service, 2003, and Laurin and Majnoni, 2002) across the world economies.
An additional layer of problems arises from supervisors' difficulties to enforce NPL reporting by banks in line with national rules.
As a consequence, ever-greening and other practices to keep reported NPLs down might be more prevalent in some countries than in others with a potential risk and confusion that affects instead the entire financial system.

As a matter of fact, this is reflected also in the Italian NPLs market that is in part affected by ambivalences on definitions, standards and guidelines.
The relevance of the problem is in fact, not geographically circumscribable since the difference in classifications and definitions across the European countries makes difficult comparisons and macro analysis.

This paper addresses all non-performing exposures (NPEs), following the EBA (European Banking Authority) definition (see section 1.2 The European Banking Authority definitions)
"NPLs" is generally used in this paper as a shorthand term and "NPL" and "NPE"' are used interchangeably within this paper.

1.2 The European Banking Authority (EBA) definitions

In order to give to the reader an extended and more international comprehension of the treated matter and because of the relevance of the European Banking Authority (EBA) definitions and measures into the Italian NPLs framework, this section is fully dedicated to the EBA definitions on non performing exposures.

The asset quality review (AQR) started in 2014 by the EBA enhanced the attention of the European banking systems in respect to the definition and classification of the NPLs.
For standardizing the credit classification across the European banking system, the EBA has produced in 2013 the "Recommendation on asset quality review" where the critical matter of the forborne credit has been officially treated.
Later in 2014 the EBA also published another document "EBA final draft Implementing Technical Standards (ITS)" where the above matters were deepened and re-analyzed.
This underlines the relevance and significance of this subject matter also at European level.
The EBA initiative is born by the need of creating an homogeneous definition of the non-performing loans and of the forborne credits.

According to paragraph 145 of Annex V of the EBA's ITS on supervisory reporting, non-performing exposures are those that satisfy either or both the "past-due" criterion and the "unlikely-to-pay" criterion.
Therefore, the definition of NPE is only based on the "past-due" criterion and the "unlikely-to-pay" criterion.

1) **The "past-due" criterion (objective criterion):**
The goal of this criterion is to individuate and to classify material exposures which are past-due.
In particular, as by the Paragraph 145(a) of Annex V of the EBA's ITS on supervisory reporting, material exposures with amounts more than 90 days past due are considered to be non-performing.
An exposure can only be past due if there was a legal obligation to make a payment and payment was compulsory.
In case that there was no legal obligation or payment wasn't compulsory, non-payment does not constitute a trigger (for example, nonpayment of discretionary interest does not constitute a past-due situation).

2) **The "unlikely-to-pay" criterion (subjective criterion):**
The debtor is assessed as unlikely to pay its credit obligations in full without realization of collateral, regardless of the existence of any past-due amount or of the number of days past due.
In contrast with triggers relating to past-due payments, the triggers relating to unlikeliness to pay as referred to in paragraph 145(b) of Annex V of Commission Implementing Regulation (EU) No 680/2014 rely less on quantitative criteria but some events that activate the non-performing classification can be anyway defined.
As this gives some room for interpretation, it is imperative for banks to have clearly defined internal criteria to identify indicators of unlikeliness to pay (UTP).
These indicators should refer to clearly defined situations (UTP events) and should be implemented homogeneously in all parts of the bank group.

To reduce the discretion, banks should have pre-defined automatic events; when such events happen the exposure is automatically identified as non-performing without any further manual confirmation or additional checks.
However, most triggers linked to the UTP criterion require regular manual assessments and banks should regularly assess the creditworthiness and repayment capacity of their customers collecting updated information and analyzing the debtors' financial situation.

The EBA analysis introduced also the concept of forborne credits (that for definition are quite similar to the old restructured loans of Banca d'Italia, but with some differences).
Forbearance measures consist of "concessions" extended to any exposure (a loan, a debt security as well as a revocable or irrevocable loan commitment) towards a debtor facing or about to face difficulties in meeting its financial commitments.
It means that an exposure can only be forborne if the debtor is facing financial difficulties which have led the bank to make some concessions.
According to paragraph 164 of Annex IV of Commission Implementing Regulation (EU) No 680/2014, a concession refers to one of the following actions:

i) modification of the previous terms and conditions of the contract
or
ii) total or partial refinancing of the exposure

Therefore, the definition of concession is not restricted to modifications that affect the net present value of cash flows from the exposure.
The correct identification of forbearance implies the ability of the bank to identify signs of possible future financial difficulties at an early stage.
In order to do so, a credit assessment should also be conducted for exposures where the borrower does not have apparent financial difficulties, but where market conditions changes could impact the ability to repay (i.e. exposures where the repayment relies on a sale of real estate and a drop in real estate prices impacts affordability).
As per the Guidance to banks on non-performing loans (ECB, March 2017) useful triggers - to be used for the identification of such financial difficulties - can be:

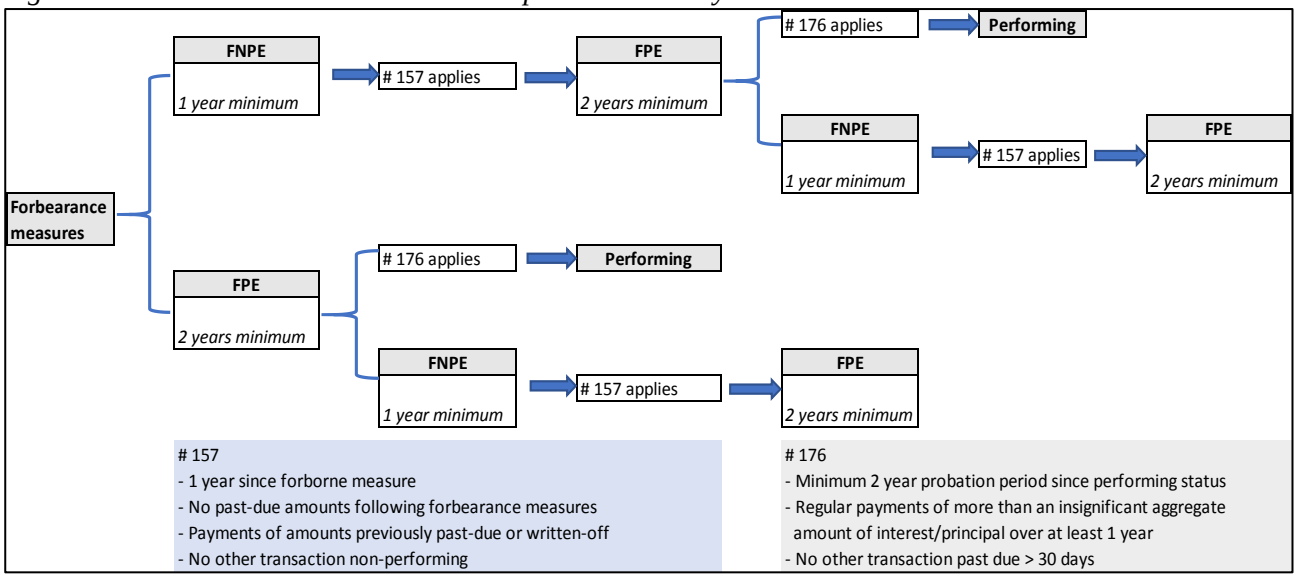
i) debtor/facility more than 30 days past due during the three months prior to its modification or refinancing;
ii) increase of probability of default (PD) of institution's internal rating class during the three months prior to its modification or refinancing;
iii) presence in watch-list during the three months prior to its modification or refinancing.

Exposures should not be identified as forborne when concessions are made to debtors that are not in financial difficulties.
Banks should distinguish between renegotiations or rollovers granted to debtors not in financial difficulties and forbearance measures.
Following paragraph 178 of Annex V of Commission Implementing Regulation (EU) No 680/2014, a forborne exposure can be performing (FPE) or non-performing (FNPE).
Granting forbearance measures to non-performing exposures does not clear their non-performing status: the exposures should continue to be identified as non-performing for at least one year after the granting of the forbearance measures.
Specific requirements in paragraph 157 for reclassifying non-performing forborne exposures comprise the completion of a "cure period" of one year from the date the forbearance measures

were extended and a requirement for the debtor's behaviour to demonstrate that concerns regarding full repayment no longer exist.

Once forborne exposures are classified as performing, they will continue to be identified as forborne until all the conditions in accordance with paragraph 176 of the EBA ITS on supervisory reporting have been met.
Once all the requirements above have been met, the loan needs to be monitored at least 2 years before being finally re-classified as performing.

Figure 1: Forebearance measures and cure periods summary



Source: Annex V, Part 2, Regulation (EU) 680/2014

In addition, the EBA has introduced the following principles:

The pulling effect:
According to paragraph 155 of Annex V of Commission Implementing Regulation (EU) No 680/2014, if more than 20% of the exposures of one obligor are past due by more than 90 days, all other exposures to this obligor (on and off-balance sheet) should be considered as non-performing.

Classification of the operation in its entirely:
According to paragraph 148 of Annex V of Commission Implementing Regulation (EU) No 680/2014, exposures should be categorized as non-performing for their entire amount.
According to the above, a given exposure cannot be classified partly as performing and partly as non-performing.

1.3 Banca d'Italia definitions

The Bank of Italy constantly and actively monitors the evolution of credit risk and banks' provision policies and amount.

For instance, Asset Quality Reviews (AQRs) are performed on a regular basis, as a part of the Supervisory Review and Evaluation Process (SREP), in order to assess the current and perspective exposure to credit risk of each institution, according to the reference framework provided by the Bank's Supervisory activities guidelines.
The AQR procedure, started in 2013 is not the only measure adopted for the analysis of the strength of the Italian banks balance sheets, yet traditionally, Banca d'Italia has always been severe and focused on credit classification.
As an example, (Pellegatta, 2014) the restructured credit was a specific category of the non-performing loans and needs to have regular payments for at least 2 years before being re-classified as performing loans.
This distinction was not present in many Europeans countries, where the restructured credits were considered as performing and they don't need a probation period.
Another severe rule adopted by the Italian system was the so called "pooling effect"; this rule implies that the whole credit exposition toward a borrower is classified as non performing if one or a part of his loans is non performing (even if the others are performing).
According to some school of thought, these differences could lead to an erroneous interpretation of data that could have overestimated the Italian NPLs stock over time;
For instance, as by an interview in 2013 to Ignazio Visco (governor of Banca d'Italia), if the Italian banks literally adopted "others" Europeans banks classifications its NPLs stock would immediately decrease of about 33%.

Besides the debates, Banca d'Italia clearly expressed technical guidelines on NPLs, that Italian banks had to respect even before the "standardization" made by the EBA in 2015.
For completion here below, the definition adopted by Banca di Italia (Banca d'Italia, n.272, 30 luglio 2008), before the change of definition frameworks promoted by the EBA, are listed and explained:

Past due or in arrears ("Esposizioni scadute > 90 giorni"):
exposures other than those classified as bad loans, substandard or restructured exposure that are past due for more than 90 days on a continuous basis.

Restructured loans ("Crediti ristrutturati"):
exposures in which a pool of banks or an individual bank, as a result of the deterioration of the borrower's financial situation, agree to change the original conditions (rescheduling deadlines; reduction of interest rate), giving rise to a loss.
In these cases the lender has accepted to take a partial loss by agreeing some changes to the original terms and conditions of the contract as a result of the deterioration in debtor's financial situation.
After a probation period of 2 years, if these loans had regularly payments then they can re-classified as performing.

Substandard loans/Watch list ("Incagli"):
exposures to counterparty facing temporary difficulties – defined on the basis of objective factors - that is expected to be overcome within a reasonable period of time.

Bad loans ("Sofferenze"):
exposures to an insolvent counterparty (even if insolvency is not legally ascertained) or in equivalent situations, regardless of any loss estimate made by the bank and irrespective of any possible collateral or guarantee.

After the EBA's ITS (Implementing Technical Standard) on supervisory reporting specifications on NPE classification (2015) subsequently adopted also by the European Commission (UE n. 227/2015), also in Italy financial institutions are strongly encouraged to use the NPE definition in their internal risk management and public financial reporting as well as in several relevant supervisory exercises such as Asset Quality Review (AQR), EBA stress test and transparency exercises.
In the application of the above rules, Banca d'Italia has modified the NPE classification into a new one that comprehends three macro clusters of NPE: (i) Past Due, (ii) Unlikely to Pay and (iii) Bad Loans; the total of these categories corresponds to the aggregate "Non-Performing Exposures" referred to in the EBA's ITS.

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

Unlikely to pay ("inadempienze probabili"):
The classification of loans in this category is the result of the judgment of the bank about the debtors' unlikelihood to fulfil its credit obligations.
In particular, these are the exposures for which the bank judges "not probable" that the debtor fulfils in full his credit obligation without the use of actions such as the enforcement of guarantees by the bank.
This category substitutes the old substandard loans ("Incagli") and restructured loans ("Crediti Ristrutturati").

Bad loans ("sofferenze"):
exposures to an insolvent counterparty or in equivalent situations, regardless of any loss estimate made by the bank and irrespective of any possible collateral or guarantee.
Same as previous classification of Bad Loans or "Sofferenze".

Figure 2: NPL classification, summary and comparison

OLD Italian definitions	EBA definitions	NEW Italian definitions
Past due or in arrears ("Esposizioni scadute > 90 giorni")		Past due ("esposizioni scadute e/o sconfinanti deteriorate") including FNPE
Restructured loans ("Crediti ristrutturati")	NPE (as by the past due and/or the unlikely to pay criterion) including FNPE	Unlikely to pay ("inadempienze probabili") including FNPE
Substandard loans/Watch list ("Incagli")		
		Bad loans ("Sofferenze") including FNPE
Bad loans ("Sofferenze")		

Source: EBA, Banca d'Italia

The previously applicable concepts of Substandard loans/Watch list ("Incagli") and restructured exposures ("crediti ristrutturati") are eliminated while the EBA introduces the new qualification of exposures subject to forbearance measures or "forborne".
Therefore, the old Substandard loans/Watch list ("Incagli") and restructured exposures ("crediti ristrutturati") flow either into the unlikely to pay ("Inadempienze probabili") or into the bad loans ("Sofferenze") cluster depending on the criteria applied and the analysis done by the banks.

As explained in section 1.2 (The European Banking Authority (EBA) definitions), the forbearance measures consist into modifications of the original contractual conditions of the loan agreed between the bank and the debtor at origination.
For instance the bank may accord to the debtor more sustainable conditions, such as a lower interest rate or a longer repayment period (that implies a lower installment amount).
Such forbearance measures can be applied either to performing borrowers with financial difficulties (FPE, forborne performing exposures) or to clients classified as non-performing (FNPE, non performing exposures with forbearance measures).

1.4 The role of Centrale dei Rischi

After having illustrated the general rules and benchmarks established and adopted by Banca d'Italia for the NPLs classification this chapter will focus on the role of Centrale dei Rischi in the monitoring and management of the aggregated banking system credit risk.
In fact, in addition to the formal guidelines, for monitoring the credit risk at national and aggregate level, in 1962 Banca di Italia has introduced the entity of Centrale dei Rischi.

The Centrale dei Rischi credit register is an information system on the debt of the customers of the banks and financial companies/intermediaries supervised by Banca d'Italia itself.
Banca d'Italia collects information on customers' borrowings from the intermediaries and notifies them (as a return information flow) the whole risk position of each customer towards the banking system (at least the position towards the intermediaries and banks that are under the Banca d'Italia supervision).
The Central Credit Register of Banca d'Italia provides intermediaries with a service intended to improve the quality of the lending of the credit system and ultimately to enhance its stability.
In practice, financial companies and intermediaries have the monthly obligation to communicate to Centrale dei Rischi the total amount of their credit exposition towards clients.
In particular, they have to communicate each position (defined as the exposition toward a single client) that is equal or greater than € 30.000,00 and all the non-performing loans independently by their value.
In this way, by summing up and aggregating all the data received, Centrale dei Rischi should be able to collect the whole exposition of each borrower towards the bank system and can give back to the intermediaries this complete and useful information.
This process increases the awareness of Banca d'Italia about the credit risk of the bank system and also allows it to monitor and control the stock of non-performing loans as well as to have a more complete picture of the phenomenon.
Summarizing and simplifying, Centrale dei Rischi has the following goals:

- Improving the process of valuation of the single borrower in the phase of provision of the credit.
- Enhancing the quality of the credit provided by the financial intermediaries
- Enforcing the stability of the whole credit system

Next to Banca d'Italia public/State initiative, some private companies were born in the recent past with the goal of creating a register that contained the bad payer borrowers and/or providing services similar or complementary to Centrale dei Rischi.
Among all, the most popular and also the largest credit information providers are:

- Assilea;
- Centrale Rischi Finanziari S.p.A (CRIF);
- Consorzio Tutela Credito (CTC)
- Experian-Cerved Spa;

2. THE ITALIAN NPLs MARKET OVERVIEW

2.1 The NPLs stock, a European issue

Nowadays the European economic system is struggling with high levels of non-performing loans (NPLs).
In fact, as by the ECB data (B.Mesnard, C.Katopodi, April 2017) at the beginning of 2017 the level of NPLs in the EU member States was exceeding the amount of €1tn (around €1.092bn) representing the 5,1% of the total loans.
The Global Crisis and the subsequent recession have left businesses and households in many countries with debts that they were no more able to repay.
As by Shekhar Aiyar, Anna Ilyina, Andreas Jobst (November 2015), for the EU as a whole, NPLs stood at over 9% of GDP at the end of 2014, more than double the level in 2009.

Despite the average rate of non-performing loans is recently slowly decreasing, due to a – slow - recovery of the European economy (better illustrated in the following paragraphs), this 5,1% (NPLs/Total loans within EU member States) registered in December 2016 (from 6,5% in December 2014 and 5,7% in December 2015), remains higher than the ratio registered in other major developed countries.
In fact, as by the World Bank reports, NPL ratios amounted to around 1,5% for both the United States and Japan at the end of 2016, considerably lower than the European one.
In addition, compared to the financial crisis in the US, the recognition of losses has been slower in Europe than in the US (NPL ratios peaked in 2012 in the EU vs 2009 in the US), and the subsequent reduction of the NPLs stock is also being more gradual.

Since the start of the crisis, the distribution of NPL has been highly unequal among Member States, with crisis-hit countries suffering major increases in NPL ratios.
In fact, within the EU Members, NPLs are particularly elevated in those southern countries, such as Cyprus, Greece, Italy, and Portugal where the economic crisis had the highest impacts.
In these countries, the non performing exposures are generally concentrated in the corporate sector, most of all among small and medium-sized enterprises (SMEs), which contribute around two-thirds of Europe's output and employment, and tend to be more reliant on bank financing than large firms.
In order to better comprehend the NPLs matter, therefore it is needed to properly frame it in a broader European perspective.

In 2016, by the analysis of the current NPLs stock and the impact of the financial crisis on the NPLs trend, the European Commission identifies three groups of Member States:

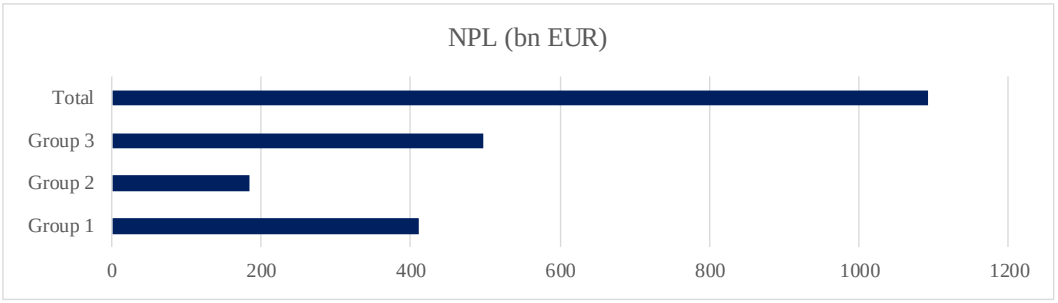
- Group 1: 9 Member States with low levels of NPLs, and with no significant rise in NPLs during the crisis (Belgium, Germany, Denmark, Finland, France, Luxembourg, Netherlands, Sweden, United Kingdom);

- Group 2: 9 Member States with low levels of NPLs but which have reported a high level or a high increase of NPLs during the crisis (Austria, Czech Republic, Estonia, Spain, Hungary, Lithuania, Latvia, Poland, Slovakia);

- Group 3: 10 Member States with currently high level of NPLs (Bulgaria, Cyprus, Greece, Croatia, Ireland, Italy, Malta, Portugal, Romania, Slovenia).

Those three groups are presented in the tables below.

Figure 3: European member states grouped by NPE ratio



Summary	NPL ratio (%)	NPL (bn EUR)
Group 1	3%	410
Group 2	6%	184
Group 3	19%	498
Total	**5%**	**1092**

Group 1	NPL ratio (%)	NPL (bn EUR)
Belgium	3%	21
Denmark	3%	20
Finland	2%	4
Germany	3%	68
Luxembourg	1%	2
Netherlands	3%	45
France	4%	148
Sweden	1%	11
United Kingdom	2%	91
Total	**3%**	**410**

Group 2	NPL ratio (%)	NPL (bn EUR)
Austria	5%	25
Estonia	1%	0
Czech Republic	3%	2
Poland	6%	7
Hungary	12%	6
Slovakia	4%	2
Spain	6%	141
Latvia	3%	0
Lithuania	4%	1
Total	**6%**	**184**

Group 3	NPL ratio (%)	NPL (bn EUR)
Bulgaria	13%	2
Croatia	10%	3
Cyprus	45%	21
Greece	46%	115
Ireland	14%	33
Italy	15%	276
Malta	4%	1
Portugal	20%	41
Romania	10%	3
Slovenia	14%	3
Total	**19%**	**498**

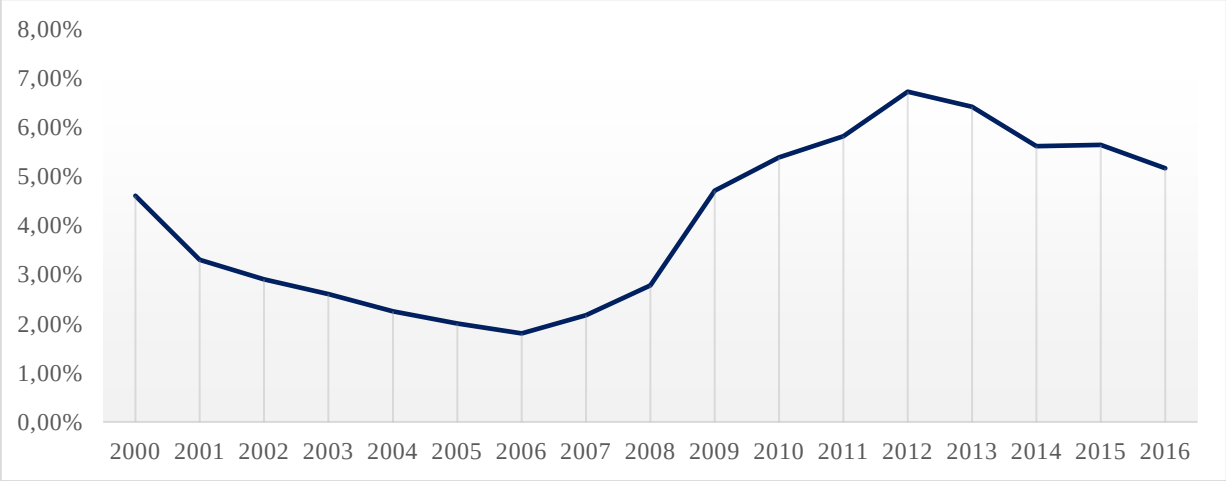
Source: EBA, ECB (data available as of June 2016)

According to Roland Beck, Petr Jakubik and Anamaria Piloiu (2013), over the past decade, the credit quality and the risk of default of loan portfolios across most countries in the world remained relatively stable until the financial crisis affected the global economy in 2007-2008.
Since then, average bank asset quality deteriorated strongly due to the global economic scenario. Following the crisis of 2008-2009, NPLs increased rapidly across the European countries as well, often reaching much higher levels if compared to those registered before the financial crisis.
When the global financial crisis reached the European countries in 2008-2009, the era of easy, foreign financed credit came to an hard slowdown and export markets suffered a huge drop, bringing the region's economy into a deep recession.

Unsurprisingly, NPL problems became most acute in those countries where the economic fall was particularly deep and where the pre-crisis credit boom had been the most extreme:

NPL ratios reached some 20 percent in Cyprus and Greece for example.

Figure 4: Euro Area – NPE ratio (Bank nonperforming loans to total gross loans) (%) – 2000-2016



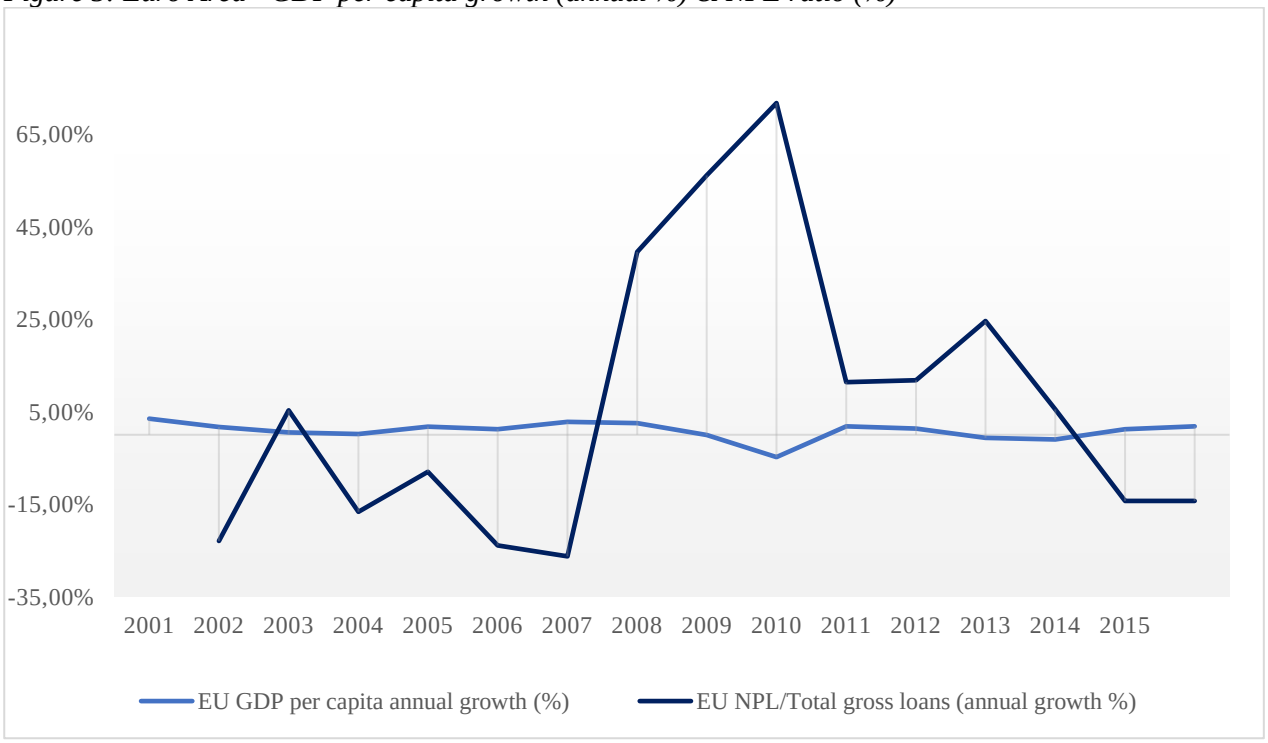
Source: International Monetary Fund, Global Financial Stability Report

A first descriptive look at the banks non-performing loans to total gross loans (%) trend suggests that, among the advanced European economy, bank asset quality gradually improved since the start of the last decade as non-performing loan ratios declined from around 4,6% of total loans in 2000 to around 1,8% in 2006.
When problems in the US sub-prime mortgage sector started to emerge in 2007, NPLs began to increase and deteriorated further in 2008 and 2009 (4,7% of total loans) even in Europe to subsequently reach their peak 4 years later, in 2012 (6,7% of total loans).

The fact that loan performance is tightly linked to the economic cycle is well known and not surprising.
The empirical literature on the interaction between the macroeconomic conditions and asset quality is vast and diverse, but the common finding of these studies is the positive relationship between asset quality and economic growth (these matters will be analyzed more in detail in the following chapter 3)).
Accordingly to B.Mesnard, C.Katopodi (European Parliament, April 2017), there is a strong correlation between high NPL and weak economic performances.
Real GDP growth and unemployment are two traditional drivers of NPLs, together with the quality of the supervisory and legal frameworks, as well as the bank lending practices.
At the same time, NPLs also have a consistent impact on economic growth, since high levels of NPLs reduce profitability, increase funding costs and tie up bank capital, which negatively impact credit supply and ultimately growth.
This matter was deeply treated into the latest quarterly report on the euro area published by the European Commission (March 2017) that highlights that high NPLs constitute a brake on economic growth not only for the affected Member States but also for the euro area as a whole.

For better analyzing the above described link between NPLs stock and GDP growth, the Bank non-performing loans to total gross loans annual growth (%) trend and GDP per capita growth (annual %) for the period 2000-2015, have been analyzed and compared.
It is easy to compute - and It's qualitative evident from the graph below - that the two variables have a not neglectable negative simple correlation (-63,4%).

Figure 5: Euro Area - GDP per capita growth (annual %) & NPE ratio (%)



World Bank national accounts data, and OECD National Accounts data files
International Monetary Fund, Global Financial Stability Report

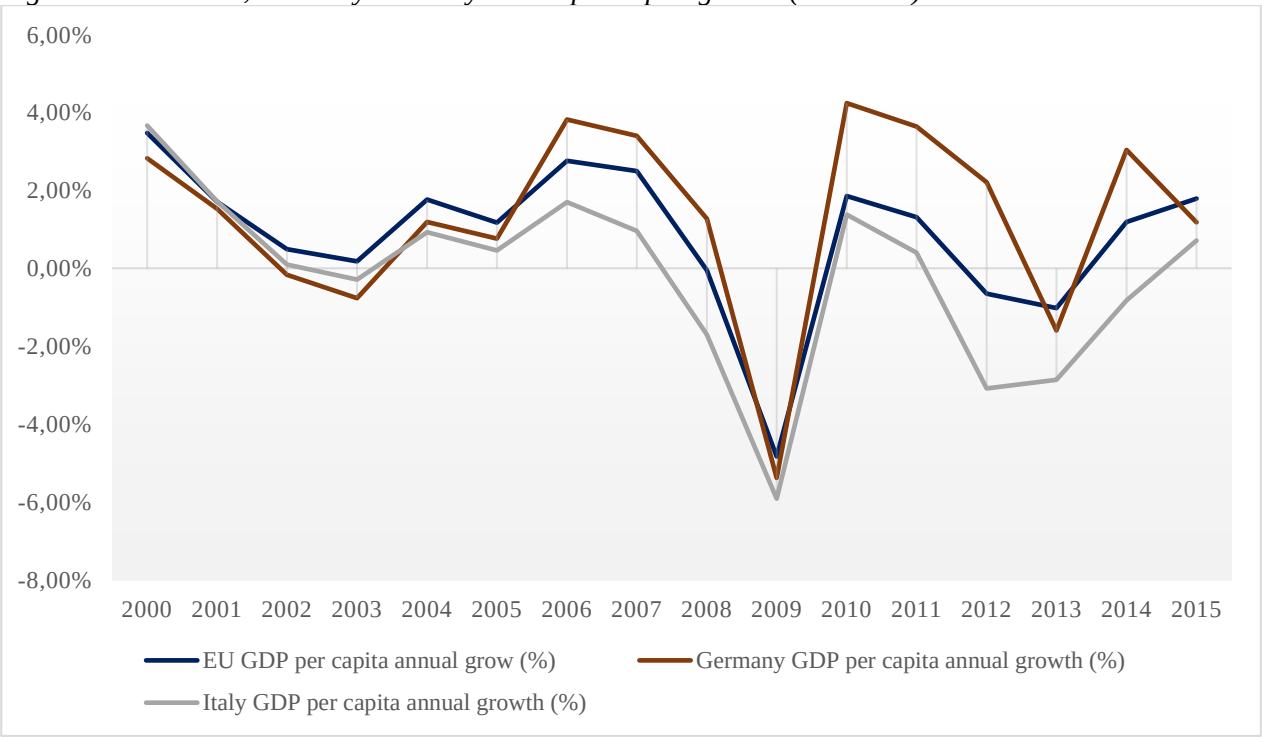
Despite the strong relationship between economic growth and NPLs stock, as evidenced by the European Banking Coordination (ECB, March 2012), high NPLs are an issue that is unlikely to be resolved by economic growth alone and, as it will be better explained in chapter 4), the intervention of different players is needed for fixing the issue.
The resumption of economic growth in the second half of 2009 led to a slowdown in the rise of NPL ratios and in the better performing economies they seemed to have peaked sometimes in 2011. However, they are generally still at high levels and the asset deterioration continues in a large number of European countries.
In fact, According to the latest available data from the European Central Bank CBD2 database (Consolidated Banking Data), in April 2016 the Eurozone banks were overloaded with €1.014bn of NPLs.
This represents a significant amount, even if the trend shows a slight reduction from the € 1.114bn peak reached in April 2015.

As illustrated above, the gradual economic recovery that gained traction at the beginning of 2015 had a clear positive impact – even if moderate – on impaired loans but with differentiated outcomes. A breakdown of loans by country of origin confirms that the NPL problem is structurally worse in the European southern countries, such as Italy.

Keeping Italy as a case study, the incidence of NPLs on the balance sheets of Italian banks remains always over 10% since 2012, reaching its peak in 2015 (around 22%), despite the downwards trend at European level.
Focusing again on GDP that, as we saw before, is supposed to have a significant correlation and impact on NPLs stock growth, It seems Italy is emerging from the negative trend of the last years,

but as data on NPLs stock and trend will show, once again this alone may be not enough for solving the NPLs crises legacy and its consequences on the entire credit chain.

Figure 6: Euro Area, Germany and Italy - GDP per capita growth (annual %)



World Bank national accounts data, and OECD National Accounts data files

Within the Euro area there are also some positive situations; opposite to Italy is the example of Germany, where the "wait and see" approach policy of banks in the disposal of bad loans seems to be a viable strategy.
After having reached the highest peak in 2012 (5,4%) German bank non-performing loans to total gross loans (%) annually reduced with a constant trend till 2014 (2,3% as by IMF data).
It's well known that, in the last years Germany is leading the European growth with a central role and consistent influence in the macroeconomic scenario and it is plausible to think that the stronger GDP growth experienced in Germany after the 2008-2009 crisis has enabled enterprises and households to resume debt payments that had been suspended.

The comparison between this two opposite situations of Germany and Italy seems to show that if the weight of impaired loans is not excessive and a recovery of the economic cycle can be reasonably expected then the system may be able to restart by itself.
However, when the ratio of NPLs is too high (as per Italy), it quickly becomes in itself an obstacle to the economic growth.
In order to restore falling profitability banks reduce their support for the real economy, forcing the businesses that depend upon bank loans out of the market.
It's important not to forget that the Italian situation is even worsened by the fact that the majority of its NPLs originated by loans towards SMEs.
Hence these loans are gross losses despite their optimistic accounting, difficultly recoverable even in the presence of strong GDP growth.

Nowadays, the huge stock of NPLs represents a relevant issue the ECB is focusing on to solve.
During the last Presentation of the ECB Annual Report on supervisory activities 2016 to the European Parliament's Economic and Monetary Affairs Committee (April 2017) Danièle Nouy, Chair of the Supervisory Board of the ECB, talking about NPLs said that "The "wait-and-see" approach we have often seen in the past cannot continue".
In fact, weak bank balance sheets have long been known to act as a drag on economic activity, especially in economies that rely mainly on bank financing.
The literature on financial dependence and growth is well-established (Rajan and Zingales 1998).
Several recent studies have looked specifically at the feedback effects from NPLs to macroeconomic performance.
Using different country samples, Klein (2013), Nkusu (2011), and Espinoza and Prasad (2010) all find that higher NPLs tend to reduce the credit-to-GDP ratio and GDP growth, while increasing unemployment.
This is consistent with data for European Area banks over the last five years.
Banks with higher NPLs – which tend to be less profitable, have relatively weaker capital buffers, and have higher funding costs – tend to lend less.
In fact, high NPL ratios most immediately, they may give rise to financial stress, especially if banks' provisioning is inadequate and their capital buffers are low.

Furthermore, high NPLs might reflect a deeper problem of general over-indebtedness in the household and corporate sectors.
In this case, a combination of deleveraging and debt restructuring would be requested and robust credit growth going forward would be problematic.
Concluding, the general concern, is that a persistent weakness in loan portfolios becomes an obstacle to the economic growth.
These and additional matters will be better analyzed in the following chapter focusing on the Italian situation.

2.2 The Italian NPLs market

2.2.1 Italian economic scenario overview

Nowadays the narrative about Eurozone problems is often focused on the Italian banks' troubles, burdened by €329 billion (as by Bollettino Statistico IV, November 2016 released by Banca d'Italia) of non-performing loans (NPLs) with little or no chance of recovery.
Such amount represents around one third of the total European NPLs stock (approximately €1tn).

As explained in the previous chapter, the problem has not come out of nowhere and in Italy is strongly related to the persistent crisis of the Italian manufacturing sector and of the SMEs started after the 2008 financial crisis.
In fact, as it happened in Europe, also in Italy NPLs have grown steadily since the financial crisis of 2008-2009.
Italian financial system has registered a marginal increase of the NPLs stock of around €30bn per year since 2008, reflecting somehow the reluctance of banks to record losses and an overall attitude of postponing the problem (the so called and yet well known "wait and see" strategy or approach).
This situation apparently didn't benefit of the austerity policies coordinated at the European level through the reform of the Stability and Growth Pact.
In addition, billions of new capital (emblematic is the example of Monte dei Paschi di Siena) have been periodically injected onto banks' balance sheets, but with poor effects, because of the low profitability of such fragmented banking industry in a zero interest rates environment.
After the European recession of 2013-2014 and the stricter rules of supervision at European level imposed by the Single Supervisory Mechanism (SSM) which imposed recognition of NPLs as losses at a faster rate, cracks in the system have begun to surface.

Focusing on the Italian economic scenario, Italy's economy is set to grow by around 1% in both 2017 and 2018, with a moderate yet steady growth as shown by the European Economic Forecast of winter 2017 (European Commission, February 2017).

Real Italian **GDP** (Gross Domestic Product) is estimated to have grown by 0,9% in 2016 (up from 0,7% in 2015) and is forecasted to have a growth of 0,9% in 2017, mainly as a result of supportive monetary policy and expected acceleration in global demand.
Later on, in 2018, sustained by both domestic and external demand developments, Italian GDP should grow around 1,1%.

In 2016, HICP (Harmonized Index of Consumer Prices) **inflation rate** was close to zero due to a further decline in energy prices and moderate core inflation.
As energy prices rise, inflation is set to climb to 1,4% in 2017 and stabilize in 2018 in line with the European Central Bank measures.

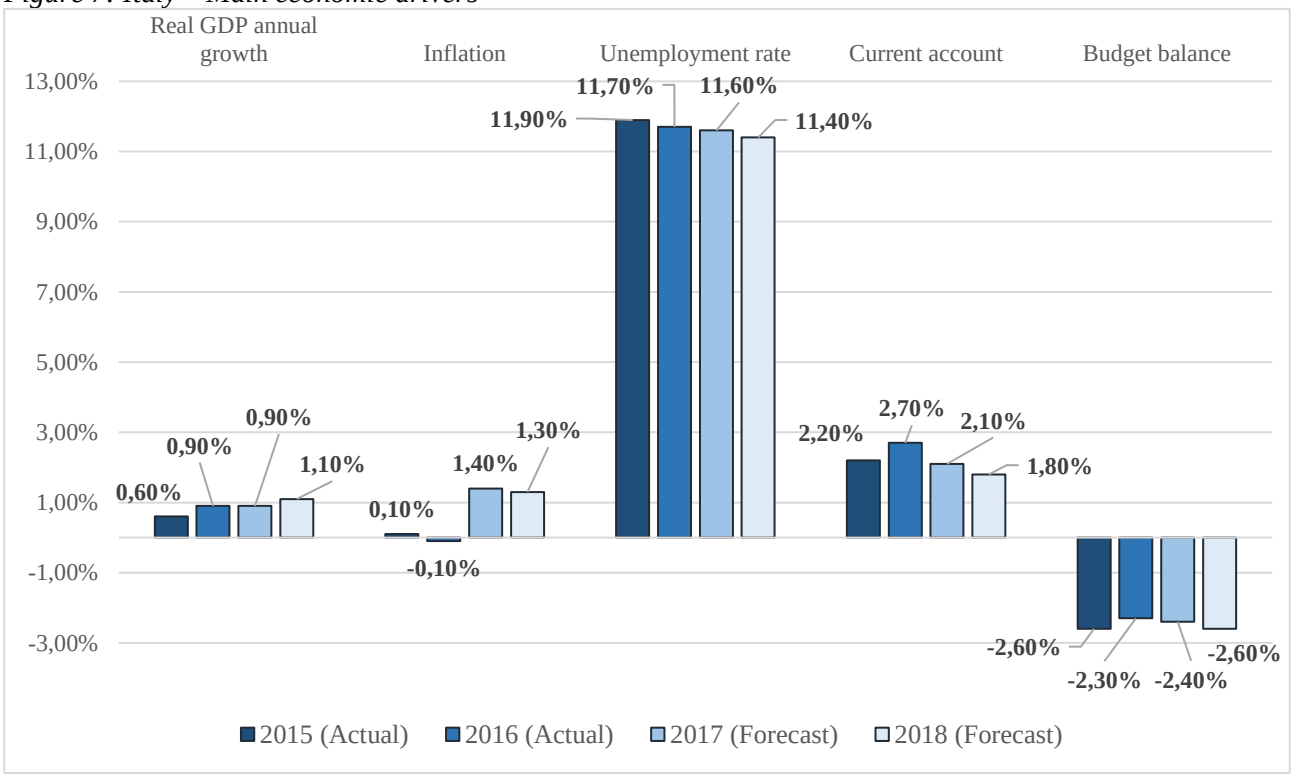
Past reforms, including a permanent reduction in labor taxation, are set to support employment in 2017 and 2018.
Despite that, job creation is projected to slow down compared to the 2015-2016 period, when it was boosted by a three-year reduction in social contributions.
The **unemployment rate** is set to remain above 11% over 2017 still largely above the aggregate European level expected to be 8,1% in 2017.

Current account surplus (computed as a percentage of GDP) in Italy is foreseen to decrease from 2,7% of 2016 to 2,1% in 2017 and 1,8% in 2018, getting closer to the European aggregate level (1,9% for both 2017 and 2018).

Concluding the picture, expectations on **budget balance** are not positive with a government that seems not able to recover the deficit.
The deficit indeed is expected to grow lightly from to 2,3% of 2016 to 2,4% in 2017 and 2,7% in 2018 as a percentage of GDP.
This low expectations may due to the Italian government current instability that saw the first minister resignation just at the beginning of 2017.

Here below a summary table with the main economic drivers of the Italian economy with the trend since 2015 to 2018 (please note that 2015 and 2016 data are actuals while 2017 and 2018 are forecasts).

Figure 7: Italy – Main economic drivers



European Economic Forecast of winter 2017 (European Commission, February 2017)

For completing the picture, considering also the weight of the Secured NPLs within the whole NPLs stock, so the amount of non-performing loans covered by real guarantee such an asset or collateral (mainly Real Estate), this section focuses on the analysis of the Italian Real Estate market.
In 2016, the Italian real estate market has been continuing on its positive trend (+18,4% overall number of transactions compared to the previous year 2015).
This was mainly driven by sales of residential properties (including garages, basements and car parking) even of the largest incremental growth compared to the previous year was registered by the industrial assets (+22,1%).
For the first time after 2011 the yearly real estate transactions exceeded the million unities (1.141.012 in 2016) with a total investment in real estate of around €9,1bn.

The two largest Italian cities, Rome and Milan, represent together the 44% of the total transactions. Residential sales in 2016 have increased throughout each region of Italy with respect to 2015. The North represents the 53,3% of the total residential assets sales and a significant positive increase of 22,3% compared to 2015, which was followed by the South (25,9% of the total residential sales) and Centre (20,8% of the total residential sales) with 16,2% and 14,6% growth, respectively.

Table 1: Italy - Assets sales by type 2015-2016

Asset type	H1 2016	H2 2016	**Total 2016**	H1 2015	H2 2015	**Total 2015**	**Delta (%) H1 15-16**	**Delta (%) H2 15-16**	**Delta (%) Total**
Residential	258.492	270.372	**528.864**	211.968	232.657	**444.625**	21,9%	16,2%	**18,9%**
Basement/garages/car parking	197.569	213.434	**411.003**	163.887	181.003	**344.890**	20,6%	17,9%	**19,2%**
Office	4.438	5.510	**9.948**	4.097	4.744	**8.841**	8,3%	16,1%	**12,5%**
Retail	14.374	16.212	**30.586**	12.634	13.594	**26.228**	13,8%	19,3%	**16,6%**
Industrial	5.018	6.269	**11.287**	4.230	5.012	**9.242**	18,6%	25,1%	**22,1%**
Other*	69.515	79.809	**149.324**	61.746	68.363	**130.109**	12,6%	16,7%	**14,8%**
Total	**549.406**	**591.606**	**1.141.012**	**458.562**	**505.373**	**963.935**	19,8%	17,1%	**18,4%**

*Other includes hospital, clinics, barracks, telephone exchanges and fire stations
Source: PwC publication "Real Estate Market Overview – Italy 2017"

2.2.2 Italian NPLs in numbers

As by the last official data available (Bollettino Statistico II 2017, June 2017) by Banca d'Italia, the Italian NPLs stock amounts to €324bn of which the 62,1%, equal to €202bn are classified as bad loans so considered as the "worst" (in terms of expected recovery) part of the total NPLs stock.

Table 2: Italy – NPLs breakdown by type

Classification (data in € million)	2017 I	% of Total exposure	2016 VI	% of Total exposure	2016 III	% of Total exposure
Total non-performing loans	325.484	16,3%	324.333	16,2%	329.038	16,5%
Bad loans	202.061	10,1%	199.775	10,0%	198.221	9,9%
Unlikely to pay	116.400	5,8%	117.090	5,9%	120.445	6,0%
Past due	7.023	0,4%	7.468	0,4%	10.372	0,5%
Total performing loans	1.674.504	83,7%	1.677.200	83,8%	1.663.960	83,5%
Total Exposure	**1.999.988**	**100,0%**	**2.001.533**	**100,0%**	**1.992.998**	**100,0%**

Source: Bollettino Statistico II 2017, June 2017- Banca d'Italia

NPLs stock had a quick and alarming growth in the last decade; comparing the last available data up to the end of 2016 to those of 2008, the NPLs stock had a compound annual growth rate (CAGR) equal to 118,6%.
This number is even higher if we focus on the bad loans only that grew from €42bn in 2008 up to €200bn in 2016 with a CAGR equal to 121,5%.
The incidence of the bad loans on the total NPE stock indeed (computed as percentage of the total NPL stock) grew with an average yearly rate of 2,6% starting from a weight of 50% in 2008 and reaching the higher weight of 61.6% at the end of 2016.
Looking at the geographical distribution, around 52% of bad loans is concentrated in the North part of Italy.

In particular the 29,4% is concentrated in the North-West area (where Lombardia with a total of €43,2Bn covers the 22% of the total stock of Italian bad loans) and the remaining 22,6% in the North-East part (Trentino Alto Adige, Veneto, Friuli Venezia Giulia and Emilia Romagna).

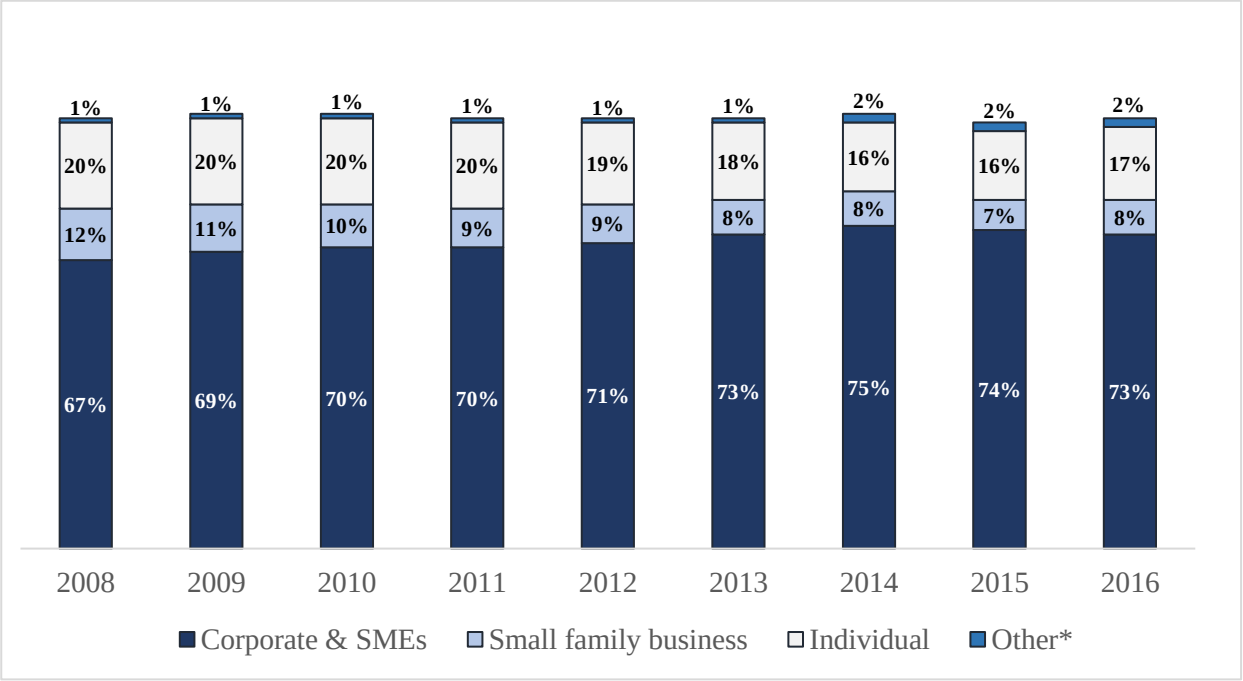
Table 3: Italy – Bad loans stock geographical breakdown

Area/Region	Total	% on Total Area	% on Total
Total North	**104.559**	**100%**	**52%**
Piemonte & Valle d'Aosta	11.968	11%	**6%**
Liguria	3.844	4%	**2%**
Lombardia	43.220	41%	**22%**
Trentino Alto Adige	3.100	3%	**2%**
Veneto	20.026	19%	**10%**
Friuli Venezia Giulia	3.349	3%	**2%**
Emilia Romagna	19.052	18%	**9%**
Total Centre	**50.513**	**100%**	**25%**
Marche	6.167	12%	**3%**
Toscana	17.353	34%	**9%**
Umbria	3.561	7%	**2%**
Lazio	23.432	46%	**12%**
Total South & Islands	**45.637**	**100%**	**23%**
Abruzzo & Molise	4.821	11%	**2%**
Campania	12.186	27%	**6%**
Puglia & Basilicata	9.915	22%	**5%**
Calabria	3.314	7%	**2%**
Sicilia	11.156	24%	**6%**
Sardegna	4.245	9%	**2%**

Source: Bollettino Statistico II 2017, June 2017- Banca d'Italia
Data in € million

This high concentration is easily explicable by considering that the North regions of Italy are the most industrialized and active in terms of business (Milano and Torino are often considered the main hubs for the Italian industrial economy) since the majority of the companies have their headquarters located in this area, therefore it ends to be the most indebted part too, because of the physiological need of capital (debt) for industrial growing and development.
As expected, banks main counterparties for the bad loans in Italy are mainly SMEs because of their central role in the Country's economy.

Figure 8: NPLs breakdown by counterpart



Source: PWC PwC analysis on data of "Bollettino Statistico" of Bank of Italy, July 2017
** It includes PA and financial institutions*

It's not surprising that bad loans versus SMEs indeed cover the 73% of the total stock (PWC PwC analysis on data of "Bollettino Statistico" of Bank of Italy, July 2017).
In fact, the Italian SMEs agglomerate is an army of around 137,000 companies centered mainly in Italy's center-north, each with between €2 million and €50 million in revenue, playing a crucial role for the Country's economy.
More than 99% of these industrial companies have less than 250 employees, and among them more than 80% are microenterprises with less than 10 employees (European Commision analysis, 2014).
Small and mid-sized Italian companies are still plagued by a crucial problem of "credit asphyxiation" (Bocciarelli & Colombo).
Despite the worrying data, It's also possible to notice some positive signals and trends that may open the doors to more positive scenarios in the next future:

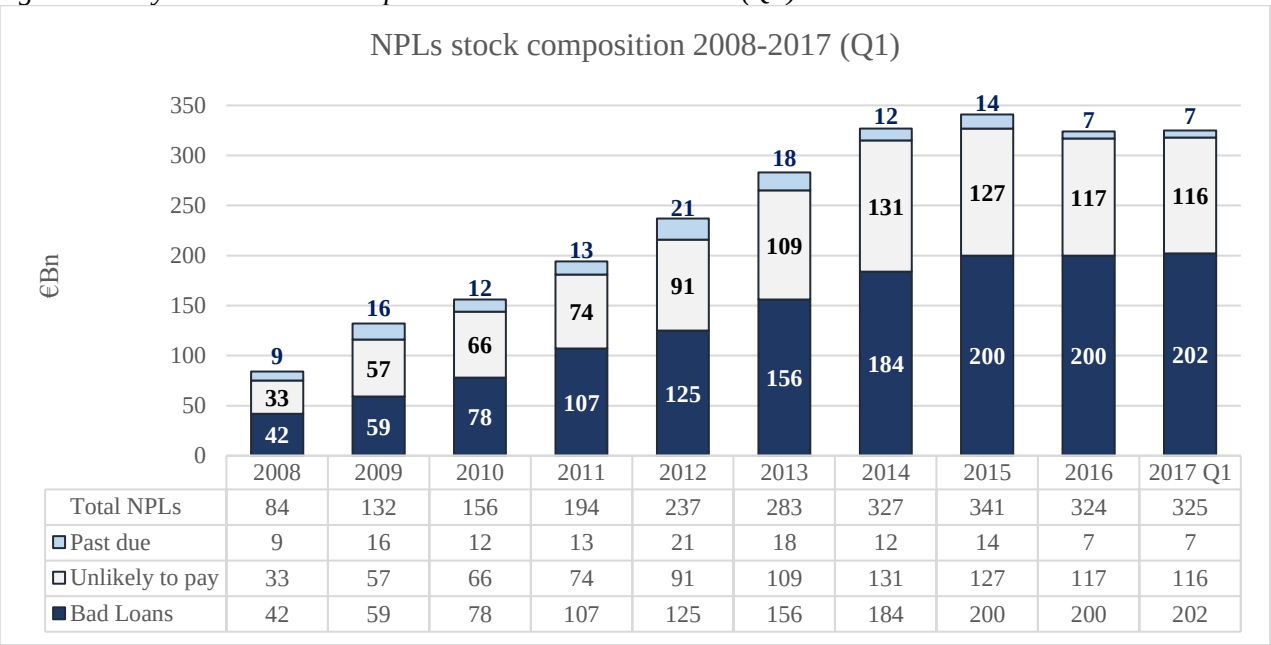
i. Total NPLs stock decreased by €16bn if compared to 2015, from €341bn to €324bn (Q4 2016).
ii. Total bad loans stock decreased by €2bn if compared to 2015, from €200bn to €199bn (Q4 2016)
iii. Total Net stock of NPE (net of provisions) at the end of 2016 was €85,2bn (ABI monthly outlook, January 2017) and registered a reduction if compared to October 2016 (€85,5bn) and November 2015 (€89bn).

These are due both to the several sales done in the market and to the depreciation and write-off done at balance level performed by the banks.

Positive trends may indicate that the measures adopted by the financial industry to reduce the NPE stock, are starting to work.

In addition to this, another positive signal comes from the declining trend of Unlikely to Pay and Past Due loans - which started in 2015 - and represents also an indication of an improving quality of underwriting.
In fact, both Unlikely to Pay and Past Due are considerably declining reaching €117bn (from €127bn at YE-2015) and €7bn (from €14bn at YE-2015) at YE-2016.
In the table below a summary of the trend Italian NPLs stock from 2008 to 2017 Q1 with a breakdown among its main components (Past due, Unlikely to pay and bad loans).

Figure 9: Italy – NPLs stock composition and trend 2008-2017 (Q1)



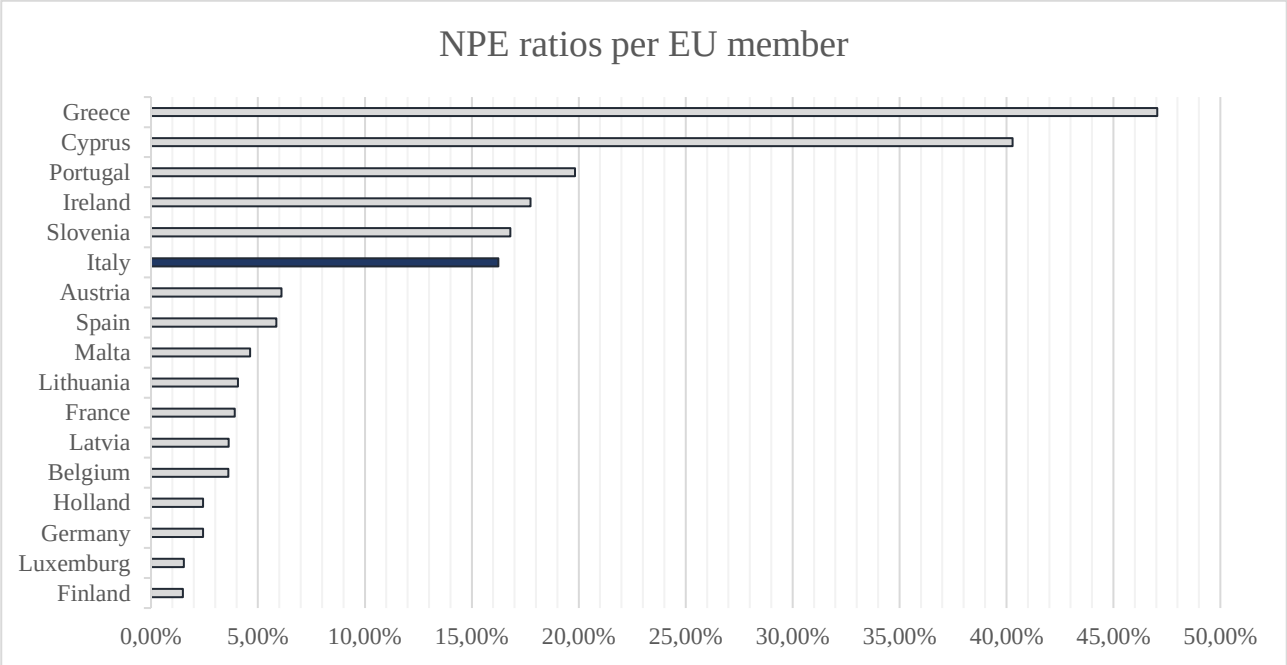
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017 Q1
Total NPLs	84	132	156	194	237	283	327	341	324	325
Past due	9	16	12	13	21	18	12	14	7	7
Unlikely to pay	33	57	66	74	91	109	131	127	117	116
Bad Loans	42	59	78	107	125	156	184	200	200	202

Bollettino Statistico II 2017, June 2017- Banca d'Italia

For having a better comprehension of the matter we should now compare and analyze the main ratios and indicators used – also - by the ECB to monitor the levels of Non Performing Exposures (NPE) on Banks under its supervision.
Since the ECB considers this levels as too high It set this topic among the priorities for 2016 and 2017.

In particular, NPE ratio is the main indicator used when insiders and experts talk about NPLs and the ECB is putting pressure on monitoring the Italian banks' NPE ratios with high frequency (Luca Davi, Il Sole 24 Ore, February 2017) in the recent years.
The NPE ratio measures the percentage of non-performing exposures over the total loans.
Considering the aggregate ratio of Banca d'Italia, the NPE ratio grew of around 3 times in the last 8 years, from 4,9% to 16,3% of the total loans, while the average European level is around 5%.
As It's evident by the table below, only 5 Countries: Greece, Cyprus, Portugal, Ireland and Slovenia registered worse levels than Italy in terms of NPE ratio (within the EU Members).
But the NPLs stock is less relevant in those countries than in Italy; Greece has a stock of around €108bn (Hellenic Bank Association, February 2017), Cyprus around €24bn (data released by the Central Bank of Cyprus, March 2017), Portugal €41bn (EBA, ECB as of June 2016), Ireland €33bn (EBA, ECB as of June 2016), Slovenia has a stock of around €3bn (Slovenian Ministry of Economy, January 2017).

Figure 10: Selected European Members – NPEs ratios



ECB data, January 2017

Summing up the NPLs stock of these European 5 Countries that have an higher NPLs ratio than Italy, the aggregate amount is still around 63% (€207bn) of the total Italian NPLs stock.
Considering these two elements, the level of the NPE ratio and size of the stock, it's easy to understand why the Italian situation has attracted so much the attention of the ECB in the recent period as well as of the investors interested in purchasing Italian distressed and illiquid assets from the Italian banks.

2.2.3 Italian banking industry overview

Given that the Italian banking situation is really a complex matter, this paper can't cover all the aspects neither it will present an exhaustive picture of the industry itself.
The paper indeed will focus mainly on data regarding the credit market and on the most recent (2016-2017) events that affected the Italian banking industry with high focus on the Italian NPLs market for giving to the reader a decent overview.

Starting from the recent facts, in December 2016, the following declaration of Steve Eisman made a lot of sensation:
"*In the Italian system, the banks say (assets) are worth 45-50 cents in the dollar. But the bid price is 20 cents. If they were to mark them down, they would be insolvent*".
Eisman famously made a huge bet ("the big short") against the U.S. housing market and when housing prices tanked in 2007-2008, he pocketed more than $1bn.
At the end of 2016 Eisman declared his new big short: Italian banks.
In other words, he thinks Italy's banking system is a ticking time bomb because of its large NPLs stock and it's only a matter of time before the "market" realizes this.
He told the British newspaper The Guardian: "*Europe is screwed. You guys are still screwed*".
This is not an isolate fact, since Eisman wasn't the only one to bet against the Italian banking system at the end of 2016.

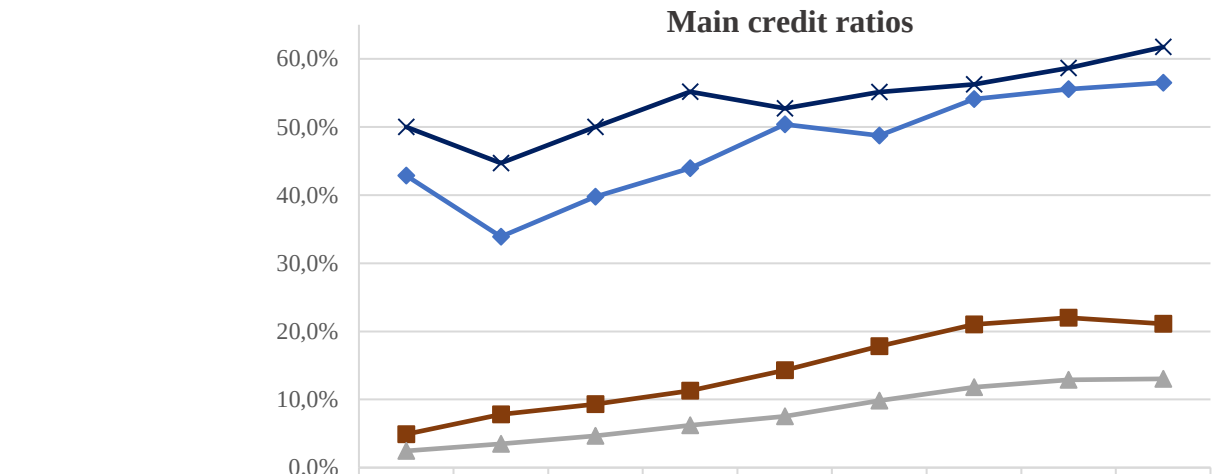
In fact, at that period there were colossal short positions on Italy from the U.S. and other countries where big investors are based (as by an interview of Raffaele Jerusalmi, the CEO of the Italian stock exchange, December 2016).
Shorting, or selling a borrowed asset, is a technique traditionally used by hedge funds to bet that the value of an asset will decrease.
Again in December 2016 data from the Italian market regulator showed "significant short positions" in Banco Popolare Di Milano and Banca Carige, while the regulator has restricted short-selling in shares of floundering Monte dei Paschi since July 2016.

The "Eisman's sentiment" was showed also by the market itself.
Weighted down by its banking shares, as 25,7% of the FTSEMIB (FTSE Russell as at 28 April 2017) index is composed by banks shares (Unicredit and Intesa that together have a share of around 20% of the total), Italy's main index FTSEMIB was actually one of the worst performing stock market in the developed world in 2016.
The index registered a -24,37% in the first 6 months of 2016, closing with a final -10,2% in the overall year.
It's not a fortuity that since March 2017 MPS have been excluded by the index (After the failed capital increase) and the index is now having better performances.
This is an additional proof oh how the banking sector uncertainty (even due to NPLs and bank instability) badly affected the entire Italian economy in 2016.

Behind the words of Eisman and other operators of the market, that can sound exaggerating, there's anyway a real issue with the Italian banking industry.
As previously seen by the aggregate data analysis, what's even more scaring within the NPLs stock trends, it's the growth of the bad loans pool.
In fact, the bad loans ratio grew of around 4 times in the last 8 years, from 2,5% to 13% and this may indicate that not only the NPLs grew but also its quality worsened along with the time.
This is confirmed by looking at the bad loans weight on the total NPLs stock that in 2016 grew of 23% if compared to 2008 (50% in 2008 versus 61,7% in 2016).
From another angle, this data may be read in a positive way too, if we think that banks have started to better analyze its NPLs stock both taking losses and degrading the not bad loans into the bad loans category when needed, also considering the new NPLs classifications adopted by the ECB (see chapter 1).

As happened in Europe (EBA report on the dynamics and drivers of the non performing exposures in the EU banking sector, July 2016), also in Italy the increase in the coverage ratio can be the effect of higher regulatory scrutiny in relation to the AQR.
Focusing again on the bad loans, the coverage ratio had an average growth rate of 4,3% in the last 8 years, touching its highest peak in 2016 with a value of 56,5%.
Once again, this may be a good signal if we think banks are accumulating more provisions than in the past in order to cover and balance the high stock of bad loans.
The table below shows the evolution of bad loans coverage ratios since 2008 to 2016 as well as the main indicators already discussed as the NPE ratio, the bad loans/total loans ratio and the bad loans/total NPLs ratio.

Figure 11: Italy – NPLs ratios 2008-2016



	2008	2009	2010	2011	2012	2013	2014	2015	2016
NPE ratio (%)	4,9%	7,8%	9,3%	11,3%	14,3%	17,8%	21,0%	22,0%	21,1%
Bad loans/Total loans(%)	2,5%	3,5%	4,7%	6,2%	7,5%	9,8%	11,8%	12,9%	13,0%
Bad loans/Total NPLs (%)	50,0%	44,7%	50,0%	55,2%	52,7%	55,1%	56,3%	58,7%	61,7%
Bad loans Coverage ratio (%)	42,9%	33,9%	39,7%	43,9%	50,4%	48,7%	54,1%	55,5%	56,5%

ABI data, January 2017

In addition to the indexes above, another important measure of the credit risk of the banks aggregate system is the so called **Texas ratio** (see Appendix I, IX) for the Texas ration definition)
Simplifying, the ratio indicates the capacity of the bank to cover losses due to devaluation of the non performing exposures.
As by an analysis done by Mediobanca that has analyzed the balance sheets of the Italian banks for the year 2015, 114 Italian banks have a Texas ratio higher than 100%.
Among all, "inexplicable" is the case of Banca di Teramo with a Texas ratio equal to 777,2%, later "saved" in June 2016 by a merging operation into the smaller Bcc di Castiglione Messer Raimondo (operation done thanks to the help of the availability of the Fondo Consortile di garanzia).
Among the banks (24 out of 114) with a Texas ratio higher than 200%, even if the majority are cooperative and rural bank, we can also find the larger Unipol Banca (€11.6bn of assets), Monte dei Paschi di Siena (€169bn of assets), Veneto Banca (€33,3bn of assets), Banco Popolare (€120,5bn of assets, later merged with Banca Popolare di Milano) and Banca Popolare di Vicenza (39,8bn of assets) for a total of €374,2bn of aggregate assets.

Table 4: Italian banks Texas ratio – over 200% perimeter

Bank	Total Assets ('000 €)	Texas ratio
Banca di Teramo di credito cooperativo	207.943	777,2%
Cassa di risparmio di Cesena	4.358.538	593,5%
Unipol Banca	11.597.329	380,3%
Banca Atesina di credito cooperativo	439.832	343,1%
Banca di Pistoia - Credito cooperativo	668.981	306,5%
Credito Salernitano Banca Popolare della provincia di Salerno	99.245	268,4%
Banca Monte dei Paschi di Siena	169.011.977	262,6%
Banca di credito cooperativo Sen. Pietro Grammatico - Paceco	166.882	246,8%
Cassa rurale valli di Primiero e Vanoi	360.246	246,3%
Cassa rurale della valle dei laghi	459.437	244,7%
Cassa di risparmio di San Miniato	3.269.695	240,0%
Cassa rurale Mori - Brentonico - Val di Gresta	389.726	239,3%
Veneto Banca	33.349.346	238,5%
Cassa rurale di Rovereto	1.116.707	234,5%
Banca Carim - Cassa di risparmio di Rimini	3.729.084	232,5%
Banca di credito cooperativo Castel Goffredo	582.289	227,6%
Banca per lo sviluppo della cooperazione del credito	2.613.326	223,0%
Bancasciano Credito cooperativo	390.860	221,8%
Banco Popolare	120.509.595	217,9%
Banca popolare di Vicenza	39.783.370	210,9%
Banca di credito cooperativo del Veneziano	1.207.498	207,8%
Banca di credito cooperativo di Recanati e Colmurano	653.402	204,3%
Banca del Fucino	1.556.285	201,1%
Banca di Filottrano - Credito cooperativo di Filottrano e di Camerano	1.079.032	200,3%

Mediobanca R&S, 2015 data are used.

Number of NPLs stock and ratios don't give a full picture to the reader if we don't consider that NPL level is strictly linked to:

i. Banks's provisioning policies and future plan for bad assets dismissal.
ii. Banks' provisions amount, since It's important to understand how much the single bank has accumulated as provisions to face its non performing exposures.

Recently banks have started to be more focused on the NPLs issues, tacking real action to fix the problems, as we can see by the analysis on the three largest Italian banks that, in line with the ECB guidelines, have already taken action in order to align their NPE ratios and capital requirements to the European standards.

Intesa Sanpaolo SpA (during the presentation of the annual results and balance sheet of 2016) declared its will to bring its NPE ratio from the current level of 14,7% to a lower 10,5% within 2019;
The approach adopted is the asset light banking, that contemplates the deconsolidation of the most distressed part of the assets in a short time, for focusing then on the internal management of remaining stock, avoiding clearance sales and maximizing returns.
This is also clear by the declarations done by the CEO Carlo Messina that confirmed the will of the bank to focus on the internal management of the NPLs stock instead of selling the assets and letting

to speculative investors to have - around 20% - returns by the investments on these kind of portfolios.
In addition, as agreed with the ECB, Intesa is going to hand to the ECB (H1 2017) the so called Asset strategy template, that will contain and explain the bank future strategy on NPLs portfolios sales and management.
Intesa strategy is definitely more focused on internal asset management rather than massive portfolios sales, with €200m of investments expected (as by the 2016 balance sheet) for technology development and strategical changes in the distressed asset management such as success fees for best performer employees, strategical use of the REoco company to prevent the loss of value (due to auctions rebates) of the assets that backed the loans and the use of a "restructuring farm", a division of the bank able to switch NPLs in re-performing loans (RPLs) by agreeing new discounted payment plans with the debtors.
Anyway, in order to be more effective in NPLs dismission, Intesa will go ahead also with portfolios sales.
The Capital Light bank, the special division of Intesa focused on distressed asset sales, has already dismissed around €20bn since its creation in 2014 and Intesa's Net Bad Loans/Equity Ratio improved last year reaching the level of 48,8% (Intesa 2016 balance sheet).
In line with the targets, some portfolio sales are already ongoing; In fact, Intesa Sanpaolo sold €2,5bn ("project Beyond the Clouds") in bad loans to a duo comprising U.S. firm Christofferson Robb & Company (CRC) and the problem loan manager Bayview Asset Management.
Two consortia comprising Apollo Global Management in tandem with Credito Fondiario on one side and Cerberus Capital Management in tandem with Cerved on the other were also originally in the running for the sale.
Further NPLs sales are expecting to come from Intesa within the end of 2017;
As by the rumors and the news another large portfolio is already on the tables of the main investment funds, the so called "project Rep" (before named project Monopoli) is a secured NPLs portfolio of around €1,4bn that contemplate the creation of an SPV in which Intesa will be partner (and co-investor) with the winner of the competitive process among the invited investors Fortress, Cerberus, Pimco, Starwood and Tpg (Sole 24 Ore, April 2017).

High is also the commitment of the second Italian largest bank, *Unicredit SpA*, that declared it wants to reduce its NPE ratio from the current 15,1% to 8,4% within 3 years.
Proves of these aim are the large portfolios that the bank put on sale in 2016; In contrast with Intesa – whose portfolios on sale are "smaller" and that focuses more on internal asset management - Unicredit's strategy is more focused on large sales (starting a new trend, since so far portfolios on sale have never been so large).
For example, in November 2016, Unicredit finalized the sale of "project Fino", a €17bn NPLs portfolio; the purchasers were DoBank (€13,5bn) and Pimco (€3,5bn).
This alternative approach may due to maximize the effort on distressed asset sales reducing the number of time consuming and expensive sale projects.
Also Unicredit has a specialized division for NPLs sales, DAM (Distressed Asset Management) that is very active on NPLs dismissions (as proved by the large number of sales done in the recent years).
At the same time, Unicredit is also working to increase its capital and consequently to improve its coverage ratios.
As a proof of this, in March 2017 Unicredit positively concluded its target capital increase of €13bn.
This was the largest ever capital increase on the Italian Stock Exchange, where the previous record also belonged to UniCredit (with €7,5 billion in 2012).

After rapidly selling off some assets in 2016, the French executive Jean Pierre Mustier (Unicredit CEO) produced a strategic plan presented in mid-December 2016 in London.
Its combination of cleaning up bad loans and strategy for recovery seemed to have fully convinced the market that reacted in a positive way (full subscription of the capital increase and positive trend of the stock).
The "new" Unicredit bank , after a record €13 billion capital increase, is now almost three quarters in the hands of the market since a total of 62% is owned by institutional investors, almost all foreign, and another 10% is owned by sovereign funds.

Although the two largest banks have defined a clear strategy on the NPLs issue, other banks are still far from a solution; this is the case of Monte dei Paschi di Siena that is one of the largest financial institutions within the most indebted banks (Texas ratio higher than 200%) and therefore the closest to the bankruptcy.

More complex and less linear is in fact the situation of the third (fourth after the creation of Banco BPM) Italian bank and the world's oldest bank, *Monte dei Paschi di Siena* (MPS).
At the end of 2016, the declared purposes of the bank for the following year (2017) were to restore its capital position via a €5bn capital increase and to proceed with the sale of a €27bn Bad Loans portfolio (so the whole NPLs stock of MPS).
After the failure (due to insufficient demand of the market to cover the target €5bn of capital increase) of the capital increase attempt, in December 2016, the Italian government allocated €20bn fund for saving and restoring the Italian banks that needed a large capital increase (among all, MPS, Veneto Banca, Banca Popolare di Vicenza were the largest).
This was the fifth emergency measure adopted by the Italian government in the last two years to face its banking industry issues (the reform of the "Banche Popolari" and "BCC", the saving of Banca Etruria and Banca Marche and the establishment of Atlante fund have preceded).
In December 2016, contrarywise to the previous target of €5bn (communicated in November 2016), the ECB communicated that a new target of €8,8bn of capital increase was needed for fixing the MPS situation.
The new decision was mainly due to the results of the analysis of the stress tests performed by the ECB in July 2016, where MPS resulted to be weaker than previously forecasted.
After the capital increase failure, the two alternatives still in place were either a **bail-in** (see Appendix I, X) for the detailed definition) or a **burden-sharing** (see Appendix I, XI) for the detailed definition) operation.
Both the options are mechanisms in line with the BRRD (Bank Recovery and Resolution Directive), in other terms the European rules on banking crises management.
In case of a bail-in for MPS, in addition to the equity holders, the junior bondholders ("obbligazioni subordinate") would be fully subject to the operation and, partially, also the senior bondholder and the deposits over €100k would be affected.
Less "invasive" would be instead the measure of the burden sharing that would affect only the junior bondholders .
With both the bail-in and the burden-sharing, the participation of the state (and therefore of the taxpayers) to the coverage of the losses and to the recapitalization of the financial institutions is limited and partially relieved (it is limited to the residual amount that the bail-in/burden-sharing does not cover).
The activation of such rescue measures is subject to a first agreement between the government and the target bank and the final approval of the EU commission.
This was one of the main reason of complexity of the MPS rescue; the bank was in fact under the pressure of the ECB, that asked for the largest capital increase possible (target is €8,8bn, as explained above), and the pressure of the European Commission that at the same time, it aimed to

limit the capital increase because of the necessary public fund intervention in case of bail-in/burden-sharing.

To complicate such operation is the legal framework itself; as by the EU regulations, in fact, the public funds can't be used for covering "forecastable" losses.
The shadows around the definition of forecastable loss don't help to clarify the situation and this is making even longer the time for the resolution.
Finally, at the end of July 2017, after long negotiations the parties involved found an agreement and the burden sharing alternative was pursued.
The increase of capital due to the conversion of the subordinated/junior bonds ("obbligazioni subordinante") will be of €4,473bn through the emission of 517,1m of new shares at €8,65 each involving around 40k bondholders.
The government (Il Tesoro) will intervein to cover the residual €3,864bn with better conditions compared to the bondholders since it will purchase the new share at €6,49 each (€2,16 of discount per share compared to the bondholders).
The total capital increase will be of €8,3bn.
After the operation, the government will be the major shareholder of MPS keeping a share of 53,45%.
As declared, the plan is then to re-quote MPS into the Italian stock market within the next fall in order to re-sell the shares to the market.
On the other hand, MPS promoted in November 2016 an important deal for the sale of its credit platform "Juliet" comprehensive of the management of €9bn NPLs portfolio (project Juliet).
The competitive process was won by Cerved that would have paid €105m for Juliet to which an earn-out of up to €66m could be added, based on the achievement of economic results until 2024.
The closing of the transaction, expected in the first quarter of 2017, was subject not only to approval by the supervisory authority, but also to the successful completion of the Bank's transaction of capital increase (as explained above) and simultaneous deconsolidation of non-performing loans, so Juliet wasn't actually finalized as originally forecasted.
In July 2017 the deal was re-opened since Quaestio Holding (with Atlante fund) and Cerved signed an agreement for the purchase and the joint management of Juliet.
In addition, thanks to the help of Atlante MPS is preparing the disposal of its whole NPLs stock that involves a total of €28,6bn (date up to YE-2016) of which €26,1bn will be object of the securitization while the remaining €2,5bn should be sold separately through dedicated operations.
The price should be around €5,5bn, equal to 21% of GBV, that compared to the NBV of €9,4bn would generate a loss of €3,9bn.
Atlante II will purchase the 95% of the Junior and Mezzanine tranches emitted by the SPV that will acquire the full portfolio.
The senior tranche will be kept by MPS with the aim to sell it to the market once it got the rating and the GACS guarantee.
As agreed between the parties, in case the return of the operation will exceed the threshold of 12%, the 50% of the surplus will directly reimburse MPS (earn-out scheme).

As per MPS also *Popolare Vicenza* and *Veneto Banca* were in a standing-off due to the complex resolution of the ECB and European Commission on capital increase and banks savings.
As by the 2016 balance sheets analysis, Banca Popolare di Vicenza e Veneto Banca count together an aggregate stock of gross bad loans of around €9,6bn (with a total NPLs stock of around €19bn) out of €41bn of total exposure; this means that more than 1 out 5 loans is potentially lost.
In addition, the NPLs trend was not encouraging, since compared to 2015 the stock grew of about 20% in 2016.

The 2 banks were considering a merger for creating a larger and more efficient bank, but the disposal of their Bad Loans portfolios was a necessary step to succeed in this operation.
Even if in 2016 the 2 banks improved their coverage ratios on gross bad loans (62% for Popolare di Vicenza and 57% for Veneto Banca) the €9,6bn bad loans are still accounted in the balance sheet at approximately 40% of their value (approximately €3,84bn).
Considering the option of sale the whole bad loans stock (€9,6bn of nominal value) and assuming an average sale price for the NPLs stock of 20-25% of the nominal value (so €1,9-2,4bn), it's easy to understand that the banks should than take a consistent loss of €1,9-1,4bn (due to the difference between the balance amount of €3,8 and the sale price €1,9-2,4bn) for being free from their bad loans.
The NPLs stock disposal would then means a drop down of the equity of the banks from the current amount of €3,9bn with a consistent impact on the capital requirements for the correct operativity of the financial institutions and the consequent need of a capital injection for covering the hole.
In April 2017, based on the stress test of July 2016, the ECB estimated a capital need of €6,4bn for both the banks (€3,3bn for Banca Popolare di Vicenza and €3,1bn for Veneto Banca).
Despite the intervention of fund Atlante in 2016 (see chapter 4), both the banks still needed additional intervention of the government for the restoration of their financial situations.
The situation was getting even more complex because of the negative results of the bank operativity; Banca Popolare di Vicenza had €1,9bn of loss and Veneto Banca had €1,5bn of loss in 2016.
For unlocking the situation, on 25 June 2017, the Italian Government enacted the – controversial - Decree n.98 stating the acquisition of "certain" asset for a total amount of €45,9bn (not including the NPLs) and "certain" liabilities for a total amount of €51,3bn of Banca Popolare di Vicenza and Veneto Banca by Intesa Sanpaolo (the difference of €5,4bn will be registered as a credit of Intesa towards the liquidation procedure).
Intesa paid a symbolic price of €0,5 for each bank for a total of €1, cherry-picking assets and liabilities within the balance-sheets of the two banks, while the liquidation of the NPLs stock will be done through the public Bad Bank "SGA".

The most important merger (at least in term of size) that took place in 2016 is the one between *Banco Popolare* and *Banca Popolare di Milano* into the NewCo *Banco BPM*, that is now the third largest Italian bank with a network of 2.500 branches and a total assets of around €171bn.
As by a joint press release (Creation of the third largest Italian banking group leader in the wealthiest areas of Italy, Banco Popolare & BPM, March 2016) co-signed by both the banks, the present value of synergies (net of tax and integration costs) was estimated in €1,9 billion.
Still, as indicated in the document one of the 6 "Key strategic guidelines" was the focus on the management of the NPLs stock: "*the reinforcement of NPL management activities through the establishment of a dedicated business unit for the valorization and the management of non-performing exposures, reporting directly to the CEO, in order to maximise efficiency and speed of recoveries as well as of disposals*".

Other important operations took place in May 2017 when UBI acquired the three regional lenders Banca Marche, BPEL and CariChieti and BPER acquired the regional bank CariFerrara, following their rescue in 2015 by Italian Authorities and the sale of their NPL to the bad bank "REV" (€10,3bn) in 2015 and to Atlante Fund (€2,2bn) in 2017.

Financial experts expect this trend of mergers for the Italian banks to increase in the next years with the disappearance of a consistent number of smaller banks.
As by the annual speech of the president of Consob (Commissione nazionale per le società e la Borsa), Giuseppe Vegas (May 2017), in addition to the Fintech and in general the technological

innovations that are changing the financial and banking industry, another important change will come from the mergers that will strongly reduce the number of banks within the Italian scenario. The main reason of this change is the needed cost reduction that mergers can create thanks to new synergies.

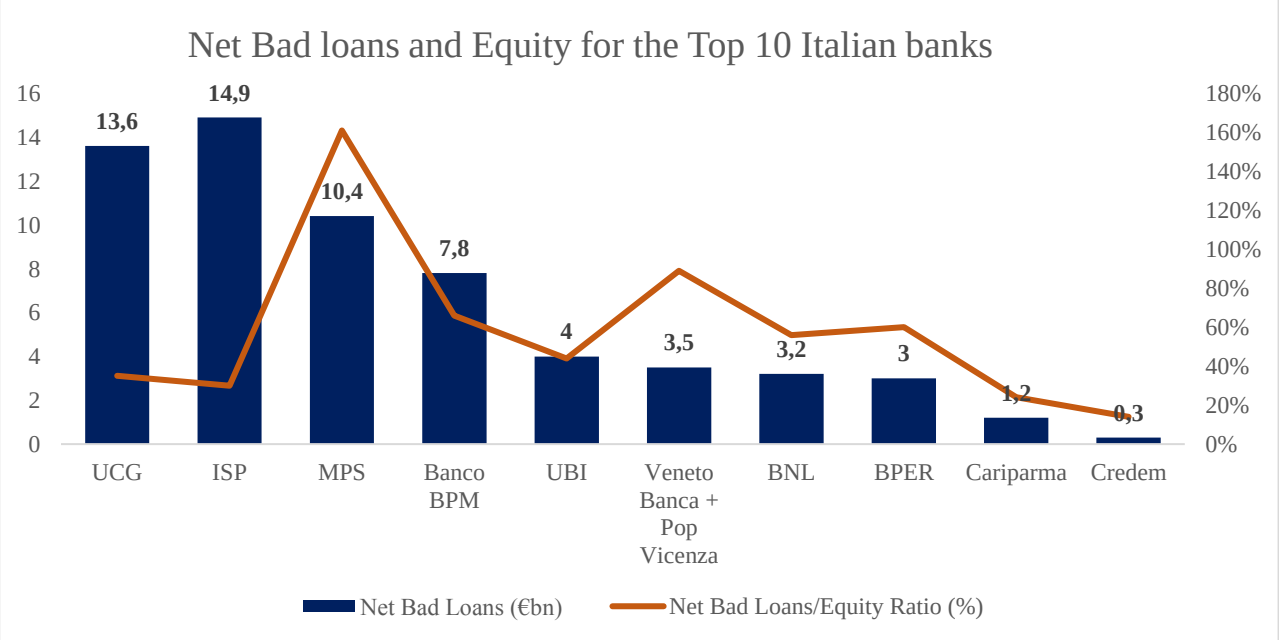
To conclude the top 10 Italian banks NPLs stocks data are showed analyzed in the paper.
The total bad loans stock for the top 10 Italian banks is around €165bn that represent around 33% of the total Italian stock of which €35,6bn (around 18% of the whole Italian stock) is in the balance sheets of the two largest bank Unicredit SpA and Intesa SanPaolo SpA.
As seen above some banks have already taken measures in order to face the NPLs issues; for example Intesa, Unicredit and Banco BPM but others still have to plan an effective strategy for NPLs management.

Table 5: Top 10 Italian banks, NPLs breakdown and main ratios – summary table

Bank	Gross Bad Loans (€bn)	Net Bad Loans (€bn)	Net Bad Loans Equity ratio (%)	Gross NPE (€bn)	Texas ratio (%)	Recoveries (€bn)	Recoveries/ Gross bad loans (%)	Sales proceeds + Losses on disposal + Recoveries (€bn)	(Sales proceeds + Losses on disposal + Recoveries) / Gross bad loans (%)
UCG	53,5	13,6	35%	77,1	96%	3,21	6,0%	4,19	7,9%
ISP	38,8	14,9	30%	58,4	91%	1,55	4,0%	1,93	4,9%
MPS	26,2	10,4	161%	45,8	149%	0,68	2,6%	0,75	2,8%
Banco BPM	13,9	7,8	66%	26	137%	0,53	3,8%	0,79	5,8%
UBI	7,1	4	44%	12,5	111%	0,39	5,5%	0,44	6,2%
Veneto Banca + Pop Vicenza	6,8	3,5	89%	16,8	160%	0,21	3,1%	0,22	3,2%
BNL	8,0	3,2	56%	13,1	106%	0,28	3,5%	0,32	3,9%
BPER	7,1	3	60%	11,2	118%	0,24	3,4%	1	14,1%
Cariparma	2,6	1,2	24%	5	103%	0,09	3,4%	0,14	4,9%
Credem	1,0	0,3	14%	1,4	59%	0,04	3,9%	0,05	5,7%
Total	**164,9**	**61,9**	**45%**	**267,3**	**109%**	**7,22**	**4,4%**	**9,83**	**6,0%**

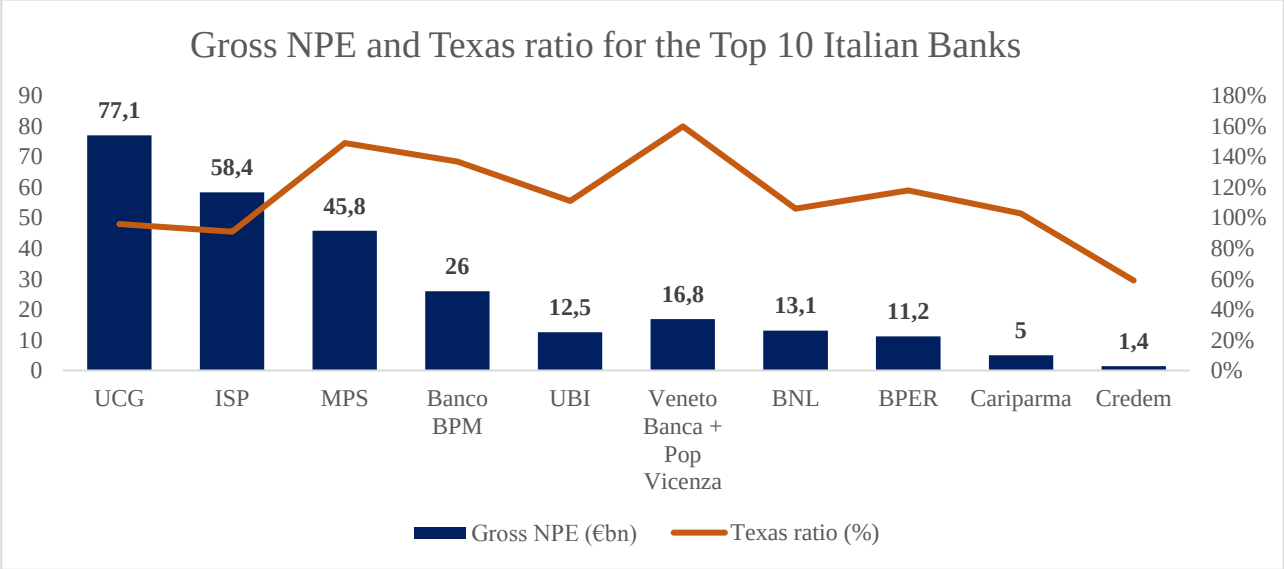
Source: PWC analysis on Financial Statements as of YE-2016
Data affected by different write-off policies

Figure 12: Net Bad loans and Equity for the Top 10 Italian banks



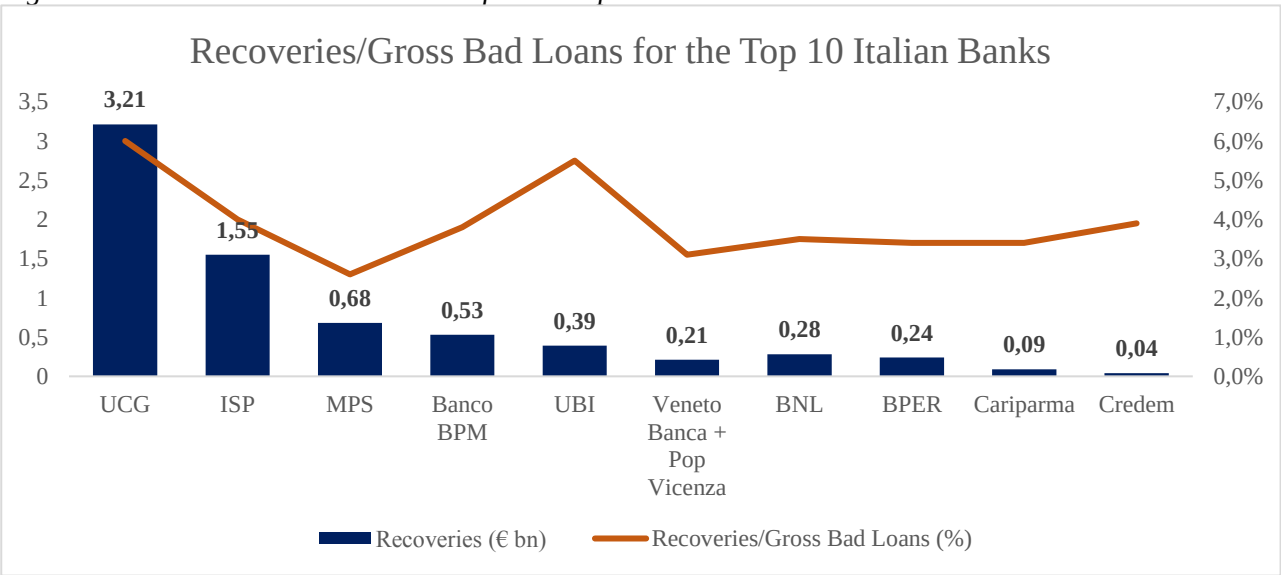
Source: PWC analysis on Financial Statements as of YE-2016
Data affected by different write-off policies

Figure 13: Gross NPE and Texas ratio for the Top 10 Italian Banks



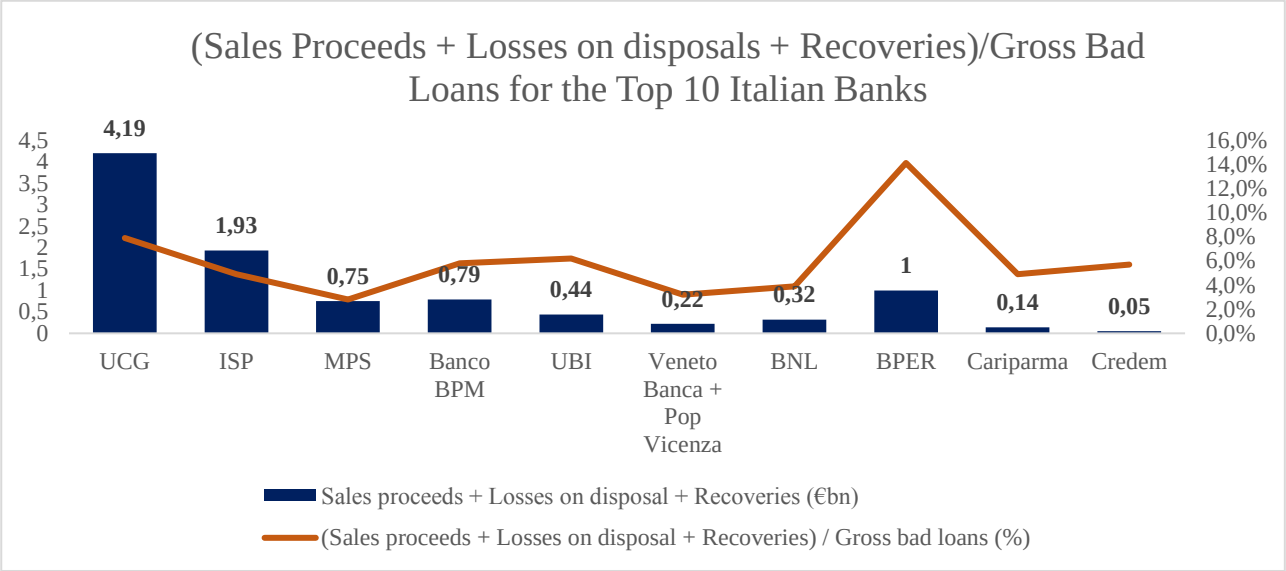
Source: PWC analysis on Financial Statements as of YE-2016
Data affected by different write-off policies

Figure 14: Recoveries/Gross Bad Loans for the Top 10 Italian Banks



Source: PWC analysis on Financial Statements as of YE-2016
Data affected by different write-off policies

Figure 15: (Sales Proceeds + Losses on disposals + Recoveries)/Gross Bad Loans - Top 10 Italian Banks



Source: PWC analysis on Financial Statements as of YE-2016
Data affected by different write-off policies

2.2.4 Italian servicing industry overview

As the NPL market is experiencing a quick and continuous growth, the Italian servicing market is following the same direction thanks to the numerous portfolio sales as well as the increasing number of financial institutions outsourcing their bad loans management.
Nowadays servicers play a crucial role for NPL management and quality of their service is a key point both for investors and banks.

The feeling of the experts of the industry is that the demand for the services provided by this kind of companies is higher than the offer at the moment, so there's room for a further development of the servicing industry.
The servicing market may appear very complex to not experts of the sector due to the large number of services provided that touch both financial and legal expertise, the technologies involved and the quickly evolving environment and context in which servicers have to operate.
Simplifying we can separate the servicing companies into two main categories:

- **Master Servicers**:
  Master servicers are financial intermediaries that monitor the activities and support the operations of the players involved in the NPL management in collaboration also with the supervisory bodies for allowing the correct modus operandi of their clients within the specific legal framework.
  In particular, they create and manage the ad hoc built companies, Special Pourpose Vehicles (from now on SPVs) in behalf of the investors - or more in general of the entities - that own the notes involved in the securitization process of the assets transferred to such SPVs.
  Normally a company transfers assets to the SPV for the management or uses the SPV to finance different projects (i.e. purchasing NPLs portfolios) since SPVs are commonly used in complex financings to separate different layers of equity infusion.

A SPV may be owned by one or more other entities and certain jurisdictions may require ownership by certain parties in specific percentages.
In the NPLs portfolio sales, SPVs are commonly used to securitize loans (or other receivables) that are object of the transaction.
This is done by creating an SPV, and then transferring the loans from the bank (seller) to the SPV (buyer).
In addition to the SPV management, the master servicers provide a vast number of services related to the securitization process such as the split of the issued securities into tranches and their repayment with vary degrees of subordination (from senior to equity), the general accounting of the collections and the management of the current accounts in behalf of the owners of the notes.
Master servicers are financial intermediaries under the control of Banca d'Italia and don't have their own operational structure for credit management so they require to outsource these activities to specialized companies: the special servicers.

- **Special servicers:**
  Special servicers coordinate together with the master servicer and the owner of the loans for the portfolio management activities.
  Investors use to outsource the management of their purchased portfolios to such entities, keeping the ownership and monitoring the performances with the support of the master servicer.
  The services provided can cover the whole process since the acquisition of an NPLs portfolio till the sale or write-off, comprehensive of the portfolio management and credit collections activities.
  Among all the main services provided can be listed as the following:

  i. Origination: Brokerage activities, origination of deals and new business opportunities; Often special servicers are the link between sellers (banks) and buyers (investment funds mainly) and manage to meet the demand and the offer of the market.
  ii. Due diligence and portfolio valuation: legal, financial and investment knowledge are required
  iii. Data enrichment: information providing, access to databases, track records and benchmark plus the use of investigation companies.
  iv. Credit recovery and collection: phone, home collection activities and the active monitoring of the legal (bankruptcy or liquidation) procedures.
  v. Portfolio management: business plan, operations and actions planning, and reporting activities.
  vi. Portfolio sale: Mainly advisory on portfolio sales

As by the "Circolare n. 288" emitted by Banca d'Italia on April 3rd 2015, the distinction between special and master servicers is better defined and regulated.
Before the new Circolare n. 288, the market was regulated by two registers; some companies were registered within the special register ex art. 107 TUB and were subject to the prudential control of Banca d'Italia, others were registered within the general register ex art. 106 TUB and were subject to less restrictive controls.
The new Circolare n. 288 is intended to clarify the legal framework and to align the standard requirements of the servicers that want to manage the relationships with Banca d'Italia (Master servicers).

For this purpose, a new and unique register art. 106 has been created and servicers have to apply to such register within specific deadlines if they want to operate as master servicers, while this is not needed if servicers want to provide only the sub servicers services.

In addition to the formal registers, also rating (or better ranking as rating is related to financial products and not to companies) is becoming an important matter for special and master servicers. Some of servicers, saw in the ranking an opportunity for communicating to the market their standards of excellence, and then decided to be ranked, mainly by S&P and/or by Fitch (see the summary table below), others are reluctant about the matter and, also considering the costs (both in terms of commitment, timing and expenses) of the ranking process, don't see this as a real adding-value operation so didn't apply for a rank yet.
Beyond the real value and utility of the rank, it is important to underline that this valuation is done in an objective prospective and should imply - at least - an effort by the applier for align its compliance, systems and operations to the standard required.
Nowadays ranking is a matter of topycal among the experts of the NPLs industry (an entire panel was dedicated also during the last Credit Village edition in Milan, March 2017) and servicers CEOs, banks and rating agency are discussing and evaluating such option.

As explained above, the focus on the Italian NPL market recently increased and many investment funds and financial companies (alternatives investments funds, private equity, distressed debts and investment banks) are entering in the market.
As a consequence, the demand for NPLs management services increased, generating new business opportunities that allowed the born of new servicers or the enlargement of the old ones through development or M&A operations.
The role of independent specialized NPL servicers is gaining importance because of the increasing volumes of portfolio disposals from Banks to Investors, together with the growing outsourcing of recovery activities by banks driven by lack of capacity, and to the implementation of ECB guidelines.
Today around 40% of the Banks' bad loans are managed by specialized player; according PWC's estimations such percentage will progressively grow, reaching up to 60% by 2021.
As by a research conducted by PWC (2017), in Italy the independent servicing companies (not captive or owned by investment funds or banks) active on NPLs management industry are less than 30, with a total AUM (Asset Under Management) of around €190bn (as of June 2016) of which the 83% (€158bn) managed by special servicers companies and the remaining 17% (€32bn) by master servicers.
Since the majority of these independent companies don't have a significant volume of AUM, the market expects (and has already seen in the recent past) a large number of M&A and servicers aggregations in the next years, as a large AUM (as a critical mass) is necessary for benefiting of the economies of scale and for attracting more business.
In addition to the large volume of NPLs that is affecting the Italian economy, another significant reason that suggests a further development of the servicing industry can be seen in the ECB's guidelines that will make the banks being more focused on the NPLs management both if they want to sell or to outsource the management of such distressed an illiquid assets.
Furthermore, additional important growth opportunities may be connected with recovery activities of the unlikely-to-pay segment and of the performing loans, as proven by some recent transactions in the segment.

Interested in purchasing the Italian servicing companies aren't just the largest Italian servicers that are willing to consolidate their position within the market but also international groups or specialized financial and investment companies that want to take part of this market and can decide

to purchase an already operating Italian platform as a strategy to break the entry barriers of the industry itself filling at the same time the gap of knowledge that usually characterize the second movers.
In fact, the interest of international players in the acquisition of servicing platforms is high, with more than 10 acquisitions completed in the last 4 years.

Table 6: Italy – Main servicers

Servicer	Bank of Italy Surveillance	Special servicing Total bad loans AUM (€bn)	Special servicing Other NPLs AUM (€bn)	Servicing performing AUM (€bn)	Master servicing AUM (€bn)	Rating YES/NOT
DoBank + Italfondiario	Bank	77,2	1,8	1,9	-	YES
Cerved Credit Management	115	12,4	3,1	9,2	-	YES
CAF	115	8,1	-	0,2	-	YES
FBS	106	7,9	0,1	-	-	YES
Guber	115	7,4	-	-	-	YES
Hoist Italia	115	6,6	-	-	-	NOT
Sistemia	115	4,9	-	-	-	NOT
Advancing Trade	106/115	4,3	-	-	-	NOT
MBCredit Solutions	106	4,1	-	-	-	NOT
Prelios	106	3,3	-	-	7,2	YES
Finint Revalue	106	2,9	-	-	-	NOT
Kruk Italia	115	2,7	-	-	-	NOT
Fire	115	2,6	1,0	0,7	-	YES
Bayview Italia	115	2,2	-	-	-	NOT
Primus Capital	106	2,2	-	-	-	NOT
Link Financial	106	2,1	0,1	0,1	-	YES
Officine CST	115	1,8	-	1,1	-	NOT
Cribis Credit Management	115	1,4	11,2	8,2	-	NOT
Credito Fondiario	Bank	1,2	1,1	1,2	12,8	YES
AZ Holding	115	1,1	-	-	-	NOT
Fides	115	1,0	-	0,3	-	NOT
Parr Credit	115	0,9	0,2			NOT
CS Union	106	0,7	0,3	-	-	NOT
SI Collection	115	0,6	0,2	-	-	NOT
Gextra (Lindorff Group)	115	0,5	0,1	-	-	NOT
Securitization Services	106	0,5	0,1	1,7	24,6	YES
Serfin	115	0,5	0,1	0,6	-	NOT
Centotrenta Servicing	106	-	-	-	4,9	YES
Zenith Service	106	-	-	-	14,9	NOT
Total		**161**	**19**	**25**	**64**	

PWC analysis on data provided by servicers as of YE-2016

The servicing market saw the first remarkable large M&A operations in 2014 when the private equity fund Hoist Finance purchased the Italian servicer Trc SpA, after a partnership that started in 2011 with the first investment of Hoist Finance into the Italian NPLs market (as by the Hoist Finance official website).

Later in 2015 the US based fund Lone Star acquired the servicer CAF (Centro Attività Finanaziarie) that was managing around €7bn AUM at that time, the private equity funds Fortress purchased the bank division UCCMB (UniCredit Credit Management Bank, subsequently renamed DoBank) from Unicredit for €550m (as by unofficial sources, €300m for the platform and €250m for the portfolio under management of €2,4bn) while Seer Capital acquired a share of Locam SpA; all three with the intent of expanding their presence in the Italian NPLs industry.

Following the trend of growth of the Italian NPLs and in line with the higher focus of investors on the Italian economy, 2016 was a very active period for M&A operations within the servicing industry.

In April 2016 K.red Srl signed an agreement for the acquisition of the company Non Performing Loans SpA in liquidation, comprehensive of the management of 4 portfolios for the total value of €1bn.
In May 2016 the Norwegian group Lindorff (controlled by Nordic Capital) acquired the 100% of Italian servicer Cross Factor while Primus Capital acquired the 70% of Centaurus Credit Recovery, an Italian special servicer, reaching the amount of around €3bn of AUM.
In June 2016 the Norwegian Axactor finalized the acquisition of the 90% of the share of CS Union for €9,9m (debt purchase/debt collection company with €1bn under management) while Banca Sistema will continue as a 10% shareholder of the new entity and will provide attractive financing as part of the strategic partnership.
In July 2016 the new DoBank, born by the acquisition of UCCMB performed by Fortress earlier in 2015, acquired the 100% of the second largest independent servicer Italfondiario SpA (yet partially controlled by Fortress), composing the largest Italian platform ever with a portfolio of around €85bn of assets under management and €200m of annual gross revenues.
The market is now expecting the announced floating of DoBank (projected value of €650-750m, considering the IPOs of Cerved Group SpA and Prelios SpA as benchmarks) to be finalized within the end of 2017 that would conclude the PE operation done by Fortress.
In September 2016 Dea Capital acquired the 66,3% of the total share of the servicer Spc Credit Management.
In November 2016 the Polish Kruk Group announced the acquisition of Italian servicer Credit Base International, based in La Spezia and of its controlled company Elleffe Capital, active in the purchase of NPLs portfolios.

In February 2017 Bain Capital Credit purchased the platform Heta Asset Resolution Italia (Harit) from Hypo Alpe-Adria Bank with its 90 employees and its €570bn of gross AUM.
At the end of March 2017, the US asset management firm Varde Partners signed an agreement to buy a 33% stake in Guber, a leading independent NPL servicer in Italy with about €7,4bn in AUM. Varde paid 47 million euros for its stake and the founders Francesco Guarneri and Gianluigi Bertini will retain the remaining 67% stake.
In April 2017, the PE fund KKR active in the NPLs market since 2014, acquired the platform Sistemia that has a portfolio of €4,6bn of AUM, of which two-thirds are secured.
As for Varde, also KKR's operation is more a PE operation rather than a direct investment in NPLs since it seems that Sistemia's management is changing while the servicer will remain a non-captive company.

On the master servicer side, we recently (end of 2016, beginning of 2017) assisted to the acquisition of the leader of the market Zenith SpA, purchased by the international financial operator Arrow Global Group Plc for €17m.
The acquisition of Zenith, a leading master servicer in the highly active €168bn (source Zenith and Assofin, the Italian Financial Association for the Consumer and Real Estate Market) Italian structured finance market, is a strategic purchase that gives Arrow immediate scale and presence in one of Europe's largest debt markets.

At the second place of the chart from the largest to the smallest servicer per AUM, we find the Italian holding Cerved Group SpA.
Cerved Group SpA, floated in the Italian market in 2015, is now a public company and only 23,5% of its capital is owned by PE investment funds (Wellington, Aviva, Massachusetts Financial e Capital); this makes Cerved the largest not captive servicer within the industry, in strong contrast with the M&A trend the market is experiencing.

Cerved is consolidating its position and growing very fast into the market also reaching long-term agreement for the management of the credits of primary financial groups; for example at the end of 2014, Credito Valtellinese S.c., parent company of the Credito Valtellinese Banking Group and Cerved Information Solutions S.p.A. via its subsidiary Cerved Credit Management Group S.r.l., have signed an agreement for the development of a long term industrial partnership for the management of non-performing loans (NPLs).
The agreement envisages the signing of a multi-year contract for the management by Cerved of the portfolio of NPLs of the Creval Group (85% in terms of Gross Book Value, GBV), via Finanziaria San Giacomo S.p.A., a company which is entirely controlled by Creval and specialised in the management of NPLs of the Creval Group, and the sale to Cerved of Finanziaria San Giacomo S.p.A.
On February 2017 Cerved Information Solutions S.p.A. has signed with Barclays Bank PLC a letter of intent according to which Cerved Group will be in charge, on an exclusive basis, for the coordination of the servicing activities related to the mortgage portfolio of approximately 12 billion Euros starting from Q3 2017 that will generate a projected yearly EBITDA of €3-4m (Nespolo, May 2017).
In July 2017 Quaestio Holding (with Atlante fund) and Cerved signed an agreement for the purchase and the joint management of Juliet, the MPS platform for the management of its NPLs.

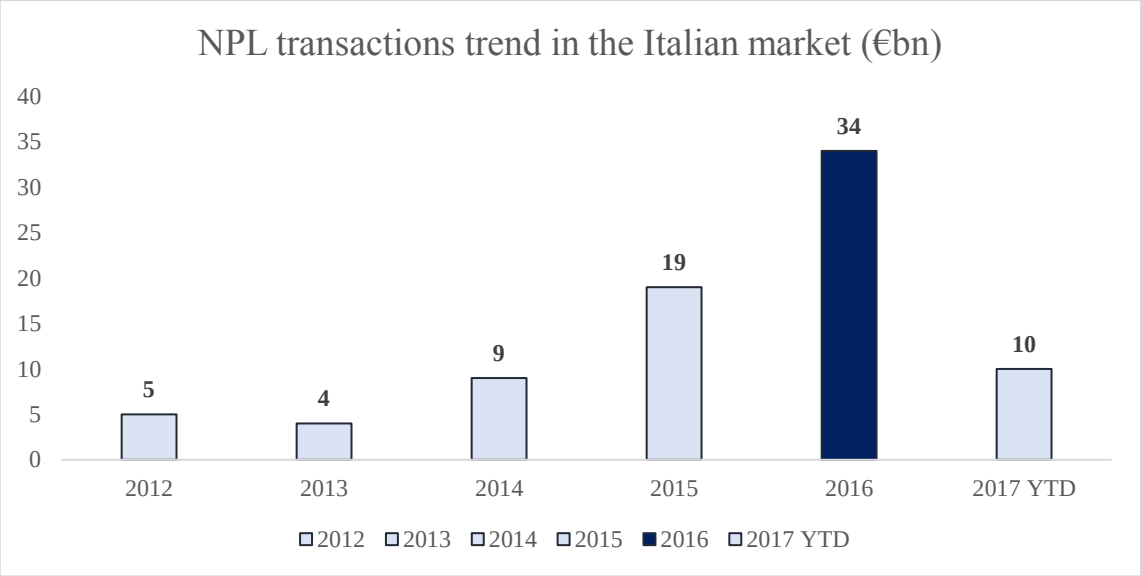
2.2.5 Italian NPLs market, recent transactions and outlook

Since many transactions are not publicly disclosed and the information is often confidential, it's not possible to track all the transactions done into the Italian NPLs market (at least without breaking any non-disclosure agreement).
For this reason, the goal of this chapter is to give to the reader a clearer idea of the main players (both sellers and buyers) and of the trend of the traded NPLs volumes within the Italian market itself, focusing on the transactions that took place in 2016 and early 2017 rather than listing all the NPLs transactions done within the selected time laps.

Generally speaking, NPLs represent nowadays a good option for investors for diversifying their portfolios, investing in alternative assets with potential high returns.
Due to the banks' need to sell their distressed credit portfolios in order to get fresh liquidity and comply with the banking authorities requirements, it is possible for investors to buy NPL portfolios at a fraction of their face value.
Even if prices have been low in the past, due to i) the negative evaluations of Italy's economy by international investors and rating agencies, ii) to the small numbers of specialized investors able and/or interested into Italian NPLs (low demand) and iii) to the complexity of the market because of the Italian legal framework nonlinearity and of the dynamicity of the market itself, now prices negotiated for portfolios are materially going up.
This reflects not only an improvement of Italian economy's perception, but mostly a growth of the NPLs market - that is apparently entering in its "maturity" stage - that along with the explosion of the NPLs stock has developed a number of complementary services (i.e. see the role of special and master servicers and the development of the servicing industry but also the GACS instrument introduced by the Italian regulators) that give more confidence to the investors (mostly meeting a need of the foreign investors).
Clearly the discount rate to be applied is becoming more negotiated, as the vendors, due to the increasing market demand, are gaining negotiating power.
Along with the increase of the demand for NPLs portfolios also the prices are getting higher due to the change of the competitive framework.

To face with the competitiveness of the market, investors have developed different strategies; some of them specialize into a specific asset class within the NPLs scenario (i.e. insolvency procedures, secured loans, leasing loans…) others have directly purchased a special or a master servicers to acquire the know-how needed to compete within the market.
All the measures adopted are intended to reduce the information asymmetry between sellers and buyers that characterizes the NPLs transactions.

Figure 16: NPL transactions trend in the Italian market (2012 - 2017 YTD)



Source: PwC market analysis (July 2017)

Still, the aggregate size of NPL portfolios to be sold is such that the market should remain attractive for some time.
Inviting opportunities can still be found in different categories, such as consumer loans, corporate loans and asset-backed loans.
Also the market leaves room to investors for developing complex financing structures and co-investment opportunities with both servicers, investors or directly with the seller (vendor financing).
In addition, new innovative tools have been developed in accordance with the legal framework and the necessity of the market; an example of this is the **GACS** (Garanzia Cartolarizzazione Sofferenze) securitization (used for the first time ever during the sale of €480m GBV NPLs portfolio by Banco Popolare di Bari to Davidson Kempner, see table below) and the creation of a "rescue" fund, named "**Atlante**" that participates to the subscription of the capital increases of Italian banks seeking recapitalizations and that takes actions to revive the NPL market in Italy.
Both the initiatives are involving ,even if indirectly, the government and the Country's financial resources into the NPLs market.

With reference to PWC analysis (July 2017), breaking down the NPL portfolios traded in 2016 by asset class, we have the following picture:

- Consumer loans: €3,8bn
- Unsecured loans: €3,1bn
- Secured loans: €1,4bn
- Mixed Secured/Unsecured loans: €25,2bn
- Other loans: €0,3bn

Despite the large stock of NPLs linked to the bankruptcies of Italian SMEs, pure Unsecured NPLs vs SMEs portfolios represent less than the 10% of the traded GBV (9,1% of the total for €3,1bn of nominal value) while sellers still prefer to sell blended/mixed portfolios; the main NPLs asset class traded is in fact Mixed loans portfolios (74,1% of the total for €25,2bn of nominal value).
The pure secured part is only around the 4% of the traded GBV and this is due to the higher commitment of funds required to participate to such auctions; this is not only because of the higher price of this asset class (due to the presence of the collateral) but also to the higher costs of analysis and due diligence needed for evaluating the collaterals and the lower depreciation of banks towards this asset class of NPLs.
In fact while on the unsecured pools, benchmarks and financial modelling are often enough for the portfolio valuation, on the secured pool an ad-hoc analysis of the collaterals is required and this implies additional costs (i.e. real estate appraisals and inspections, collateral analysis, higher due diligence costs…).

Despite the GBV is a good proxy, the best indicator for understanding the size of the trades of the market is the price that investors paid for such transactions.
Funding is never disclosed as it is a really sensible information, but as a pure exercise we can anyway – rationally - suppose that different asset classes have different prices on the market with in general lower prices for unsecured portfolios and higher prices for secured and mixed portfolios due to the presence of the collaterals.
We can assume (as a pure exercise, but with discrete sensitivity of the market) that the price for an unsecured & consumer transaction varies between 2-10% of the nominal value while for the secured transaction the range is 20-40%.
Therefore if a mix portfolio is composed 50% unsecured and 50% secured its price should varies between 11-25%.
While on "other" loans the average of the above benchmark will be applied since the asset class is unknown (11-25%).
Applying these logics to the total traded NPLs stock (the disclosed part as above), we can deduce that in 2016 the traded funding should be at least around €3-8bn.

Table 7: Funding estimation for disclosed transaction in 2016

Portfolio asset class	Total GBV traded (€m)	Min price proxy (% of GBV)	Max price proxy (% of GBV)	Min price (€m)	Max price (€m)
Secured	1.400	20%	40%	280	560
Mixed: Secured/Unsecured	25.200	11%	25%	2.772	6.300
Unsecured vs SME	3.100	2%	10%	62	310
Consumer	3.800	2%	10%	76	380
Other	300	11%	25%	33	75
Total	**33.800**			**3.223**	**7.625**

Even if these numbers are partial and can't represent the whole market (as a part is not disclosed), these volumes seem to be anyway modest if compared to banks' total stocks of Bad Loans.
Since the ECB guidelines are set to have a big impact on the banks NPEs' deleverage program the market expects portfolio disposals to further increase.

As by another source, the national observatory Osservatorio Nazionale NPL Market, born in April 2017 with the aim to give more transparency to the Italian NPL market, the number of deals closed in 2016 (comprehensive of both disclosed and "secret" transactions) is 119 for a total nominal value transferred from sellers to buyers of €23,9bn.

The research underlines that the 47% of the transferred nominal value (€11,3bn) refers to re-trade operations (or second market transactions) with no direct impact on the disposal of the bad loans of the banking system.
Looking at the full picture, the remaining 53% (€12,6bn) sold on the primary market is just enough to balance the amount of NPLs originated by the Italian banks in 2016.
More than 50% of the transactions has been done with the use of a Special Purpose Vehicle (SPV) in line with the securitization rules of the law n.130/99 while the remaining operations has been done by financial operators or banks as per Banca Ifis that is both seller and buyer.

However, as by Banca Ifis data (Market Watch NPL, The Italian Scenario, April 2017), in the first quarter of 2017 the market experienced €2,8bn transaction that confirms that foreign companies keep on showing interest towards Italian Non-performing loans.
Also Banca Ifis expect €46,1bn of deals are about to be released on the market, with status ongoing or even already announced.
While PWC is expecting 2017 volumes to reach more than €60bn, mainly because of the huge prospective MPS deleveraging (€29,4bn).

3. CAUSES AND CONSEQUENCES OF THE LARGE EUROPEAN NPLs STOCK

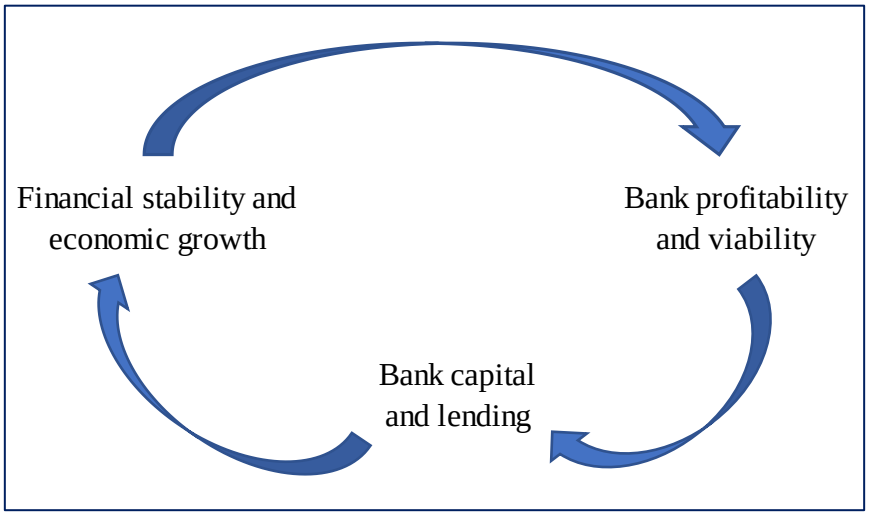
With reference to the available literature and studies done over the treated matter, this chapter has the aim to list and analyze the main economic causes and consequences of the high European NPLs stocks in order to give to the reader a clearer idea of the magnitude of the matters analyzed in this paper, explaining the interactions and impacts between an high stock of NPLs and the real economy.

By universal consent, one of the main reason of high NPL stocks in many countries is the slow recovering of economy and population incomes after crisis of 2008 (Mingaleva, Zhumabayeva and Karimbayeva, 2014), that follows a period of economic boom, where lending requirements were often – too - relaxed and tightened once the cycle turns, amplifying the impact of downturn of credit quality and volume.
As evidenced in "A macroeconomic perspective on non-performing loans (NPLs)" (2017), the general health status of the financial sector and the amount of NPLs in banks' balance sheets are strongly inter-related with macroeconomic conditions.
The NPE ratio can be effectively considered a useful indicator for evaluating the state of health of an economic system and as by Barr (1994) an high NPL stock is also a valid and significant predictor of bank failures.
Even on those cases where banks avoid the failure, it is proved that NPLs have however a negative impact on a bank's cost structure and efficiency (Maggi and Guida, 2009) and most of all on banks willingness to lend (Cucinelli, 2015).
Also it shouldn't be excluded that, a slow NPL resolution process could generate doubts over financial stability, thereby weakening investors' confidence in banks and/or in a country financial system with a possible additional damage to the real economy.

According to Demirguç-Kunt, A. and E. Detragiache (2005) difficult macroeconomic conditions tend to exert negative effects on the financial sector.
The vice-versa is also true since problems in the financial system, and in the banking sector in particular, can negatively affect the macroeconomic context.
The existence of a significant relationship between macroeconomic developments, asset quality and credit risk is pointed out also by the research of Drehmann and Tsatsaronis (2014), that have defined such relationship as two-sided and highly non-linear (such concept will lead the analysis done in the following paragraphs).
In addition, even the empirical evidences show that it's more frequent and probable that corporates and households fail on the repayment of their loans during recessions and period of weak or slow economic growth and this logically leads to an increase of the NPLs stock in banks' balance sheets.
This NPLs stock increase creates issues for banks in lending money for financing development projects with the effect of locking-in bank capital into unviable projects.
The above dynamic can easily lead into a negative vicious circle in which banks end up trying to face the issue of their NPLs stock rather than lending new cash into the economic system.
Such mechanism has again a negative effect overall in the real economy where SMEs and families are firstly affected by the effects of the credit crunch (this is even more acute in Italy where SMEs represent the core components of the industrial/productive Italian industry).

The magnitude of the effects of such dynamics depends in general on the capacity of the banking system in adequately canalizing savings to investment, allocating risks and transmitting monetary policy impulses to the real economy in time and through the correct channels.

Figure 17: NPLs – Vicious liquidity spiral



Keeping in mind the vicious circle of Figure 17 and the relationship between credit demand and supply, as evidenced in the Quarterly Report on the Euro Area Vol. 16 (2017), overall, while financial developments can affect macroeconomic developments via a variety of channels, two channels appear particularly important when it comes to NPLs:

1) <u>The bank balance sheet channel – Credit supply</u>
   It refers to the rationing of bank lending to the real economy due to the risk capital constraints.
   Higher level of credit riskiness of firms mean higher bank lending rates, while risk aversion in banking lending means higher collateral requirements and consequently higher rejection rates.

2) <u>The borrower balance sheet channel – Credit demand</u>
   This depends on the impact on firms' and households' willingness to invest in times of perceived debt overhang.

The combination of 1) and 2) can give rise to the emergence of a vicious circle in which low asset quality (see high NPE ratios) and decreasing lending activity (due to higher credit risk perceived) result in low bank profitability, which leads to insufficient growth in bank capital and subdued new lending to the real economy, negatively affecting GDP growth with the adverse effect of generating new NPLs.
The effect of the above vicious circle may be additionally worsened by the need to strengthen banks capital due to a tightening of regulatory requirements, which is typical in a post-crisis situation when supervisory and capital requirement models are usually updated and additional requirements are needed to avoid future similar criticalities.
By a macroeconomic point of view, the understanding of the mechanics is particularly important in order to break such vicious circle before it gets out of control with long-term negative and hard to handle effects.

Focusing on the Italian situation, as by an analysis of Banca d' Italia (2017) the NPL problem at Italy's banks can be largely addressed to the prolonged recession that has hit the Italian economy in recent years and to the lengthy credit recovery procedures.
The "bank-centric" feature of the Italian banking system, the banks' lending policies in some cases inadequate or illegal and the lengthy credit recovery procedures, (mostly attributable to the slow pace of civil justice) contributed to worsen over the years the issue of the Italian NPLs.
The recession that struck Italy between 2008 and 2014 can be split into two main moments (phase 1 and phase 2, as better described below) that severely impaired Italian banks' balance sheets and loan quality.

Since the Italian banking system was little exposed, compared to other European counterparts, to the US subprime mortgage market and the structured products that played a large role during the crisis (these were pointed as the main triggers of the world financial collapse of 2008-2009), it reacted relatively well to the 2008-09 recession (phase one of the financial crisis).
However, when the effects of the crisis moved from the financial market to the real economy, the deterioration in customers' economic and financial circumstances did lead to a significant increase in the flow of new NPLs.
Consequently, the second phase of the financial crisis for Italy began in the second half of 2011 when Italian experienced an heavy sovereign debt crisis.
With the new recession, customers' ability to repay debt was further diminished, leading to a rise of the NPE ratio and NPLs stock that deeply affected the real economy.

However, as analyzed by a recent and interesting study on the origins of the Italian NPLs, done by Angelini, Bofondi, and Zingales ("The origins of Italian NPLs", 2017), the causes of the Italian NPLs shouldn't be read as totally exogenous and external to the control of the Italian financial industry.
In fact, the authors identified the potential reasons for the rise in NPLs into the following drivers:

- Macroeconomic conditions (apparently exogenous)

- High risk taking (endogenous)

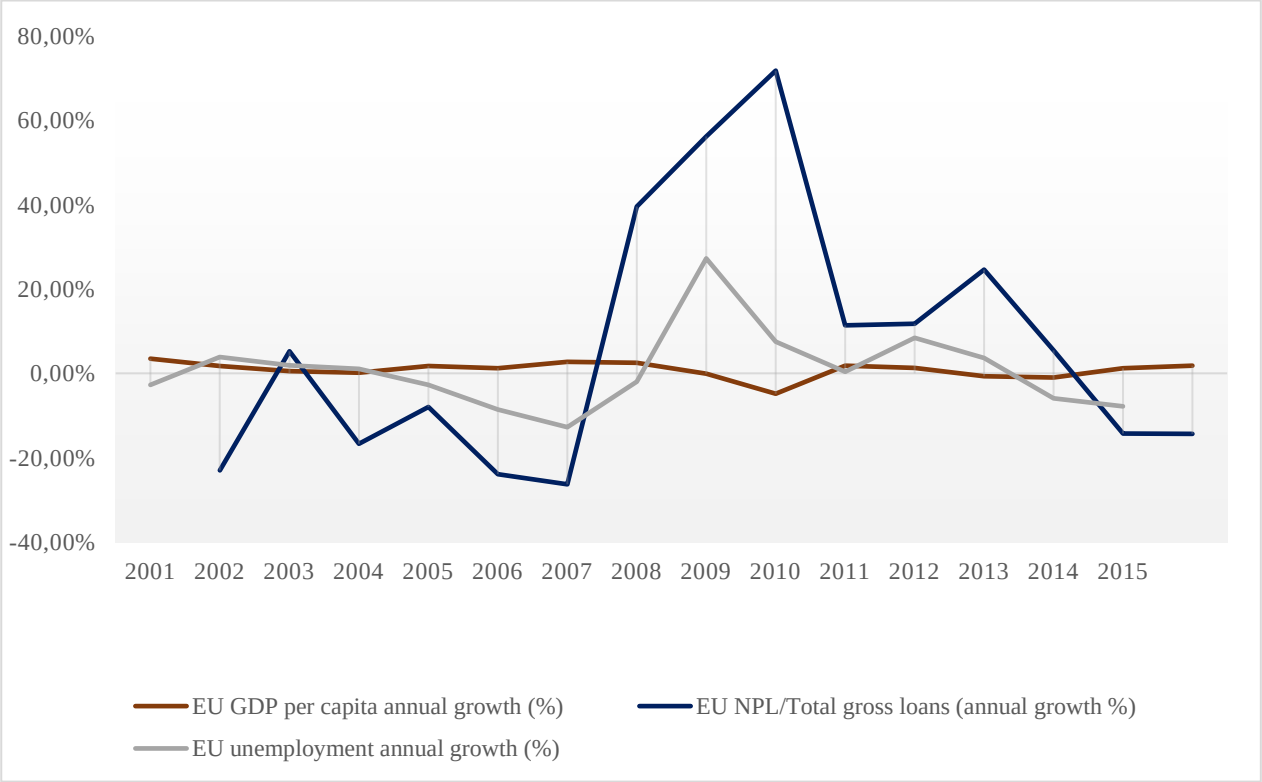
- Other banking specific factors; as the poor lending practices in the period before the financial crises of 2008 (endogenous)

Despite (according to such analysis) the macroeconomic conditions explain about 90% of NPLs flows, these shouldn't be consider as totally exogenous and consequently a large share of the rise in NPLs shouldn't be considered "unavoidable" (outside of the control of banks themselves).
The depth of the financial and eurozone crisis was effectively related to the amplification of crises through the financial sector and NPLs themselves are likely to have exacerbated the recession, especially in Italy.
In addition, even if we suppose the major determinant of the NPLs growth to be out of the control of the banks, it is important to underline that banks could and can choose their exposure to the macroeconomic risk (i.e. adjusting and setting their interest rate exposure) so this means that exposure of financial institutions to macroeconomic risk isn't actually unavoidable.
In the bank based economies and/or in those situations where banks coordinate together assuming an high exposition (i.e. because in a specific moment this grants good returns compared to a low perceived/computed risk) to the macroeconomic conditions, the negative effect is even amplified (if considered at aggregate level).

Considering the analysis introduced and reported so far, it should be clear now to the reader, that the complexity of the implications of the NPLs issue within the macroeconomic dynamics is high, yet the NPLs play an important role in the study of the economy with direct and circular effects into the real economy.
Keeping in mind such complexity, for the matter of this paper it is useful to identify and study which are the main economic drivers that allow experts to better understand and interpret the NPL phenomena.
Overall, the literature agrees that the growth rate of GDP stands out as the most important driver of NPLs trends and dynamics.
As an example Beck, Jakubik and Piloiu (2013) use dynamic panel estimation to show that even if the interest rate and share prices influence the NPL ratio, the growth rate of GDP has the greatest explanatory power.
According to this idea, also a study by Espinoza and Prasad (2010) documents how lower economic growth and higher interest rates trigger an increase in NPLs.
Within the Euro area, many studies have found significant relationships between asset quality and macroeconomic environment in countries such as Greece (Louzis, Vouldis and Metaxas, 2012), Spain (Salas and Saurina, 2002) and Italy (Quagliariello, 2009).
Focusing again on the Euro area, as by the study of Makri, Tsagkanos and Bellas (2014), once again GDP growth and unemployment are pointed out as the major drivers of NPLs, though bank-specific variables such as management quality and risk preferences are found to play a role as well.

Macroeconomic conditions, as well have a non-negligible impact on the magnitude of the NPL matter.
In order to estimate the causal relationship between NPLs and economic performance, cross-country studies had to circumvent the problem of simultaneous causation.
The most common approach in the literature is the use of vector autoregressive (VAR) models.
Although studies use different samples and dependent variables, they typically find a negative and significant impact of rising NPL ratios on GDP growth and employment (Balgova, Nies and Plekhanov, 2016).
Additional confirmation comes from the research of Klein (2013) that using a VAR estimation reported a negative impact of increases in NPL ratios on credit, growth and employment in emerging Europe following the 2008-09 financial crisis.

Figure 18: Euro Area - GDP per capita growth (annual %) vs NPE ratio (%) & unemployment annual growth (%)



Sources: World Bank national accounts data, and OECD National Accounts data files
International Monetary Fund, Global Financial Stability Report
Eurostat data

As previously shown in Chapter 2, for better analyzing the above described link between NPLs stock and GDP growth, the Bank non-performing loans to total gross loans annual growth (%) trend and GDP per capita growth (annual %) for the period 2000-2015, have been analyzed and compared.
The paper limits its analysis on the valuations of the simple correlation between the considered variables.
Such analysis showed that the two variables (Bank non-performing loans to total gross loans annual growth (%) trend and GDP per capita growth (annual %) for the period 2000-2015) have effectively a not neglectable negative correlation equal to -63,4%.

For taking into consideration the new evidences pointed out by the analysis of the literature (as better listed above), the EU unemployment rate annual growth percentage has been added to the previously showed graph (that yet compared GDP and NPE annual growth).
As expected, the EU NPLs stock growth percentage seems to depends more on the GDP growth rather than the EU unemployment rate annual growth percentage and this is also expressed by the lower correlation index that has a value of 53,1%.

Table 8: Correlations matrix - EU NPE ratio, EU GDP and EU unemployment rate (annual growth %)

Correlation indexes	***EU NPL/Total gross loans annual growth***	***EU GDP per capita annual growth***	***EU unemployment annual growth***
EU NPL/Total gross loans annual growth	100,0%	-63,4%	53,1%
EU GDP per capita annual growth	-63,4%	100,0%	-86,6%
EU unemployment annual growth	53,1%	-86,6%	100,0%

Euro Area - GDP per capita growth (annual %)
World Bank national accounts data, and OECD National Accounts data files
Euro Area – NPE ratio (Bank nonperforming loans to total gross loans) (%)
International Monetary Fund, Global Financial Stability Report
Euro Area – unemployment annual growth (%) - Eurostat data

Representations of the evolution of NPL, GDP growth and the evolution of unemployment rates indicate that a decrease in GDP and an increase in unemployment rate conduct to increase in NPLs.
The negative relationship between NPL and the growth rate of GDP and the positive relationship between NPL and the unemployment rate are clearly observed since the crisis 2008.

Having clarified the context and the main drivers for the study of the NPLs phenomena within a macroeconomic scenario, the paper will now list and deeply analyzed the main economic consequences of the NPLs in order to give to the reader enough elements for understanding why NPLs have attracted so much the attention of the ECB and of regulators in the recent years.
As an additional reference, the European Systemic Risk Board (ESRB), in a recent study (Resolving non-performing loans in Europe, July 2017) has remarked and underlined once again the importance of the NPLs matter, declaring that:
"*Large stocks of NPLs on the balance sheet of banks are not only a microprudential supervisory problem, but an issue with broader macroprudential and financial stability implications"*.
Still it's important not to forget that causes and consequences of high stocks of NPLs are linked within a potential vicious circle that increases the complexity of the study of the NPLs phenomena.

From an high level point of view, first of all, an high NPE ratio has direct negative consequences on banks' lending, that is remarkable known as a crucial tool for a well-functioning economy.
It has to be considered that credit and lending is not only needed for business expansion and development, but also for daily business operational expenditures (i.e. working capital).
As it was already explained, a credit crunch may originate business failures that push the NPL ratio further up, making banks even more reluctant to lend (with clear reference to the vicious liquidity spiral described above and a consequent domino effect).
A further consequence of an high NPE ratio is the consequential misallocation of resources, mostly in those economies with strong bank-business interlinkages.

In these cases banks inject large part of the new credit into the existing troubled sectors and companies ("zombie lending") trying to avoid further business failures with the consequence of diverting funds away from more productive industries and sectors of the economy.
The extreme example is the case in which a public intervention is needed to avoid banks failures. In such cases banks themselves need capital injections for facing large losses; this is an common problem of a considerable number of Italian banks as it was already illustrated in chapter 2 (see Texas ratio analysis and the case study of Monte dei Paschi di Siena bank).
Despite it can have a concrete short term positive effect, the lending misallocation created by high NPLs compromises the country's growth by a long term point of view.

Going more in detail, by the analysis of the research promoted by Servaas Deroose in 2016 and the subsequent analysis done by Berti, Engelen and Vasicek (2017), it is possible to conclude that the impact of NPLs in terms of reduced credit supply is linked to several factors:

- Locking-in bank capital into unviable projects:
  Generally, an high NPE ratio affects banks' lending activities in different ways.
  A bank with an high stock of NPLs is likely to focus on internal consolidation and improving asset quality rather than providing new credit.
  In fact, an high NPE ratio requires greater loan loss provisions, reducing capital resources available for lending and denting bank profitability.
  For handling the NPLs stock, banks are also required to allocate and freeze specific amount of capital that are locked in for balancing non-productive assets even for long time periods. This results in less available funding for new lending with a direct impact on the real economy.
  The reduction of banks NPLs stock is then crucial for freeing up bank capital and making resources available for the credit chain, especially for financing small and medium sized enterprises (SMEs) which usually depend more on bank financing.

- Reducing bank profitability:
  The necessity of provisioning for NPLs reduces banks' net income and the reduced returns on NPLs also reduce profits.
  In fact, the need to provision for NPLs and higher capital requirements on the non-provisioned part lead to lower returns on NPLs compared with performing loans.

- Monitoring and servicing costs:
  Another factor that impact on the bank profitability is the cost of monitoring of distressed loans and borrowers that increases the operating costs of banks otherwise not sustained.

- Higher funding costs:
  Debt issued by banks with a high burden of distressed assets is perceived as riskier by the system, and a premium is therefore required by bondholders.
  Uncertainty on the asset quality of individual banks may also generally limit their access to funding.

- Distorting capital allocation:
  High NPL ratios are also with a poorer allocation of credit.
  Banks often, because of a lack of the incentives to tackle non-performing loans, focus more on delaying losses recognition rather than writing off the bad loans even where expected recovery is zero.

In some cases banks may decide to wait for economic growth to improve their NPLs ratios, delaying loss recognition with the effect of delaying growth itself ("wait and see" approach).

Focusing again on the Italian economy, analogue evidences were found by the study "Non-performing loans and the supply of bank credit: evidence from Italy" released by Banca d'Italia in March 2017.
The research highlights that the worse quality of the balance sheet associated to a high level of the stock of NPLs could in principle affect the supply of credit through three main different channels:

- a mechanical accounting mechanism:
  Lower credit quality affects bank capital via risk weights.
  Since financial intermediaries and banks are subject to prudential regulations on capital (for more information see chapter 2, register art. 106 on special servicer subsection), a worsened credit quality implies higher risk weights on bank loan portfolios in the computation of regulatory capital ratios as a measure to cover expected risks and losses.

- an increase in funding costs
  Again, higher credit risk causes an higher cost of capital that can become permanent if the credit quality is non improved.
  This can also conduce banks to adopt a permanently lower rate of expansion of their asset base.
  In addition, a reputational risk is place; if a heavier burden of NPLs is interpreted as a sign of low managerial abilities, and if this is not fully balanced by an adequate coverage ratio, then the bank's external funding costs may arise as a consequence.
  The higher funding costs due by high NPLs can quicly lead to a contraction in loan supply.

- a change in the bank's risk-taking attitude
  Finally, NPLs might change banks' risk attitudes.
  At times of low interest rates, thinly capitalized banks are more sensitive to the effects of monetary policy and more willing to extend credit to weak borrowers.
  Counter-intuitively, for these banks an high stock of NPLs results to be an incentive to lend more, following a 'gamble for resurrection' type of logic.

Causes and consequences of high NPLs stock are still a matter of study, and the analysis done in this chapter can't be exhaustive, anyway, in the light of what better described above, we can summarize and assume that the main causes of the high European NPLs stock is identified in the slow recovering of economy and population incomes after crisis of 2008, and in the slow and inefficient management of the NPLs stock by many European financial industries.
Despite that, the causes of such phenomena shouldn't be considered as totally exogenous since banks are supposed to be able to manage their expositions to the macroeconomic risks.
In addition, NPLs stock has a consistent relationship with the macroeconomic context and such relationship has been identified as two-sided and highly non-linear.
NPLs stock and NPLs growth trends can be also used as important drivers for macroeconomic studies (i.e. see predictive power on banks failures) and are consistently correlated to GDP pro capita and unemployment rate growth.
Causes and consequences of high stocks of NPLs are linked within a potential vicious circle that increases the complexity of the study of the NPLs phenomena.
Despite that, the direct consequences of high NPLs stocks into the banking system are mainly linked to the lending policies with indirect effects on the real economy.

The transfer of the effects of the financial crisis from the financial market to the real economy generated a domino effect that infected even those Countries' economies, such as Italy, that have initially better reacted to the financial crisis thanks to their limited exposure towards the structured financial products.
The consequent "credit crunch" effect culminated into the raise of the bankruptcy rate of the small and medium enterprises, that represent the core components of the industrial/productive Italian industry.

Finally, considering all the above and the recent statements of the European Systemic Risk Board (ESRB) a large stocks of NPLs on the balance sheet of banks are not only a micro-prudential supervisory problem, but an issue with broader macroprudential and financial stability implications. The analysis of the possible ways to handle and potentially fix this issue will be object of the following chapter 4).

4. POSSIBLE SOLUTIONS FOR THE NPLs ISSUE

According to Haben and Quagliariello (EBA, 2017) there is no "silver bullet" for addressing NPLs, but rather a number of interdependent actions.
As suggested by the IMF, the solution of the post-crisis NPLs has to pass through 3 main pillars (Ayar et al., 2015):

i) Stricter supervisory rules
   Supervisory pressure on banks to proactively manage and dispose of NPLs is needed.
   At the same time banks have to raise their provisioning and coverages, improve their arrears management systems, and accept/handle the short-term losses generated by the removal of NPLs from their balance sheet (i.e. through the sale to the market);

ii) Legal reforms for accelerating enforcement procedures and enhancing insolvency regimes.
   Slow and often inefficient legal systems and judiciary procedures need to be revised to allow faster and more efficient recovery processes;

iii) Further initiatives for the development of a more effective secondary market for NPLs are needed.

Considering the first pillar, much has already been done.
On October 2013 the EBA defined technical standards on the definition of NPLs and forbearance.
Recently on March 2017, the European Central Bank ("ECB") published an updated guidance to banks on how to tackle non-performing loans (described as "one of the European banking industry's most pressing issues").

Even if the guidance is non-binding, the ECB fully expects all significant institutions to adopt it with immediate effect, in order to have the first results expected to start from 2018.
Within the guidance the main pillars of NPL strategy can be summarized as following:

- assessing the operating environment;
- developing qualitative and quantitative targets over the short, medium and long-term;
- implementing the operational plan;
- fully embedding the NPL strategy into the management processes of the bank, including a regular review and 'independent' monitoring by risk control functions within the organization.

With regard to the pillar ii), during the last few years many European countries have significantly improved their insolvency and foreclosure regimes and strengthened their judicial systems (Costancio, 2017).
Focusing on the Italian market, estimates suggest that the series of legislative measures issued by Italian authorities in August 2015 should lead, once fully operational, to a fall in the average duration of bankruptcy procedures and foreclosures of about 50% and 25%, respectively (Marcucci et al., 2015).

Despite the third pillar iii) would be the most effective (at least in the short term) to sell off the huge stock of NPLs accumulated so far by European banks, this is still an open point since a definitive solution wasn't found yet.

For this to happen it is necessary that the market for NPLs became more competitive, in order to be able to reduce the bid-ask gap.

Forcing banks to write off or dispose of NPLs in a very short period, in a context where an efficient secondary market is missing may create financial stability concerns leading to trades where the final price is far from the optimum obtainable under better market conditions.
According to Haben and Quagliariello (2017), the following corrective actions to address market failures would improve the secondary market:

- Addressing incentives for banks' management to take action on NPLs.
- Improving price via:
    - Solving the data quality issue by improving the quality, quantity and comparability of data available to investors;
    - Enhancing the transparency of the market by sharing data and benchmark on existing NPL deals;
    - Simplifying and standardizing legal contracts (i.e. sale and purchase agreements).
- Addressing the first mover disadvantage by overcoming current market illiquidity issues. This would mean stepping into the market at a price reflecting the "real economic value" or future efficient clearing price as opposed to the current market price, with a view to selling into more liquid and efficient market at a later date.

This chapter would focus on the third pillar.
First, the secondary market will be illustrated and analyzed, explaining all the issues regarding the market inefficiency and the bid-ask gap as a main cause of the failure of such market.
Following, the chapter will focus on the Italian market, detailing the two major initiatives, the public guarantee GACS and the fund Atlante, put on place by the government in the recent years as an attempt to fix the secondary market inefficiencies.
As it will be better explained on the dedicated sections, such instruments weren't enough for facing the magnitude of the NPLs stock; from this arises the necessity of a systemic solution.
Starting from a recent (Febraury 2017) proposal of the EBA, the bad bank hypothesis will be then studied and analyzed.
Keeping in mind the necessity of a massive and systemic intervention and for providing a comparable alternative, the paper will bring the reader overseas, analyzing the measures adopted by the US government in 2008 within Emergency Economic Stabilization Act for facing the US toxic assets the burdened the American banks after the financial crises.
Concluding, putting all the knowledge together, the paper would try to develop a further theoretical systemic alternative that would involve the direct intervention of the ECB.

4.1 The secondary market solution, opportunities and issues

As seen in other countries (Jassaud and Kang, 2015), involving third parties investors in either directly purchasing NPLs or working with banks to restructure distressed borrowers can help banks to reduce their NPL stock over time.
This could be applied also to Italian banks, theoretically becoming a regular tool for managing distressed assets.
Interest in a distressed debt market is growing in Europe, with NPL transactions that in Italy estimated to have reached around €20 billion per year in 2015 and €30 billion in 2016 (as by chapter 2.2.5).
A secondary market for NPLs also contributes to reduce the collection burden on banks and would free up resources and capital needed to support new lending.
In addition, the market could be a valid alternative to the "traditional" internal asset management made by banks helping on boosting loan recovery values by providing a more cost effective strategy to lengthy court procedures (banks may prefer to receive anticipated cash, even if with a discount compared to their NBV, through a sale in the second market rather than waiting for the recovery process to end, considering also the higher grade of uncertainty that characterizes the second option).
In the future, if well developed and enough liquid such market could theoretically become a standard operational tool also for Italian banks for offloading bad assets and orienting the management of their loan portfolios.
An active market for NPLs may improve secondary market liquidity for loans and also attract a wider range of institutional investors, such as private equity funds, asset managers, insurance companies, and pension funds, bringing new liquid financial resources (even from abroad) into the Italian economy.
These alternative investors would help extend the banking industry sources of financing, providing another source of needed capital for the corporate sector, promoting more broadly the reallocation of resources towards more productive corporates and finally assisting in their reorganization and expansion.

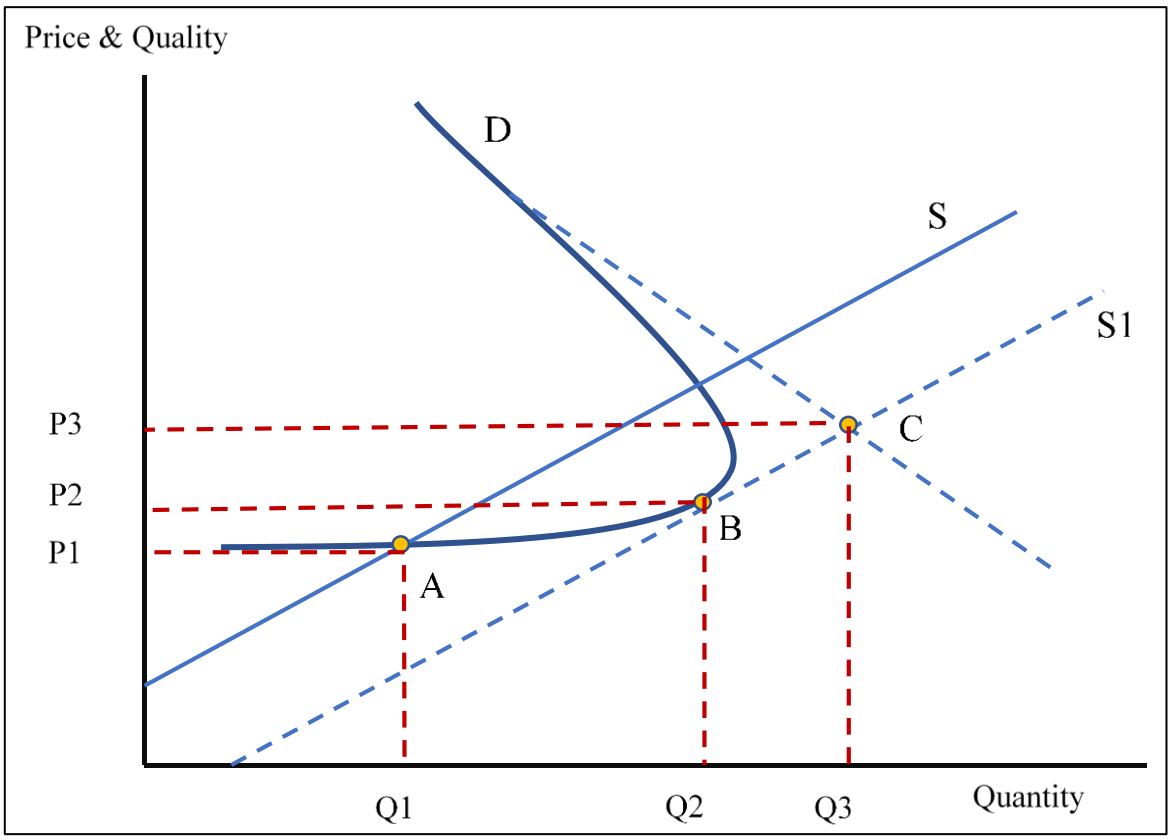
4.1.1 The bid-ask gap analysis

In the theoretical world, if financial markets were fully efficient, NPLs would be priced in a way that would result in quick market clearance and their removal from banks' books in a satisfactory way for both the parties involved.
As a matter of fact, the NPLs growth trends within the euro area show that market transactions of loans are, however still insufficient.
In fact, the prices that investors are willing to offer are often substantially lower than the price that would be at least neutral to the capital position of banks; this doesn't allow to match seller's expectation with the consequence of making portfolio sales convenient only on a smaller number of cases.
The reasons of this bid-ask gap will be analyzed in detail and explained within this chapter.

During the recent (February 2017) speech of Vítor Constâncio, Vice-President of the ECB, at an event entitled "Tackling Europe's non-performing loans crisis: restructuring debt, reviving growth" organized in Brussels, because of the presence of an asymmetric information issue, the NPLs market has been compared to the "the market for lemons" (Akerlof, 1970).

This asymmetric information issue is originated by the fact that NPLs may come to the sale with a quality level that is unknown to the buyer, but can be discerned by the seller who managed the loan till the moment of the sale and that in the majority of the cases (a part for the second market portfolios) was the one that also originated the loan that is object of sale.
Asymmetry of information between the seller and the buyer may then lead to an outcome where only low-quality assets, ("lemons") are actually traded.
In fact, the less informed buyer won't pay an higher price for higher-quality assets, given that he may be not able to recognize them as higher-quality assets.
As a result such assets would be kept on the books of the seller, where it is also forecastable that they won't be very provisioned (since the seller should be able to recognize the quality of these) and this make even more difficult that demand and offer will finally match.

Figure 19: Market of lemons scheme – NPLs demand and supply



As by Akerlof (1970) in a market for "lemons", demand is a function not only of price, but also of the average quality of the goods being traded.
For this reason, multiple equilibria can arise as shown in Figure 19.
The "bad" market equilibrium A is consistent with the currently observed market of lemons conditions, as only a small quantity of "lemons" (in this case, low quality NPLs) is traded.
At the conditions of the equilibrium A, both the capital constraints of banks and the bid-ask spread may be lower than the average, due to the relatively close alignment of the actual and perceived – bad - quality of these NPLs (so the loans should be enough provisioned by the seller to be put on sale).
Within this logic, if the seller improves the supply (S1), an improved market equilibrium will arise, equilibrium B.

Anyway, if the efforts only address supply-side constraints, this will offer limited room to market functioning, because of the shape of the demand curve D, with the consequence that additional supply will not be fully absorbed by the market.
Filling the informational asymmetries, however, has higher potential to handle the market failure. If these issues can be addressed, then, ceteris paribus, an improved equilibrium C can be achieved through improving demand (such improvement is represented by the change in the shape of the demand curve from D to the more standard D1.
According to this reasoning, the presence of collateral further increases the asymmetry as well as the cost of investor due diligence (because as seen in the Appendixes I and II, the RE foreclosure is complex and expensive both in terms of financing and time) making the final match between bid and ask even more complicated.
As a matter of fact, unsecured NPLs (including retail loans, credit card debt) have been most actively traded in the secondary market.
These assets are typically easier to work out and there is sufficient transparency for investors concerning their value; in addition, due to their unsecured nature and the resultant high levels of provisioning, sales typically take place at very low prices relative to book value, making it easier for investors to achieve their targeted returns.

It's also true that, during the due-diligence time, the buyers normally have access to data for studying and analyzing the loans object of trade, but, generally speaking, independently from the asset nature (whatever secured or unsecured loan) investors may always fear that banks cherry-pick the best assets for themselves (adverse selection towards the buyer), thus reducing the quality of portfolios offered on sale, with a consistent moral hazard issue.

In addition to the market inefficiency, regulatory and features of the judicial system, such as structural inefficiencies in debt and collateral enforcement, also play a role to the lack of market turnover and increase the risk profile of the investment in NPLs with high impacts on the bid-ask gap (because of the impact that the IRR has on the NPV computation; higher risks reflects in higher IRR and this means lower prices (NPV) with larger bid-ask gap).
The European legal framework often doesn't help to solve the NPLs issues; legal procedures needed to collect a simple claim take often too long and cost too much in many euro area countries (ECB 2017).
Also, some of the costs sustained for promoting the loans recovery, cannot be recognized in the values of NPL, but rather, according to accounting rules, are charged to the general expenses.
This creates a discrepancy between the economic and book value of NPLs that ends to be an additional disincentive to increase supply, especially for those banks that are not sufficiently profitable or that have thin capital cushions.

The supply of NPLs has to deal with a number of constraints and rules such as capital constraints and provisioning levels as well as regulatory pressures.
Concerns about realizing a loss and the related impact on provisions and capital may also play a prominent role.
As an example, the sale of part of an NPL portfolio at a low price may lead to upward pressure on coverage ratios for the remaining portfolio.
If supervisory measures or market discipline require that the remaining and unsold part of the NPL stock has to be marked down to the achieved sales price, even though the residual asset quality has in fact improved on aggregate as a result of the sale.
When banks assess for a potential sale they have to consider also the effect caused by the recalibration of prudential models, including loss-given-default models, based on the data generated by the asset sales.

For all the reasons above, banks may finally prefer not to sell and wait for a possible upturn in asset values, instead of realizing a loss through the sale and all its consequences.
Another supply-side consideration related to banks' willingness to sell is that banks may want to avoid the first-mover disadvantage effects, so for a given price, supply may be low.

Analyzing the demand side, besides the information asymmetry explained above, one of the main deterrent for investors is the high uncertainty around the recoveries, both amount and timing. Moreover, the presence of barriers to entry such as licensing requirements that also imply restrictions on the transferability of loan portfolios, further inhibit demand in some euro area countries (see chapter 2.2.4 The Italian servicing industry).

Table 9: NPLs market – Demand & Supply side impediments

Demand-side impediments	**Supply-side impediments**
- Information asymmetry - Inefficient and uncertain debt enforcement frameworks - Licensing requirements - Restrictions on trasferability of loans	- Unwillingness to realize losses - First mover disavantage - High cost of debt recovery not always recongnized in NPL book values

Source: ECB 2017

Finally, another key factor that affects both demand and supply is the availability of high-quality data for the assets in question.
The absence of such data can compromise the results of valuation methods investors may use in due diligence, resulting in heightened uncertainty concerning asset values and additional costs associated with collecting sufficient data to facilitate workout, resulting in commensurately lower bid prices.
Often all these difficulties have to be managed by the buyer within the time constraints imposed by the sale processes set up by sellers, ending up in a higher level of the perceived risk of the investments leading, once again, the investor to apply higher rates of return with a final lower price.

The direct consequence of all these conditions, under which the NPL market operates, is a wide gap between bid and ask prices.
According to Fell et al. (2016), that developed an analysis based on the World Bank Doing Business database, the gap between the notional gross book value (GBV) and net present value (NPV) of NPLs may be as high as 40-50% of the GBV.
In this analysis, market values of NPLs are estimated by discounting future cash flows from the sale of collateral, less the cost of recovery, using typical discount rates applied by banks and investors and the above gap can be broken down into three components that determine the size of bid-ask spreads for NPLs:

1. <u>The average cost of recovery:</u>
   enforcing a claim through the legal system can cost between 4% and 22% of the value of the claim according to the World Bank Doing Business database

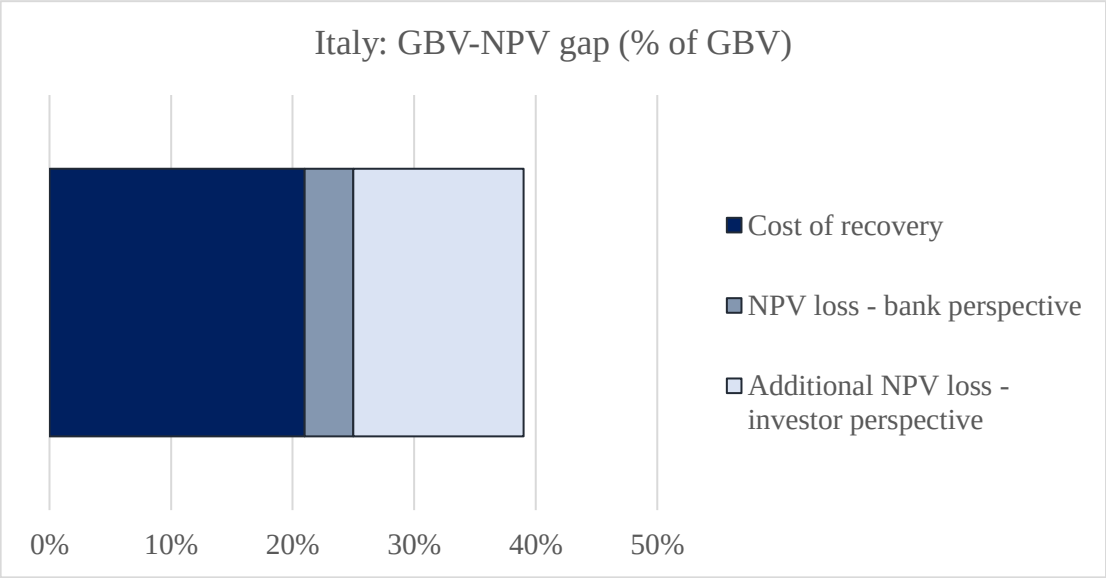
2. <u>NPV loss by the bank perspective:</u>

As explained in Appendix I, the net book value (NBV) of the claim for the bank, as required under IAS 39, is calculated as the NPV of future cash flows from the loan, using the original effective interest rate of the loan, often below 5%, as a discount rate.

3. Additional NPV loss by the investor perspective:
   The discount rate applied by investors is related to their cost of capital, the premium demanded for the riskier nature of an NPL portfolio relative to a performing one, and an information asymmetry premium.

Assuming the banks discount future flows using a rate equal to 5% while investors apply an higher rate equal to 15%, then the 10% spread makes a big difference in NPV computation.
Also it is assumed that both the seller and purchaser forecast the same gross future recovery.

Figure 20: GBV – NPV gap main components



In the chart, investors' NPV estimate (yellow segment of the bar) has to be considered as incremental to banks' NPV estimates.
Total NPV losses are the sum of the three segments of the bar while the bid-ask depends on the extent to which the costs of recovery are factored-in to the ask price.
If banks fully factor-in these costs, the bid-ask spread could be as little as the difference between the NPV estimates of banks and investors (i.e. yellow of the bar) or, if banks do not account for these costs at all, it could be as much as the previous gap plus the costs of recovery (i.e. the yellow segment plus the blue segment).

From the analysis above, It's easy to understand that both the cost of recovery and the rate of return play a big role in the bid-ask gap.
For clarifying all the concepts, with reference to (Ciavoliello, Ciocchetta, Conti, Guida, Rendina and Santini, April 2016) an example is presented here below.

Considering a bad loan with a GBV of €100, partly secured by a real guarantee, it is assumed that the bank's estimate of expected cash flows is the same as that of investors in the market with only one inflow whose expected value is 50 per cent of the gross value of the loan (already net of the

direct costs of selling the guarantee), which will be collected in full at the end of the recovery procedure.
Also it is assumed that the expected residual recovery time is four years and that (according to IAS 39) the discount used by banks for the expected cashflows is 4%.
Accordingly to the average coverage ratio of bad loans (57%) as by Chapter 2, then we can assume that the bank registered a net position for the 43% of the GBV (€43).

Table 10: Simulation of a NPLs portfolio sale - Bid-ask gap from the bank's perspective

	Bank	**Bank with indirect costs**	**Investor**
Scenario	a)	b)	c)
GBV	100	100	100
Total expected collection from the sale of the guarantee	50	50	50
Time to collections (years)	4	4	4
Avg CFs discounting rate	4%	4%	15%
Indirect costs (% of expected collections)	0	6%	6%
NPV	43	43	29
Indirect costs	0	3	3
NBV	43	40	26
Coverage ratio	57	60	
Loss (bank perspective)	**17**	**14**	

As shown in Table 10, investors typically deduct from the price all the indirect management costs (administrative expenses and servicer fees) they will incur during the 4 years needed to recover the cash flows.
According to "Notes on Financial Stability and Supervision No. 3 - April 2016" (2016), indirect costs may account for as much as 6 per cent of nominal expected cash flows.
Scenario b) shows the valuation of a bank which includes these costs, without changing the other factors of scenario a).
In this case, the NBV of the bad loan is 40% of GBV, some 3 percentage points below the scenario a) since provisions have to be increased by the same amount (see Coverage ratio).
In the example above, within the hypothesis and the assumptions done, the bank should accept a loss of 14-17% its gross book value for selling an average provisioned credit to an hypothetical investor.
As anticipated the IRR selected by the investor is a key component of the bid-ask gap and, changing the IRR we can evaluate the sensitivity of the bid-ask gap to such parameter.

Table 11: Sensitivity analysis – Bid-ask gap vs Investor's IRR

Investor IRR (%)	10%	11%	12%	13%	14%	**15%**	16%	17%	18%	19%	20%	21%	22%	23%	24%	25%
Investor NPV net of ind. Costs (€)	31	30	29	28	27	**26**	25	24	23	22	21	20	20	19	18	17
Loss (bank perspective) scenario a) (€)	-12	-13	-14	-15	-16	**-17**	-18	-19	-20	-21	-22	-22	-23	-24	-25	-25
Loss (bank perspective) scenario b) (€)	-9	-10	-11	-12	-13	**-14**	-15	-16	-17	-18	-19	-19	-20	-21	-22	-22

The results show that the effect on the valuation of bad loans is substantial, ranging from 17 to 31 percentage points of GBV according to the selected IRR.
Concluding, as by Ciavoliello et al., and by these tentative findings it is suggested that the main reasons for the gap in the market price of bad loans relate to the different valuation criteria

used in the financial statement and by investors to compute the value, rather than to insufficient coverage ratios.

For filling the bid-ask gap either the investor is able to find some upsides related to:

- Higher projected recovery amount:
  Analyzing the loan, the purchaser may revert the information asymmetry issue, discovering information that may increase the expected gross recovery of the loan (so far we assumed it was fixed at 50% of the GBV and equal to seller and buyer).
  The purchaser may also use tools that are not available to the bank and/or applying a more efficient cost structure also adapting its IRR with the use of structured finance tools.

- Reducing timing for recovery:
  Again analyzing the loan and/or applying ad hoc instruments (i.e. REOCO) the buyer may have a different (shorter) expectation on timing for recovery.
  This may have a sensitive impact on the NPV computation.

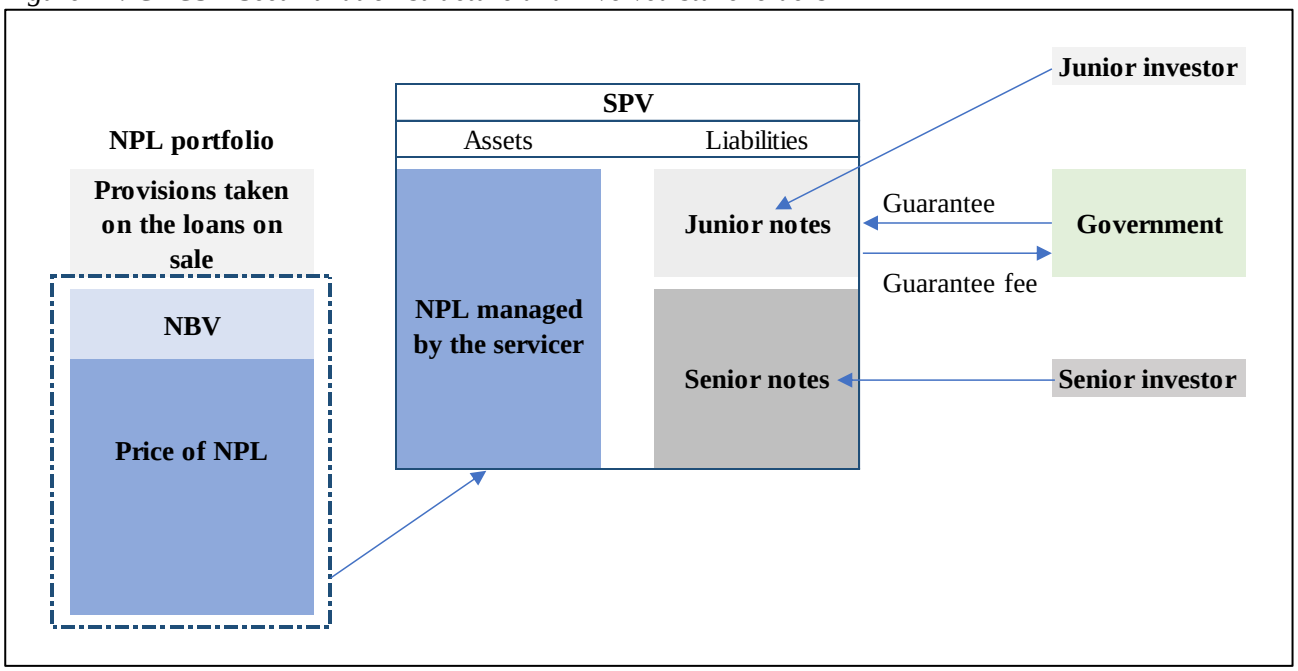
Generally purchaser should focus most on the more provisioned loans where the gap is lower for definition.
In the next sections further methods, tools and measures, developed either for filling the bid-ask gap within the second market, or for alternative disposals of distressed assets out of the market are analyzed.

4.2 GACS – The Italian public guarantee

Given the explained market failure, in managing the large stock of NPLs by itself, the intervention of government measures was needed.
After the agreement found between Rome and Bruxelles, on April 2016, through the publication on the Gazzetta Ufficiale of the decree n. 18/2016, the GACS tool saw the light.
GACS (Garanzia Cartolarizzazione Sofferenze) is a – not – innovative tool developed by the Italian Ministry of Economy in accordance with the ECB for helping the Italian banks with the disposal of their NPLs stock.
Within a transaction scheme with the use of the GACS, the SPV acquires the NPLs portfolio and for financing the acquisition it issues both junior and senior notes (ABS, mezzanine optional) that will be acquired by the purchaser/investor and potentially by the seller itself (in case of vendor financing).
On the senior notes, the government will attach a guarantee, the so called GACS, that is subject to the obtainment of at least an investment grade rating on the senior notes.
In exchange of such guarantee, the SPV will pay the government a periodical fee (in line with market prices).
As per a CDS (Credit Default Swap), the guarantee will be activated to cover potential losses, in this case due to the non-reimbursement or late reimbursement of the senior notes (as better explained later in this section).
The seniority of the waterfall that cash flows from the underlying assets has to follow will be the following:

1. Fees to the Servicer;
2. State Guarantee Fee;
3. Interests on Senior notes (variable rate, paid periodically);
4. Interests on Mezzanine notes (if any);
5. Full reimbursement of the senior notes;
6. Full reimbursement of the mezzanine notes;
7. Payments to the Junior notes.

Figure 21: GACS – Securitization structure and involved stakeholders



Additional rules that have to be respected in order to get the GACS is that the purchase price can't be higher than the bank NBV for the traded portfolio and the servicer in charge of the recovery of the credit has to be different from the seller and can't belong to the same corporate group.
In addition the GACS can be accorded only if the seller has transferred at least the 50% + 1% of the junior notes or in alternative a significant amount of the junior and mezzanine notes (if any) that grant the full disposal of the portfolio subject of the sale by the balance-sheet of the seller (by an accounting point of view).

The pricing of the guarantee is to be based on a basket of CDS with comparable rating assigned by a rating company based on the previous six months' pricing.
For the first three years, the pricing is based on 3yr CDS.
A step-up in year four requires to use the 5yr CDS, which then becomes 7yr CDS with the second step-up at year 6.
In detail:

- In years 1, 2 and 3, the price of the 3y benchmark CDS is paid on the outstanding amount of the senior tranche.
- In years 4 and 5, the price of the 5y benchmark CDS is paid on the outstanding amount of the senior tranche.
- Staring from year 6, the price of the 7y benchmark CDS is paid on the remaining outstanding amount of the senior tranche.

In addition, if the repayment of the senior notes goes after the 3rd year, the following fees have to be added to the above:

- In years 4 and 5, if the senior tranche wasn't repaid in full by the end of the third year, a penalty charge is added to the basic fee corresponding for compensating the difference in payments from a 5y benchmark CDS held over the full period of years 1 to 5 compared to the actual payments made in the first 3 years.
- After year 5, if the senior tranche wasn't repaid in full by the end of the fifth year, a penalty charge is added to the basic fee corresponding for compensating the difference in payments

from a 7y benchmark CDS held over the full period of years 1 to 7 compared to the actual payments made in in the first 5 years.

If the default happens, then the beneficiary of the GACS may cash in its payout by the guarantee within 9 months after the maturity of the senior notes.
The default can also be a missing, even partial, payment either of the interests or the principal that is on late of at least 60 days since the due date agreed for such payments.
Before obtaining the payment of the guarantee, the beneficiary has to send the refund request to the seller for the overdue amount.
After 30 days and within 6 months after the sending of the refund request, the beneficiary can finally ask for the intervention of the government guarantee that will reimburse the beneficiary within the terms agreed.
After the repayment the MEF (Ministero dell'Economia e delle Finanze) will have the right to start a recovery activity for recovering the overdue amount (senior notes not reimbursed) plus the applicable legal interests.
For the year 2016, the Italian government has allocated a fund of €100m for the GACS activity.

Up to date the unique transaction closed with the use of GACS was the one done by Banca Popolare di Bari in October 2016 for the sale of €480m NPLs portfolio of which around €304m were loans mainly secured by residential and commercial properties, with the remaining being unsecured.
For the sale, according to the data divulgated by the seller itself, the SPV issued 3 types of ABS as follows:

- €126,5m of senior notes with a rating investment grade BBB (High)/Baa1 by DBRS and Moody's.
  The coupon for this tranche was 6mEuribor +50bps.
- €14m of mezzanine notes rated B (High)/B2 by DBRS and Moody's
  The coupon for this tranche was 6mEuribor +6%.
- €10m of junior notes without rating.
- The coupon for this tranche was 6mEuribor +15%.

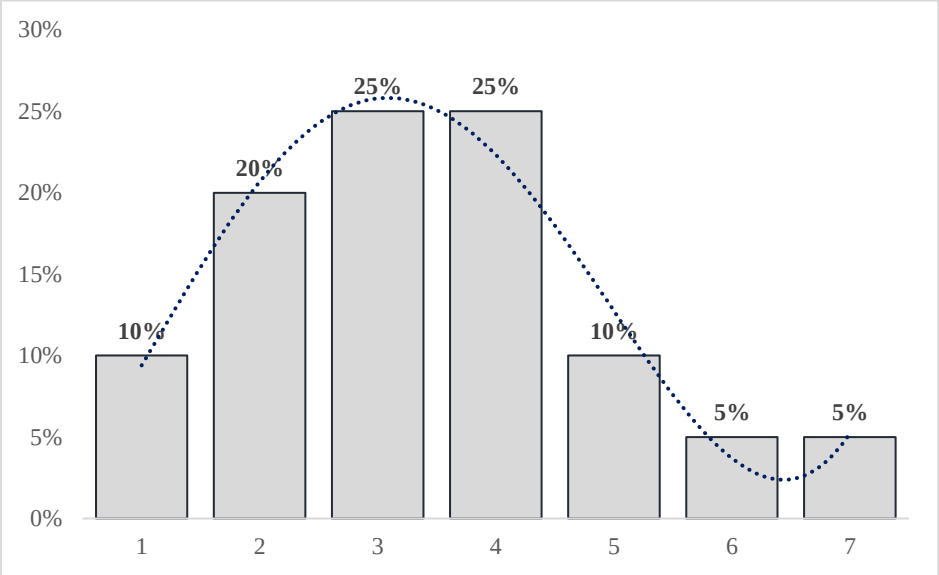
Advisor of the operation was JP Morgan while the servicer is Prelios.
The operation was declared as successful by the seller as it was reached a price of around 30% of the book value put on sale.
To subscribe the junior and the mezzanine notes (as by the press) was the Investment fund Davidson Kempner Capital Management.

For evaluating the benefit of the use of the GACS in reducing the bid-ask gap, it will be now illustrated an example.
Starting from the Banca Popolare di Bari available data and making consistent assumption, a reverse-engineering model has been built for comparing a trade with the use of GACS against the same trade without the use of the public guarantee.
Assuming that:

- The deal will repay all the notes within 7 years;
- The 6mEURIBOR for simplicity is fixed to 0%;
- According to a research of Mediobanca Securities (2016), it is reasonable to estimate that the market price of the guarantee will range between 85-90bps at the start and 125-135bps at the end plus a penalty, so for a matter of simplicity it will be now fixed to 1%;
- It is assumed, the rate of return will be therefore 2% (gross of guarantee fees) for senior notes, 6% for mezzanine notes and 15% for junior notes;
- No leakage is assumed;

- For timing and recovery distribution, it is assumed a Gaussian distribution of cash flows reaching a peak during the 3rd and 4th year equaling 25% of the recovery value, whilst as little as 5% in year 6 and 7.
  Here below the shape of the curve adopted:

Figure 22: 7ys Recovery curve assumption



Therefore, according to the curve above, the WAL (weighted average life) of the recovery is 3,4 years.

Under the above assumptions it is possible to build a financial model that, through a reverse engineering mechanism, is able to estimate the expected NCFs of the investment.
Also, applying the returns of the tranches and the recovery curve as above, the model is able to replicate the investment structure for each investor.

Table 12: Transaction with GACS – Business Plan/Acquisition model (CFs and notes structure)

Tranche	Funding	Coupon	Price / GBV
Senior	126,5	2,0%	26,4%
Mezzanine	14,0	6,0%	2,9%
Equity	10,0	15,0%	2,1%
Total	**150,5**	**4,62%**	**31,35%**

						IRR 2,00%					IRR 6,00%				IRR 15,00%		IRR 10,90%	IRR 4,62%
		Senior reimbursment					Mezzanine reimbursment					Equity		Total (Mezzanine + Equity) investment	Total investment	
Year	Forecasted NCFs (€bn)	Outstanding Balance (€bn)	Interest Payment (€bn)	Principal Payment (€bn)	Total cash back (€bn)	NCFs (€bn)	Outstanding Balance (€bn)	Interest Payment (€bn)	Principal Payment (€bn)	Total cash back (€bn)	NCFs (€bn)	Total cash back (€bn)	NCFs (€bn)	NCFs (€bn)	NCFs (€bn)	
0						-126,5					-14,0		-10,0	-24,0	-150,5	
1	17,5	126,5	2,5	14,1	16,7	16,7	14,0	0,8	0,0	0,8	0,8	0,0	0,0	0,8	17,5	
2	35,0	112,4	2,2	31,9	34,2	34,2	14,0	0,8	0,0	0,8	0,8	0,0	0,0	0,8	35,0	
3	43,8	80,4	1,6	41,3	42,9	42,9	14,0	0,8	0,0	0,8	0,8	0,0	0,0	0,8	43,8	
4	43,8	39,1	0,8	39,1	39,9	39,9	14,0	0,8	3,0	3,9	3,9	0,0	0,0	3,9	43,8	
5	17,5	0,0	0,0	0,0	0,0	0,0	11,0	0,7	11,0	11,6	11,6	5,9	5,9	17,5	17,5	
6	8,8	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	8,8	8,8	8,8	8,8	
7	8,8	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	8,8	8,8	8,8	8,8	

Where:

- Outstanding balance at Y1 is the amount of subscription of the tranche (senior, mezzanine and junior/equity).
- Interest payment is the interest matured during the year of reference computed as $Interest\ payment\ (t) = Outstanding\ balance(t) * annual\ coupon$
- Principal repayment is computed as the difference between the NCFs generated by the investment less the payment of the interests.
- Total cash back is the sum of interests and principal repaid in the period.
- NCFs of the tranche is the total cash back plus the price paid for the note (in negative at time 0)
- Following the waterfall, the NCFs repay in order: the senior interest, the mezzanine interest, the senior principal, the mezzanine principal, the equity.

Within this scheme, the final return for the investor (junior + mezzanine) is 10,90% as it's an average of the two coupon of the mezzanine and senior tranche, while the total return of the investment is 4,62%.

Keeping fixed the Expected NCFs, we can compare the transaction with the use of GACS to, ceteris paribus, 1) a full equity transaction; 2) a leveraged transaction without GACS.

1) For making the two transactions comparable it is sufficient to compute the IRR for the investor for the scenario with the use of GACS.
   This will be the weighted average of the rate of the mezzanine and junior tranches only and it's equal to 10,90%, as illustrated above.
   it is now possible to calculate the NPV of the same NCFs of above for obtaining the price investor would pay in case of full equity investment keeping the same rate of returns of the scenario with GACS:

$$NPV(t) = \frac{NCF(t)}{(1 + avg\ IRR\ for\ investor)^t}$$

Table 13: Transaction without GACS - Full Equity Business Plan/Acquisition model

Tranche	Funding	Coupon	Price / GBV
Senior	0,0	0,0%	0,0%
Mezzanine	0,0	0,0%	0,0%
Equity	124,7	10,9%	26,0%
Total	**124,7**	**10,90%**	**25,98%**

						IRR 0,00%					IRR 0,00%	IRR 10,90%		IRR 10,90%		IRR 10,90%
		Senior reimbursment					Mezzanine reimbursment					Equity		Total (Mezzanine + Equity) investment		Total investment
Year	Forecasted NCFs (€bn)	Outstanding Balance (€bn)	Interest Payment (€bn)	Principal Payment (€bn)	Total cash back (€bn)	NCFs (€bn)	Outstanding Balance (€bn)	Interest Payment (€bn)	Principal Payment (€bn)	Total cash back (€bn)	NCFs (€bn)	Total cash back (€bn)	NCFs (€bn)	NCFs (€bn)		NCFs (€bn)
0						0,0					0,0		-124,7	-124,7		-124,7
1	17,5	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	17,5	17,5	17,5		17,5
2	35,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	35,0	35,0	35,0		35,0
3	43,8	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	43,8	43,8	43,8		43,8
4	43,8	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	43,8	43,8	43,8		43,8
5	17,5	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	17,5	17,5	17,5		17,5
6	8,8	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	8,8	8,8	8,8		8,8
7	8,8	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	8,8	8,8	8,8		8,8

The result is a significant lower price equal to €125m (25,98% of GBV)

2) For making the two transactions comparable we have to:
   - Keep the same leverage (Debt/Equity ratio) of the GACS transaction so 84,05%;
   - Make an assumption on the cost of debt; it is assumed a cost of debt equal to 5%

Table 14: Transaction without GACS – Leveraged structure Business Plan/Acquisition model

Tranche	Funding	Coupon	Price / GBV
Senior	126,5	5,0%	26,4%
Mezzanine	14,0	6,0%	2,9%
Equity	4,1	15,0%	0,8%
Total	**144,6**	**5,91%**	**30,12%**

						IRR 5,00%					IRR 6,00%		IRR 15,00%		IRR 9,05%	IRR 5,91%
		Senior reimbursment					Mezzanine reimbursment					Equity		Total (Mezzanine + Equity) investment	Total investment	
Year	Forecasted NCFs (€bn)	Outstanding Balance (€bn)	Interest Payment (€bn)	Principal Payment (€bn)	Total cash back (€bn)	NCFs (€bn)	Outstanding Balance (€bn)	Interest Payment (€bn)	Principal Payment (€bn)	Total cash back (€bn)	NCFs (€bn)	Total cash back (€bn)	NCFs (€bn)	NCFs (€bn)	NCFs (€bn)	
0						-126,5					-14,0		-4,1	-18,1	-144,6	
1	17,5	126,5	6,3	10,3	16,7	16,7	14,0	0,8	0,0	0,8	0,8	0,0	0,0	0,8	17,5	
2	35,0	116,2	5,8	28,4	34,2	34,2	14,0	0,8	0,0	0,8	0,8	0,0	0,0	0,8	35,0	
3	43,8	87,8	4,4	38,5	42,9	42,9	14,0	0,8	0,0	0,8	0,8	0,0	0,0	0,8	43,8	
4	43,8	49,2	2,5	40,5	42,9	42,9	14,0	0,8	0,0	0,8	0,8	0,0	0,0	0,8	43,8	
5	17,5	8,8	0,4	8,8	9,2	9,2	14,0	0,8	7,4	8,3	8,3	0,0	0,0	8,3	17,5	
6	8,8	0,0	0,0	0,0	0,0	0,0	6,6	0,4	6,6	6,9	6,9	1,8	1,8	8,8	8,8	
7	8,8	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	8,8	8,8	8,8	8,8	

As forecastable, the price computed in this case (€145m, 30,12% of GBV) is higher than the one obtained in the full equity scenario but still is lower than the one obtained with the use of GACS.

The goal of this simple exercise was to show that the main contribution of the GACS is actually to maximize the benefit of the leverage in a structured finance investment.
In the case above (according to the assumption done), the guarantee (and the rating behind it) allows to lower the perceived risk of the investment within the senior tranche.
As a consequence, senior bondholders will invest at lower rate (compared to the financing rates obtainable by investments banks), lowering down the weighted IRR of the investment with a final benefit in terms of price for the seller.
Keeping the full equity scenario as a base case, the table below will summarize the results between the three scenarios analyzed.

Table 15: Simulation of the effects of the GACS on the final transaction price

Scenario	Scenario description	Debt / Equity	Price (€bn)	Price / GBV	Price / Price scnario 1	Price / Price scnario 2	Price / Price scnario 3
1	Full Equity	0,00%	124,7	25,98%	100,00%	86,24%	82,84%
2	Levereged scenario w/o GACS	84,05%	144,6	30,12%	115,96%	100,00%	96,06%
3	Levereged scenario w GACS	84,05%	150,5	31,35%	120,71%	104,10%	100,00%

For better understanding the impact of the GACS, the study case of Banca Popolare has been generalized and a sensitivity analysis (based on a VBA ad-hoc developed model) is produced.

By deleting the mezzanine tranche, and keeping the same Recovery curve of before, the sensitivity of the final price to the senior tranche ratio, in other words the Debt / (Debt + Equity) ratio is the following (still senior tranche has a 2% coupon and equity tranche 15%):

Table 16: Transaction with GACS, Sensitivity analysis – Total price variation at different senior tranche %

Senior trance on total (D/ (D + E))	Senior tranche (€bn)	Equity (€bn)	Total price (€bn)
40,00%	47,9	71,9	119,9
45,00%	54,7	66,9	121,6
50,00%	61,9	61,9	123,7
55,00%	69,3	56,7	126,0
60,00%	77,0	51,3	128,3
65,00%	85,0	45,8	130,7
70,00%	93,3	40,0	133,3
75,00%	102,7	34,2	136,9
80,00%	112,5	28,1	140,7
85,00%	122,9	21,7	144,6
90,00%	134,1	14,9	149,0

The same analysis has been developed also on the scenario 2 (leveraged without GACS) with different cost of debt (or senior notes coupons) equal to 3%, 4% and 5%:

Table 17: Leveraged transaction, Sensitivity analysis – Total price variation at different senior coupons

Senior coupon = 3%				Senior coupon = 4%				Senior coupon = 5%			
Senior trance on total (D/ (D + E))	Senior tranche (€bn)	Equity (€bn)	Total price (€bn)	Senior trance on total (D/ (D + E))	Senior tranche (€bn)	Equity (€bn)	Total price (€bn)	Senior trance on total (D/ (D + E))	Senior tranche (€bn)	Equity (€bn)	Total price (€bn)
40,00%	47,7	71,5	119,2	40,00%	47,5	71,2	118,7	40,00%	47,2	70,8	117,9
45,00%	54,4	66,4	120,8	45,00%	53,9	65,9	119,9	45,00%	53,6	65,5	119,1
50,00%	61,4	61,4	122,8	50,00%	60,9	60,9	121,8	50,00%	60,4	60,4	120,9
55,00%	68,7	56,2	124,8	55,00%	68,0	55,7	123,7	55,00%	67,4	55,1	122,5
60,00%	76,2	50,8	126,9	60,00%	75,4	50,2	125,6	60,00%	74,6	49,7	124,3
65,00%	83,9	45,2	129,1	65,00%	82,9	44,6	127,6	65,00%	81,9	44,1	126,0
70,00%	92,1	39,5	131,6	70,00%	90,9	39,0	129,8	70,00%	89,7	38,4	128,1
75,00%	101,1	33,7	134,8	75,00%	99,5	33,2	132,7	75,00%	98,0	32,7	130,6
80,00%	110,5	27,6	138,2	80,00%	108,5	27,1	135,7	80,00%	106,6	26,7	133,3
85,00%	120,4	21,3	141,7	85,00%	118,0	20,8	138,8	85,00%	115,6	20,4	136,0
90,00%	131,1	14,6	145,6	90,00%	128,0	14,2	142,3	90,00%	125,2	13,9	139,1

Combining the results, it is possible to create the following sensitivity table that measures the price gap between the scenario with GACS and the scenario with a simple leverage at the variation of both the senior tranche incidence (D / (D + E) and the cost of debt funding (or senior note coupon):

Table 18: Sensitivity analysis – price-gap (GACS vs Leveraged) at the variation of senior coupon & senior tranche

Price gap (price scenario with GACS - price scenario with leverage):

Senior trance on total (D/ (D + E))	Senior coupon / cost of funding			
	3,00%	4,00%	5,00%	6,00%
40,00%	0,7	1,2	1,9	3,3
45,00%	0,8	1,7	2,4	3,9
50,00%	0,9	1,9	2,9	4,9
55,00%	1,1	2,3	3,4	5,9
60,00%	1,4	2,7	4,0	6,7
65,00%	1,6	3,1	4,7	7,9
70,00%	1,7	3,5	5,2	8,7
75,00%	2,1	4,2	6,3	10,4
80,00%	2,5	5,0	7,4	12,1
85,00%	2,9	5,8	8,6	14,1
90,00%	3,4	6,7	9,9	16,1

Price gap (price scenario with GACS - price scenario with leverage)/GBV:

Senior trance on total (D/ (D + E))	Senior coupon / cost of funding			
	3,00%	4,00%	5,00%	6,00%
40,00%	0,14%	0,25%	0,40%	0,69%
45,00%	0,16%	0,35%	0,51%	0,81%
50,00%	0,20%	0,40%	0,59%	1,01%
55,00%	0,24%	0,48%	0,71%	1,23%
60,00%	0,28%	0,56%	0,84%	1,40%
65,00%	0,33%	0,66%	0,98%	1,65%
70,00%	0,35%	0,72%	1,08%	1,81%
75,00%	0,44%	0,88%	1,31%	2,16%
80,00%	0,52%	1,04%	1,54%	2,53%
85,00%	0,61%	1,21%	1,80%	2,93%
90,00%	0,70%	1,40%	2,05%	3,34%

It's important to underline that such results are strictly depending on the choice of the recovery curve; a longer WAL of the investment would lead to higher benefits from the use of GACS.
Despite the positive results that are possible to be obtained through the use of GACS, such tool has not been used so far, after the case of Banca Popolare di Bari.
The main reasons are the concerns of the operators around the complexity of such instrument.
The use of GACS involves new players into the transaction, such as the rating agency and the members of the Ministry of Economics.
This implies an higher grade of complexity, longer time for finalizing the operations and additional due diligence costs that scare sellers and buyers that have finally preferred not to use such instrument (as proved by the numbers of trades done without GACS since the origination of the GACS tool).
GACS is still a matter of study for many investment company (mainly foreign) that look at it with a mix of interest and concern.

4.3 Atlante

Atlante is an Italian private equity fund that is dedicated to recapitalize some Italian banks, as well as purchase the securities of the junior tranches of non-performing loans.
The fund was under regulated by EU Alternative Investment Fund Managers Directive.
The creation of Atlante was a further step of the Italian government and of the market operators for trying to help the Italian banking system that is experiencing a deep crisis, that is getting even worse in the recent years (see chapter 2).
The declared goals of the fund are:

- To insure the success of the capital increases required by the Autorità di Vigilanza for those banks that are facing objective market/financial difficulties;
- To help in fixing the Italian NPLs issue.

The fund is managed by Quaestio Capital Management SGR S.p.A., a wholly owned subsidiary of Quaestio Holding S.A., which is owned by Fondazione Cariplo (37,65%), Fondazione Cassa dei Risparmi di Forlì (6,75%), Cassa Italiana di Previdenza e Assistenza dei Geometri liberi professionisti (18%), Locke S.r.l. (22%) and Direzione Generale Opere Don Bosco (15,60%).
The financial goal of Atlante is an annual return rate of 6% (lower if compared to the IRRs of investment funds investing in distressed assets) with a temporal horizon of 5 years (extensible to additional 3 years).
On 29 April 2016 Quaestio announced that the fund had collected €4,249 billion from 67 investors including Cassa Depositi e Prestiti (CDP).
The funds came from Italian banks (around 3bn), Italian banks foundations (around €500m), Cassa Depositi e Prestiti (around €500m) and Insurance companies (around €250m).
In detail, in order from the largest to the least share (interesting to notice the some of the banks that have issues with the NPLs stock are putting consistent shares in Atlante):

- Unicredit (€845m);
- IntesaSanpaolo (€845m);
- Cassa Depositi e Prestiti (€500m);
- Poste Vita (€260m);
- UBI Banca (€200m);
- Compagnia SanPaolo (€100m);
- Fondazione Cariplo (€100m);
- Banca Popolare di Milano (€100m);
- Banca Popolare dell'Emilia Romagna (€100m);
- UnipolSai (€100m);
- Credito Valtellinese (€60m);
- Fondazione CR Torino (€50m);
- Banca Mediolanum (€50m);
- MPS (€50m);
- Banca Popolare di Sondrio (€50m);
- Banco Popolare (€50m);
- Allianz (€50m);
- Credit Ras Vita (€50m);
- Generali Beteiligungs (€50m);
- Fondazione CR Padova e Rovigo (€40m);
- Popolare di Bari (€40m);
- Iccrea Banca (€40m);

- Generali Italia (€40m);
- Reale Mutua (€30m);
- Ente CR Firenze (€27m);
- Fondazione CR Lucca (€27m);
- Alleanza (€25m);
- Fondazione CR Cuneo (€20m);
- Fondazione CR Modena (€20m);
- Fondazione CR Parma (€20m);
- Fondazione di Sardegna (€20m);
- Carige (€20m);
- Cattolica (€18m);
- Genertellife (€15m);
- Lombarda Vita (€13m);
- Fondazione Banca del Monte di Lombardia (€10m);
- Fondazione CR Forlì (€10m)
- Fondazione CR Carpi (€10m);
- Fondazione CR Perugia (€10m);
- Fondazione CR Pistoia e Pescia (€10m);
- Fondazione CR Udine e Pordenone (€10m);
- Popolare di Puglia e Basilicata (€10m);
- Banca Sella (€10m);
- CR Asti (€10m);
- CR Bolzano (€10m);
- Generali Espana (€10m);
- Generali Versicherungen (€10m);
- Fondazione CR La Spezia (€8m);
- Fondazione CR Ascoli Piceno (€8m);
- Fondazione CR Piacenza e Vigevano (€8m);
- Fondazione CR Ravenna (€8m);
- Fondazione CR Reggio Emilia - Pietro Manodori (€8m)
- Fondazione del Monte di Bologna e Ravenna (€8m);
- Banco Desio (€7m);
- Banca di Piacenza (€5m);
- Popolare Alto Adige (€5m);
- Popolare Pugliese (€5m);
- Icbpi (€5m);
- Banca Valsabbina (€5m);
- BCC Vita (€5m);
- Vittoria Assicurazioni (€5m);
- Fondazione Livorno (€4m);
- Berica Vita (€4m);
- Banca di Credito Popolare (€3m);
- Banca Galileo (€1m);
- Popolare di Cividale (€1m);
- CR Ravenna (€1m)

The declared (published on Quaestio Capital website) allocation of such resources between the two main goals of the fund was to invest as follows:

- Up to the 70% of the capital (around €2,97bn) into the capital increases for the Italian banks in need as required by the Autorità di Vigilanza (within the SREP framework).

The injection of capital into banks will be done:

- By underwriting shares on sale into the stock market, through agreements with one or more members of underwriting syndicate or through private placement to the fund or co-investment;
- The fund is allowed to purchase a maximum share of 75% for each single issue, unless the underwriting of an higher stake is necessary for the successful completion of the capital increase operation.
- Atlante can't invest in capital increase if this involves a subsequent forced takeover (Offerta Pubblica di Acquisto, OPA);
- Atlante won't exercise any management activities into the banks it has invested in, but will be allowed to set up operations of co-investment and/or partnership together with other investors.

- at least 30% of the capital (around € 1,27bn) for the purchase of Italian banks NPLs. Atlante will invest in junior tranches within operations of NPLs (both secured or unsecured) securitization.
  After the end of June 2017, all the capital not invested in capital increases will be allocated to investments in NPLs.

The first trade closed by Atlante was the subscription of the entire capital increase of Banca Popolare di Vicenza (BPVi) after Borsa Italiana rejecting the listing of the bank.
On April 2016 only 5 thousands old shareholders (out of 120 thousands) subscribed the new capital increase of the bank, representing only the 7,66% that was very far from the threshold set by Banca d'Italia at 25%.
Due to low demand on IPO, the entire capital increase of €1,5 billion was then subscribed by Atlante and some other private subscriptions were automatically canceled due to the bank fail to float in the Borsa Italiana stock market.
In detail, Atlante subscribed 15bn new ordinary shares emitted by the bank at the price of €0,1 per share for a total subscription of €1,5bn.
After the operation, Atlante owned the 99,3% of the total capital of the bank.
However Atlante operated as anchor investor with the only aim to save and revitalize the bank in trouble.
Similar operation was done for saving Veneto Banca.
At the end of June 2016, only the 2,2% of the shareholders subscribed the new capital increase of Veneto Banca.
As per BPVi the threshold was fixed by Banca d'Italia at 25%.
Existing shareholders excised rights of withdrew and bought just 2,2% of the new capital increased while Atlante, became the majority shareholder, which subscribed €988.582.329,50 out of €1 billion new shares of the bank, owning 97,64% shares of the bank.
the bank's CET1 ratio was increased to an estimated 11% immediately after the capital increase, despite decreased to 10,74% on 30 June 2016.
In short time Atlante invested around €2,5bn for capital increase of banks in troubles.
Despite the effort and the large investment of Atlante (€3,5bn) into BPVi and Veneto Banca, later on June 2017 the European Central Bank and the Single Resolution Board determined Veneto Banca and sister bank BPVi were insolvent.
On 25 June 2017, the Italian Government enacted the – controversial - Decree n.98 stating the acquisition of "certain" asset for a total amount of €45,9bn (not including the NPLs) and "certain" liabilities for a total amount of €51,3bn of Banca Popolare di Vicenza and Veneto Banca by Intesa Sanpaolo (the difference of €5,4bn will be registered as a credit of Intesa towards the liquidation procedure).

Intesa (that together with Unicredit was the major shareholder of Atlante; €845m invested) paid a symbolic price of €0,5 for each bank for a total of €1, cherry-picking assets and liabilities within the balance-sheets of the two banks, while the liquidation of the NPLs stock will be done through the public Bad Bank "SGA" (see chapter 2 for further details).
On the NPLs acquisition side, on August 8th 2016 Atlante II have raised €1.715bn in order to finance the purchase of NPLs; such amount was the residual fund of Atlante (€4,25bn) after the capital increase of BPVi and Veneto Banca (around €3,5bn employed).
At the beginning of 2017, Atlante II acquired €2,2bn NPLs (80% secured) from Banca Marche, Banca Etruria e CariChieti for a total investment of €713m (around 32% of GBV).
The operation finally allowed UBI to conclude the purchasing of the three "good banks" Banca Marche, Banca Etruria e CariChieti.
A similar transaction was done on June 2017, when Quaestio Capital Management SGR purchased through Atlante II, €343m NPLs portfolio from Nuova Cassa di Risparmio di Ferrara S.p.A, after the NPLs were transfered to the bad bank REV.
As per UBI, the sale of the NPLs portfolio allowed BPER to acquire Nuova Cassa di Risparmio di Ferrara S.p.A.
The portfolio was composed by Unlikely to Pay and Non-Performing Loans of which 48% secured loans and the remaining 52% unsecured loans.
The price paid was around 19% of the GBV.
The due diligence was done with the assistance of Credito Fondiario that will be appointed also for the role of master servicer.
As by the most recent updates, on July 2017 Quaestio Holding has been formally involved into the full dismission of the NPLs of MPS.
The operation involves a total of €28,6bn (date up to YE-2016) of which €26,1bn will be object of the securitization while the remaining €2,5bn should be sold separately through dedicated operations.
The price should be around €5,5bn, equal to 21% of GBV, that compared to the NBV of €9,4bn would generate a loss of €3,9bn.
Atlante II will purchase the 95% of the Junior and Mezzanine tranches emitted by the SPV that will purchase the full portfolio.
The senior tranche will be kept by MPS with the aim to sell it to the market once it got the rating and the GACS guarantee.
As agreed between the parties, in case the return of the operation will exceed the threshold of 12%, the 50% of such surplus will directly reimburse MPS (earn-out scheme).

As described above, so far the results of Atlante intervention for the capital increases were poor and the choice of investments have arised some disputes.
Regarding the investments in NPLs, as described above the intervention of Atlante allowed the banking system to fix some important issues, but since its origination Atlante appeared clearly undersized for facing the Italian NPLs stock issue.
So far Atlante was a short term measure for the benefit of the smaller banks rather than a final solution for the banking system issues, since the size of the fund is simply not sufficient to address the cash calls of the larger banks and then deal with the vast amount of NPLs across all Italian bank balance sheets.

4.4 Systemic alternatives for the NPLs resolution

At the light of the analysis of the current processes on place for the resolution of the Italian NPLs, such as the sale of the NPLs portfolios on the open market, the public initiatives of the GACS and Atlante and considering the large stock of NPLs (see chapter 2) that is burdening the Italian banking system and all its consequences (see chapter 3), it is rational to assume that still a massive intervention would be needed and probably more than welcome.
The Italian NPLs secondary market has effectively revealed its inefficiencies while GACS so far wasn't a very effective tool as its application was very limited (mainly due to its complexity).
The analysis of Atlante II showed that the fund was sensitively undersized for properly facing the Italian NPLs stock and the majority of the capital was used for supporting banks capital increases.
Considering the above, this chapter will explore an example of a viable systemic alternative, by analyzing the recent EBA's proposal of a European Asset Management Company (ACM).
After that, going back to the origin of the problem (as better illustrated in chapter 3, the high stock of NPLs is one of the consequences of the 2008 financial crises), the paper will illustrate the systemic measures adopted by the US government after 2008, trying to get interesting hints to be applied into the context of our interest.

4.4.1 European ACM – The bad bank alternative

A bad bank is a corporate structure created for isolating illiquid and/or high risk assets held by a bank or a financial organization, or a group of banks or financial organizations.
If a bank accumulates a large portfolio of debts or other financial instruments that burden its balance-sheet generating financial issues (see chapter 3) also making it difficult for the bank to raise capital, in such circumstances, the bank may wish to segregate its "good" assets from its "bad" assets through the transfer of the bad assets to a bad bank.
The goal of the segregation is to allow investors to assess the bank's financial health with greater certainty.
The creation of a bad bank can be part of a bank's strategy to deal with a difficult financial situation, or by the government or other official institution as part of an official response to financial problems across a number of institutions in the financial sector.
In addition, the creation of a bad bank allows (besides removing the bad assets from the original bank's balance sheet) good banks to focus on their core business of lending while the bad bank can specialize in maximizing value from the recovery of bad assets under management with a final benefit for the entire system.
The original purpose of the bad bank institutions was to address challenges arising during an economic credit crunch to allow private banks to take problem assets off their books.
In fact after the financial crisis of 2007–2008 several bad banks have being set up in several countries (i.e. Spain, Ireland and Portugal).
The main critics around bad banks argue that:

- Knowing that the bad bank will take over non-performing loans, will boost moral hazard in risk-taking for banks, that may take undue risks, which they otherwise would not.

- The option of handing the loan over to the bad bank becomes essentially a subsidy on corporate bankruptcy.

Bondholders are given an incentive to sue for bankruptcy immediately, instead of developing a company that is temporarily unable to pay.
The bankruptcy makes such loan eligible for sale to a bad bank, becoming a subsidy for banks on the expense of small businesses.

According to Gaffeo & Mazzocchi (2017), despite after the financial crisis some bad banks have been created with the use private capital in order to deal with specific assets classes, this was done on a relatively small scale.
At the time being, as per chapter 2, the NPLs issue has assumed systemic proportions.
Therefore purely private sector solutions are not deemed as sufficient to properly address all these problems.
Recently, at the beginning of 2017, the establishment of a common European AMC (Asset Management Company), so according to our dictionary bad bank, has been proposed by the Chairperson of the European Banking Authority (EBA) Andrea Enria.
Such hypothesis was already introduced by Mr Vítor Constâncio, Vice-President of the European Central Bank during an event on February 2017, as a viable solution for the NPLs.

According to Enria (2017), a common European approach for a government-sponsored asset management company, with a segmentation by geography and/or asset class, could provide the following benefits:

- Enhancing clarity and simplicity for both sellers (banks) and buyers.
  Such structure would allow the counterparties to better understand the interaction with relevant state aid and Bank Recovery and Resolution Directive (BRRD) rules and the underlying data and mechanisms of the AMC;

- Enhancing the credibility of the initiative while ensuring that due process is followed in the implementation phase;

- Providing lower funding costs and an increase in operational efficiency (as explained above, the bad bank would be focused and specialized in the management of the bad assets);

- Reaching a critical mass on both the supply and the demand side, helping accelerate the process of disposal of the NPLs stock improving banks' balance sheets.

According to the paper published by the EBA members Quagliarello & Haben (February 2017, Central Banking) the process for establishing the AMC would be designed as follows:

1) First of all, banks are submitted to stress tests.
   The results of such tests (simulating adverse provisioning scenarios over a three-year horizon) are used to identify the area of intervention of the ACM and the amount of the potential state aid for each bank.
   The stress test may also, identify the need for the immediate resolution (i.e. for banks failing in the baseline scenario) and immediate recapitalization.
   In addition it will be determined how much state aid could be used to facilitate the transfer of NPLs, which would be equal to the difference between current market prices (CMP) and real economic value (REV).

2) For determining the REV the purchaser will make a detailed due diligence, analyzing the assets object of the sale.

The seller provides full data sets available to potential investors.
The sale of NPLs to the AMC takes place at a price equal to their REV and the transfer price should reflect the market value of NPLs in the absence of market failures.
The higher the level of banks provisioning for the selected pool of loans, the more the REV would approximate the NBV (net book value), reducing the potential loss for the seller.
Banks would not be formally obliged to carry out the sale, but should be pushed to do it by supervisory authorities if the results of the stress test of 1) would require it.

3) If the REV, so the transfer price, would be lower than the NBV, such difference would first hit the existing shareholders and in case by junior debt through a bail-in mechanism according to the European Commission under state aid rules.

4) Within a specified time (apparently set at 3 years) frame specified at the time of purchase, the ACM is committed to recover the loans, selling it on the second market.
The selling price for these transactions represents the CMP.

5) If the selling price on the secondary market (CMP) would be lower than the REV, the difference (loss) is charged ex-post to the originating bank through the activation of a clawback clause.
The aim of this clawback clause is to avoid moral hazard issues by the seller, that in this way has no interest in selling at a too high price.
The clawback would not involve any return of assets to the banks' balance sheet while it would take the form of a parallel issue of equity warrants (if the bank can't directly afford the loss) to national governments (in order to avoid different countries taking losses for foreign banks) at the time of the asset sale to the AMC, with a strike price which would be triggered if the final sale price is lower than the real economic value.
To absorb these potential losses, banks should issue stock warrants that would allow the State to subscribe new capital at an exercise price.
In order to reduce moral hazard by participating banks, the strike price of the warrant should be penalizing for the issuer.

Analyzing the EBA's proposal both strengths and weaknesses emerged; these will be summarized below.

Strenghts:

- The proposal is systemic and would offer to banks an opportunity to speedily remove problematic assets from the balance sheet at an efficient clearing price.
The achievement of a satisfactory critical mass of exchanged NPL volumes should be reached as the ACM would purchase NPLs at an higher price compared to the market that theoretically should be close to the NBV (because of lower expected returns)

- The proposal encourages the standardization of classification schemes and increases the transparency over NPLs transactions, creating benchmarks and information made available to investors

- Eventual losses won't get by the ACM but by the original seller and, through the warrants by the Country of origin of the bank, avoiding the mutualization among EU member states, that represents one of the major deterrent (political issue) to the creation of a European bad

bank (Germany opposed yet to an ACM alternative because of the mutualization/burden sharing of potential losses among the EU members).

Weaknesses:

- The presence of the clawback clause could potentially prevent a full removal of loans from banks' balance sheets.
  Indeed, to allow for the derecognition of a financial asset, the IAS-39/IFRS-9 standard requires that all the risks and rewards related to written-off assets are effectively transferred, therefore the presence of the warrant would not allow such a derecognition (Gaffeo, 2017).

- In case the ACM wouldn't get CMPs greater than REVs (such hypothesis sounds real as the ACM, by nature would invest at a lower IRR compared to the secondary market leading to higher prices for the sellers), the ACM would have the only effect to postpone the losses generated by the NPLs with a direct involvement of the public money and the period of 3 years seems too short for benefiting of an improvement of the economics conditions the system should experience because of the "NPLs" fixing (see chapter 3 for understanding potential benefits).

- The proposal doesn't detail the complexity of the creation of a bad bank.
  Setting up a bad bank would imply time and costs (considerable part of those fixed) that may affect the efficiency of the solution itself.
  In addition, given that European banks and therefore the credit recovery processes work in multiple jurisdictions a successful centralized solution should also have the needed skills for handling different and specific judicial frameworks.

However, despite the number of critics and negative feedbacks received and besides the accounting issue for the derecognition of the assets, with an extension of the timing for the clawback clause, the proposal may look more attractive.
In fact, it would be reasonable to assume that an "immediate" deconsolidation of the Italian banks NPLs combined with a longer time for the clawback clause may allow the Italian banking system and the economy to restart, creating those conditions that may adding value for the recovery of the NPLs and therefore rising their CMP (i.e. higher employment rate and GDP and a better Real estate market).

4.4.2 TARP – US strategy overview

The Troubled Asset Relief Program (TARP) is a program of the United States government to purchase toxic assets and equity from financial institutions to strengthen its financial sector after the subprime mortgage crisis.
TARP was signed into law by President George W. Bush on October 3, 2008 as a component of the government's measures in 2008 (the Emergency Economic Stabilization Act, EESA) to address the subprime mortgage crisis.
The act granted the Secretary of the Treasury authority to either purchase or insure up to $700bn in troubled assets owned by financial institutions.
The general purpose was that by removing such assets from the financial system, confidence in counterparties could be restored and the system could resume functioning.
The definition of "troubled asset" was actually broad allowing the Secretary wide latitude in deciding what assets might be purchased or guaranteed.
In detail the definition of "troubled asset" was the following (Congress Budget Office, The Troubled Asset Relief Program: Report on Transactions Through December 31, 2008):

1) Residential or commercial mortgages and any securities, obligations, or other instruments that are based on or related to such mortgages, that in each case was originated or issued on or before March 14, 2008, the purchase of which the Secretary determines promotes financial market stability;
   and
2) Any other financial instrument that the Secretary, after consultation with the Chairman of the Board of Governors of the Federal Reserve System, determines the purchase of which is necessary to promote financial market stability, but only upon transmittal of such determination, in writing, to the appropriate committees of Congress.

In July 2010, the financial regulation reduced TARP's spending cap to $475bn from the original $700bn.
As per 2008 data, the cost of a $475 billion bailout would be around $1.5k estimated cost per American (based on an estimate of 305 million Americans), or around $2k per working American (based on an estimate of 151 million in the work force).
After the announcement of EESA, the TARP Capital Purchase Program on October 14, 2008 was designed, and several other programs followed.
These programs can be broadly broken down into Bank Support Programs, Credit Market Programs, Other Investment Programs, and Housing Programs with several sub-programs within these categories.
For the purpose of this paper only programs related to Bank Support Programs, Credit Market Programs will be detailed and described.
Anyway the full picture of the investments through all the programs is reported (Troubled Asset Relief Program (TARP): Implementation and Status, Webel, 2013):

Bank Support Programs:

1) Capital Purchase Program (CPP):
   The CPP purchased preferred shares in banks (Preferred stock is an equity instrument, but it does not confer any control over the company and typically has a set dividend rate to be paid by the company; it is similar economically to debt, but accounted for as equity).

As for the terms, the Treasury purchased preferred shares in the banks that had dividends with a rate of 5% for the first five years, and 9% thereafter; this was done for stimulating banks to buy-back the shares after the 5th year.
Treasury also received warrants to purchase stock in the companies at a set price.
The resulting addition of capital should have allow banks to overcome the effect of the toxic assets while the assets remained on bank balance sheets.
CPP profits come from dividend payments and warrants received from recipients, and capital gains (in those limited cases when shares are sold for more than face value).
Also other profits come from the sale of the warrants received.
Losses instead come from failure to repay in part or full.

2) Targeted Investment Program (TIP):
This program provided for exceptional preferred share purchases and was used only for Citigroup and Bank of America.
Since the CPP was notionally for 'healthy' banks, Treasury announced this help had been given via the Targeted Investment Program, which it explained was for struggling companies whose failure could damage the financial system.
As per the CPP profits came from dividends and warranties (but with different conditions compared to CPP).

3) Asset Guarantee Program (AGP):
The AGP provided guarantees that were also part of the exceptional assistance to Citigroup and Bank of America.
No cash were actually distributed to Bank of America as the agreement wasn't finalized (income is due to the fee paid to TARP) while for Citigroup OFS (Office for financial Stability), along with the Federal Reserve, and the FDIC guaranteed a $301 billion pool of Citigroup's covered assets.
Of the $301 billion, OFS guaranteed coverage for $5 billion in potential losses.
The loan guarantee is not recognized as an obligation, but rather a commitment, per credit reform accounting standards.

4) Community Development Capital Initiative (CDCI):
The CDCI provided for lower dividend rates on preferred share purchases from banks that target their lending to low-income underserved communities and small businesses.
These preferred shares pay an initial dividend rate of 2%, which will increase to 9% after eight years. Unlike the CPP, no warrants in the financial institutions were included.

Credit Market Programs:

5) Public-Private Investment Program (PPIP):
This program provides funds and guarantees for purchases of mortgage-related securities from bank balance sheets.
Purchases and management of the securities is done by private investors (between the investors that took part to the program we find also Oaktree Capital and Blackrock that as per chapter 2 are looking with interest the Italian NPLs market) who have provided capital to invest along with the TARP funds.
The program was intended to address one of the roots of the financial crisis, purchasing the hard-to-value mortgages and asset-backed securities on banks' balance sheets.

Under the program the government both invested alongside private investors and provided them cheap financing (leveraging) in the hope that with the extra help, the private investors would reach a price at which they're willing to buy and banks are willing to sell.
Within the PPIP the resources (equity) was dedicated in 2 different sub-programs:

- The Legacy Loan Program:
  for acquiring troubled loans already on a bank's balance sheet;
- Legacy Securities Program:
  designed to deal with existing mortgage-related securities on bank balance sheets.

6) Term Asset-Backed Securities Loan Facility (TALF):
   The program was operated by the Federal Reserve to support the asset-backed security market, with TARP funds committed to support the program and absorb initial losses.
   In other words, TALF was designed in order that income accrues to the Fed with possible losses and some expenses accruing to the Treasury.
   Along with the time the amount was reduced multiple times, because the program had experienced no losses and any recourse to TARP funds was deemed unlikely.
   In January of 2013, the Treasury announced that its participation in the program was ending.
   Over the course of the program, all of the loans have been repaid with interest, resulting in a profit.

7) Securities Purchase Program:
   This program supported the Small Business Administration's (SBA's) through purchases of pooled SBA guaranteed securities to increase credit access for small businesses.

Other programs:
These programs mainly focused on the assistance of the large US insurance company AIG (American International Group) and other leaders company of the automotive industries such as General Motors (GM) and Chrysler.

Housing programs:
These programs are unlike the other TARP programs in that they do not result in valuable assets or income in return for the TARP funding.
The main goals of such program was:

- To pay mortgage servicers if they modify mortgages to reduce the financial burden on homeowners;
- To provide aid to state housing finance agency programs in states that have high unemployment rates or experienced the steepest declines in home prices;
- To refinance mortgages on "underwater" properties, those on which the mortgage balance is greater than the current value of the house.

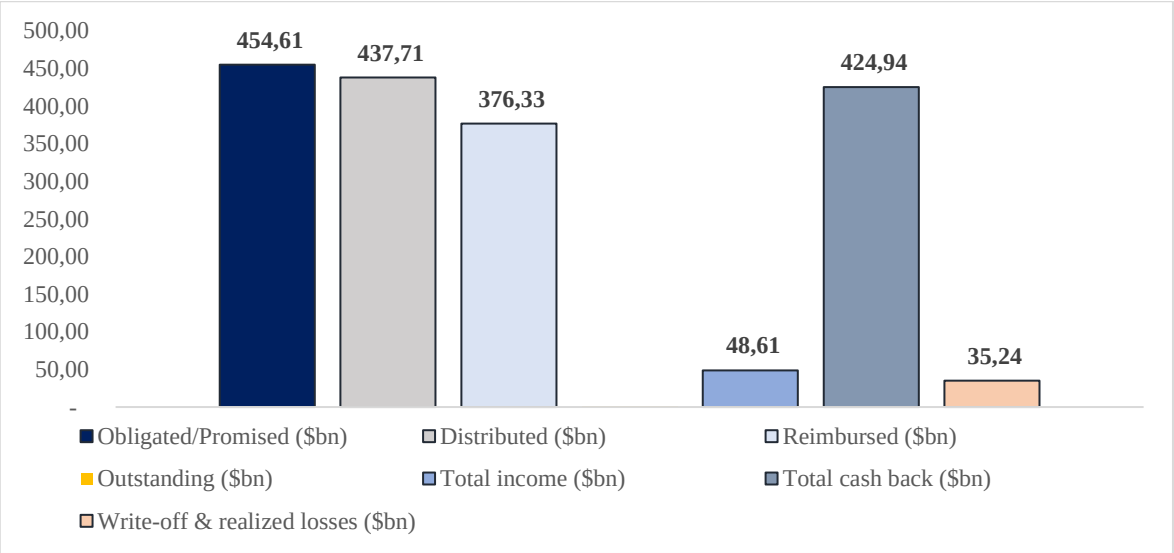
After having introduced and summarized most of the programs, it is useful now to illustrate the capital allocations of TARP among the above projects and the returns obtained.
The table below is an updated (August 2017) picture of the TARP investments, where the total income is comprehensive of dividends, interests, warrants sold, other income/expenses.

Table 19: TARP program funding – Summary table (2008 – 2017)

Area of intervention	Program	Obligated/ Promised ($bn)	Distributed ($bn)	Reimbursed ($bn)	Outstanding ($bn)	Write-off & realized losses ($bn)	Total income ($bn)	Total cash back ($bn)	Total cash back/distributed incremental
Bank support program	**Capital Purchase Program (CPP)**	**204,90**	**204,90**	**199,31**	**0,06**	**5,17**	**27,08**	**226,39**	**10,49%**
	Banks with assets >= $10bn	165,33	165,33	162,55	-	2,78	17,02	179,57	8,61%
	Banks with assets < $10bn	14,57	14,57	11,76	0,06	2,39	2,22	13,98	-4,05%
	Citigroup Common	25,00	25,00	25,00	-	-	7,84	32,84	31,36%
	Targeted Investment Program (TIP)	**40,00**	**40,00**	**40,00**	-	-	**4,43**	**44,43**	**11,08%**
	Bank of America	20,00	20,00	20,00	-	-	2,67	22,67	13,35%
	Citigroup	20,00	20,00	20,00	-	-	1,76	21,76	8,80%
	Asset Guarantee Program (AGP)	**5,00**	-	-	-	-	**4,13**	**4,13**	
	Bank of America	-	-	-	-	-	0,28	0,28	
	Citigroup	5,00	-	-	-	-	3,85	3,85	
	Community Development Capital Initiative (CCDI)	**0,57**	**0,21**	**0,45**	**0,09**	**0,03**	**0,06**	**0,51**	**142,86%**
	Total bank Support programs	**250,47**	**245,11**	**239,76**	**0,15**	**5,20**	**35,70**	**275,46**	**12,38%**
Credit Market program	**Public-Private Investment Program (PPIP)**	**18,63**	**18,63**	**18,63**	-	-	**3,85**	**22,48**	**20,67%**
	Term Asset Backed Securities Lending Facility	**0,10**	**0,10**	**0,10**	-	-	**0,68**	**0,78**	**680,00%**
	Purchase SBA Securities (SBA)	**0,37**	**0,37**	**0,36**	-	-	**0,01**	**0,37**	**0,00%**
	Total Credit Market program	**19,10**	**19,10**	**19,09**	-		**4,54**	**23,63**	**23,72%**
Other programs	**American International Group (AIG)**	**67,84**	**67,84**	**54,35**	-	**13,48**	**0,96**	**55,31**	**-18,47%**
	Automotive Industry Financing Program (AIFP)	**79,69**	**79,69**	**63,13**	-	**16,56**	**7,41**	**70,54**	**-11,48%**
	Total Other programs	**147,53**	**147,53**	**117,48**	-	**30,04**	**8,37**	**125,85**	**-14,70%**
Housing	**Treasury Housing Programs Under TARP**	**37,51**	**25,97**	-	-	-	-	-	
Total	**Total TARP program**	**454,61**	**437,71**	**376,33**	**0,15**	**35,24**	**48,61**	**424,94**	**-2,92%**

Aggregating the seven main components, it is possible to obtain the following picture and to isolate losses and returns:

Figure 23: TARP program funding – Aggregated CFs (2008 – 2017)



Source: US department of Treasury Monthly TARP Update for 08/01/2017

Focusing on the Bank Support Programs, Credit Market Programs only:

Table 20: TARP program – Focus on Bank Support & Credit Market programs

	Obligated/ Promised ($bn)	Distributed ($bn)	Reimbursed ($bn)	Outstanding ($bn)	Write-off & realized losses ($bn)	Total income ($bn)	Total cash back ($bn)	Total cash back/distributed incremental
Total bank Support programs	**250,47**	**245,11**	**239,76**	**0,15**	**5,20**	**35,70**	**275,46**	**12,38%**
Total Credit Market program	**19,10**	**19,10**	**19,09**	**-**	**-**	**4,54**	**23,63**	**23,72%**
Total	**269,57**	**264,21**	**258,85**	**0,15**	**5,20**	**40,24**	**299,09**	**13,20%**

These two programs are actually the most interesting for the purpose of this paper.
In fact, the goal of the Bank support program is conceptually not far from the bailout operations Atlante is doing with the capital increases of the Italian banking system.
Going forward we may evaluate the TARP Credit Market program as a possible case study for the way out of the Italian NPLs.
In fact, the TARP Credit Market program was intended to leverage private funds with government funds to remove troubled assets from bank balance sheets.
Actually this is the closer program to the original definition of TARP than other TARP programs.

In particular, the Legacy Loan Program seems to propose an interesting solution for the resolution of the NPLs.
Besides the seller, the program involves:

- The FDIC (Federal Deposit Insurance Corporation) that provides oversight for the formation, funding, and operation of a the fund that will purchase assets from banks.
  In addition, FDIC provides a guarantee for debt financing issued by the PPIF to fund the asset purchase.
  The FDIC's guarantee will be collateralized by the purchased assets and the FDIC will receive a fee in return for its guarantee.
- The Treasury will manage its investment on behalf of taxpayers to ensure the public interest is protected.
  The Treasury intends to provide 50% of the equity capital for each PPIF.
- Private investors that will contribute for the remaining 50% of equity and will retain control of asset management, subject to rigorous oversight from the FDIC.

Institutions of all sizes are eligible to sell assets under the Legacy Loans Program.
At the beginning of the process the bank have to select the assets it wants to sell and communicate them to the FDIC.
Assets eligible for the sale will be determined together by the participating banking organizations, the FDIC, and the Treasury.
In order to protect taxpayer dollars from credit losses, the FDIC will employ contractors to analyze the pools and will determine the level of debt to be issued by the PPIF that it is willing to guarantee. Such level can't exceed a 6-to-1 debt-to-equity ratio.
The final eligible pool of loans, will then be put in auction by the FDIC to qualified bidders.
The private investors will be invited to bid for contributing an amount equal to 50% of the equity for the PPIF with the Treasury putting the remaining.
The winning bid for this equity stake together with the amount of debt the FDIC is willing to guarantee (based on a predetermined debt-to-equity ratio), will define the price offered to the selling bank.

At the end of the process the bank can decide whether to accept the offer price or reject it.
Once the transaction is completed, the private capital partners will control and manage the assets until final liquidation, subject to strict oversight from the FDIC.
The mechanism will be explained through an example.

Example:

Pool on sale: Residential mortgages with a face value of $100m;
FDIC leverage determination (after analysis as of above): 5-to-1 debt-to-equity ratio;

FDIC puts the portfolio on sale in an auction mechanism in order to make private buyers submitting bids.
It is assumed that the highest bid from the private sector is $60m (this defines the total price that will be paid for the portfolio).
According to the leverage previously determined by the FDIC, the Treasury and the private investor would split the $10m equity portion ($5m each)
The new PPIF would issue debt for the remaining $50m of the price and the debt would be guaranteed by the FDIC.
This guarantee would be secured by the purchased assets.
The private investor would then manage the servicing of the portfolio and the timing of its disposition on an ongoing basis, using asset managers approved and subject to oversight by the FDIC.

Despite the criticisms (also some frauds took place because of lack of adequate supervision, as in October 2011 quarterly report to Congress, the Special Inspector General for the Troubled Asset Relief Program reported "more than 150 ongoing criminal and civil investigations") around the TARP programs (mostly for the high use of the leverage, seen as one of the causes of the 2008 crises and of public taxpayers money), the TARP is an interesting study case for the valuation of an investment scheme where public and private money combine for investing in banks' bad assets.
As anticipating at the beginning of this section, the goal of this high-level analysis was to explore the TARP mechanism in order to get hints and ideas that could be applied within the area of our interest (i.e. the Italian NPLs market) rather than analyzing the its implications and performances.
Summarizing:

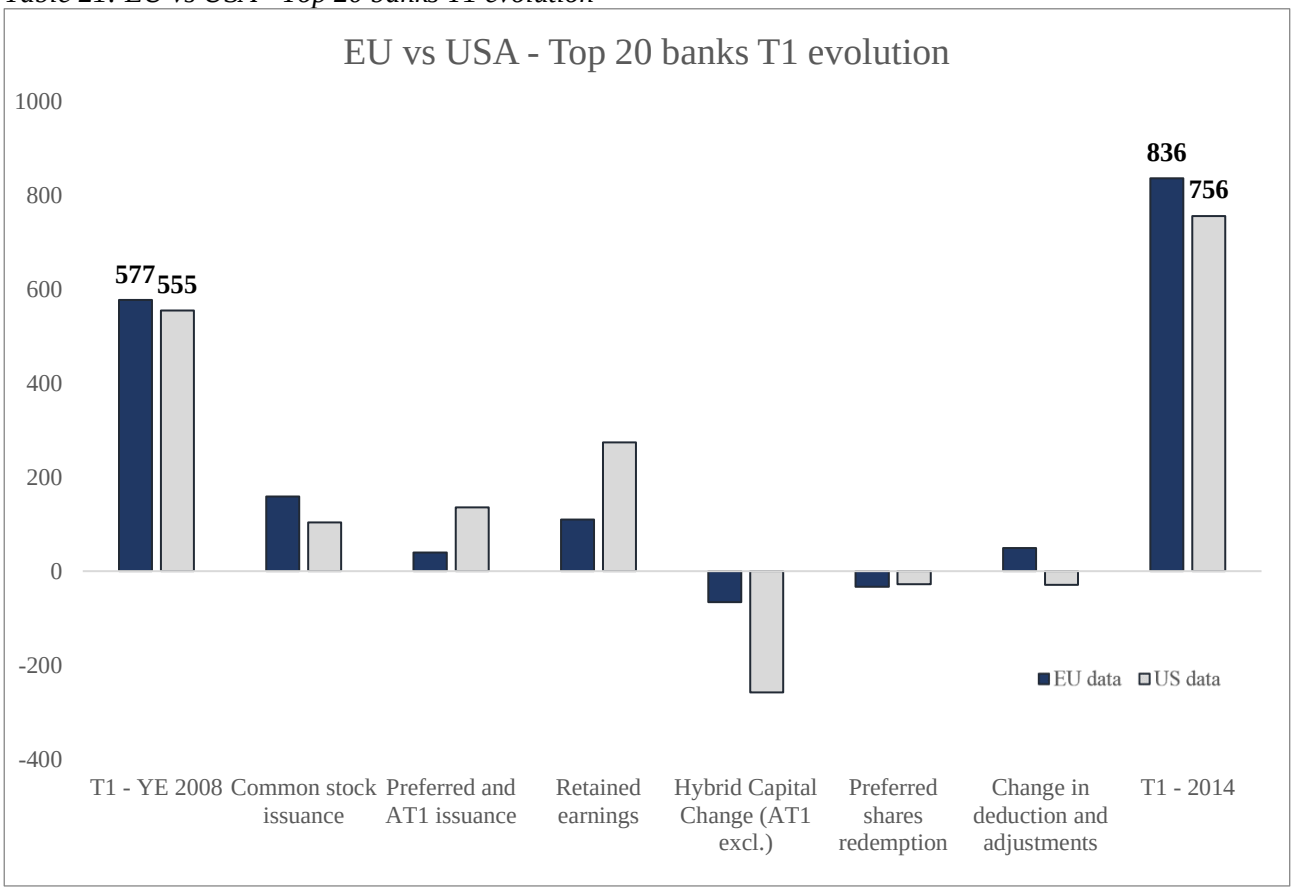
- The Legacy Loan Program provided a massive, regulated and prompt intervention for the management of US illiquid assets;

- The equity co-investment component was designed to well align public and private investor interests; this should maximize the long-run value for U.S. taxpayers.
  In particular, a good way to protect taxpayers was to ensure that the government is not paying more for assets than their long-run value as determined by private – often more specialized - investors.
  Since The Legacy Loan Program funds will be invested together with private capital on similar terms, this reduces the likelihood that taxpayers will be overpaying.
  At the same time the mechanism doesn't exclude taxpayers to get potential upside in case the investment will overperform.
- The plan is designed to help reduce the liquidity discounts contained in legacy asset prices in the near-term and with the use of the leverage should produce attractive price for the sellers.

- Potentially the program can boost private demand for distressed assets, attracting investors with good returns at a lower commitment (Equity is shared between Treasury and private investors).

Concluding, as underlined by Enria (Challenges for the future of banking), comparing the adjustment process of EU and US banks, it is interesting to notice that, at the end of 2008, the amount of Tier 1 (see appendix IV for the definition of Tier I) capital of the top 20 banks in the US and in the EU was almost the same (€555bn for the US banks and €577bn for the EU banks).
The analysis shows that after 6 years, the EU banks have increased capital (Tier I) more than their American competitors (+45%, against +36%).
Looking at the data, US banks have issued more capital (especially preferred stocks), but also through the measures adopted within the TARP program, they also made significantly more buy-backs.
As a final result, the net increase of capital since the Lehman crisis has been more substantial for EU banks.
It's rational then to assume that the capital increase pushed by the Fed at US banks in 2009, based on the use of the federal funds available under the TARP program, has allowed a more rapid strengthening of the US banks, which in turn might have accelerated the recovery in lending dynamics in that country.

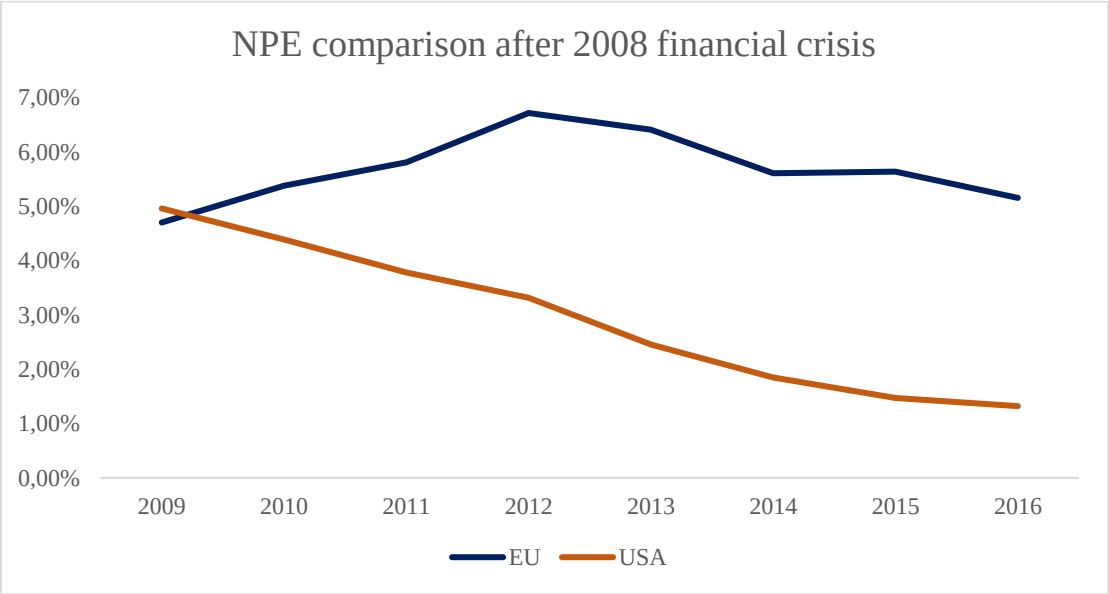
Table 21: EU vs USA - Top 20 banks T1 evolution



Euro Area vs USA – Tier1 evolution 2008-2014 (€bn)
Source: Enria, Challenges for the future of banking, 2014

In addition, comparing the trend of the NPE ratio between US and EU, it's interesting to notice that, just after the crises in 2009, such level was almost the same for the two economies (actually EU NPE ratio was lower 4,7% vs 5%).
However, the evolution of the index for the two economies has been different so far; while the US economy has experienced a constant decrease, the EU banks experienced a constant growth till 2012.
As of 2016 the spread is still significantly large, with a NPE ratio for the European banks that is around 4 times the American (5,16% vs 1,3%) and it's higher than the NPE ratio as of 2009 registered by both the American and European banks.

Figure 24: UE vs USA NPE comparison after 2008 financial crisis



Euro Area vs USA – NPE ratio (Bank nonperforming loans to total gross loans) (%)
World Bank national accounts data, and OECD National Accounts data files

This doesn't mean TARP is the solution for bad loans neither it was the main reason of such trends but it's reasonable to assume that a coordinated and systemic framework may play a role in addressing banks' bad assets instead of leaving to the single Countries' economies to determine a solution for such a large and complex issue.

4.5 A theoretical proposal for NPLs disposal

After having understood the necessity and the importance of a systemic (Euro area level) measure for managing and – hopefully - fixing the NPLs issue and after having analyzed pros and cons of the EBA's proposal for a European ACM and of the US Legacy Loan Program within the TARP scheme, this chapter will try to develop and formulate a theoretical proposal for the management of the European NPLs stock
The proposal tries to sum up and replicate the magnitude and the framework of TARP program within the European environment adding the non mutualization/burden sharing of losses among the EU members by the application of a revised version of the clawback clause introduced by the EBA's study on a European ACM.
Such attempt is to be intended as a pure theoretical exercise, since it focuses more on giving a different angle on the treated matter rather than analyzing the real complications and the feasibility of such intervention within the current legal framework.
For this reason, the proposal ignores also the cross countries agreements on place between the ECB and the European Members economies.
The idea arises from the combined analysis of the TARP (Troubled Asset Relief Program) put on place by the US for facing the 2008 financial crises, the monetary policy of the ECB (in particular the Quantitative Easing program started in 2015) and the EBA's proposal of a European ACM.

The proposal will be explained by the use of a simulation.
Once again the paper will use the Italian NPLs as an example for the application of the studied proposal.

After the AQR and the revision of European banks' balance-sheets started in 2013 that had as object also the analysis of the Non-performing loans, it is fair to assume that the ECB should trust in the European banks' NBVs for the NPLs.
In other words the ECB should trust in the European banks valuation and provisions made on NPLs.
Assuming Italy as a case study, we have a total NPLs stock of €325bn (as by chapter 2) and an average Coverage ratio of 48,9% (EBA YE-2016).
This means that roughly the NBV of the Italian banks is 51,1% of the total stock so €166bn.
Keeping such numbers as a reference, the studied framework would follows the following steps:

1) First of all, banks would be submitted to stress tests.
   The results of such tests are used to identify the area of intervention.
   Banks with the poorest results will be the first of the list to be subject to the NPLs stock disposal.
   A list of NPLs portfolios (small banks would be aggregated to respect a minimum portfolio size to be determined) with priorities determined based on stress test will compose the pipeline of the intervention.

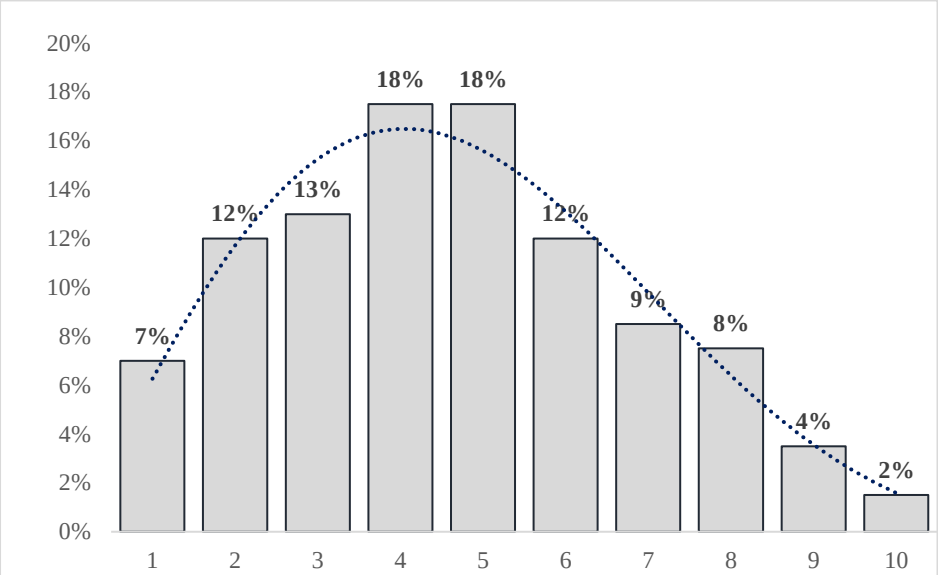
2) Having individuated the NPLs portfolios to be divested for each Italian bank (as per 1)), the ECB will independently analyze the portfolios (one per time, following the list of 1)), determining the maximum level of investment (leveraged determination) it can do within a pre-determined investment grade risk profile.
   The studied proposal assumes that the ECB will invest on such portion at a risk-free rate (whatever proxy 10ys US bond, 10ys German bond, EURIBOR…) that it will be now estimated for simplicity at 0,5%.

The time frame of the investment will be 10 years for allowing, on average, the full repayment/recovery of the loans (i.e. RE foreclosure and bankruptcies procedures may last more than 10 years).
The example assumes that the outcome of the ECB due diligence is that ECB will be confident on investing on the pool paying a price equal to the 90% of the NBV (ideally, the ECB should be confident in evaluating the NPLs stock at a value closer to the NBV, but an additional 10% buffer is kept in this example).
This means that after a detailed due-diligence on the portfolio, the ECB would project to obtain a return equal to the risk-free rate (0,5%) by investing an amount equal to 90% of the NBV within 10 years from the analyzed NPLs pool.
Applying such reasoning to the whole NPLs stock, we obtain an amount equal to €149bn (90% of the total NBV)

3) After having determined the risk-free threshold for the investment of the analyzed NPLs pool as per 2), the ECB will set a public auction for the sale of the portfolio.
Specialized investors with adequate track records will be invited to participate to the auction.
Private investors will be invited to express a binding offer for the full portfolio on sale considering that:
   - The ECB will co-invest for the % share determined at point 1).
     In this case 90% of total price at the given risk-free rate and timing (0,5% rate, 10 years timing with no leakage);
     In its valuation the investor has to keep such assumptions in consideration.
   - Maximum price will be capped to the NBV (banks won't be able to get a profit by the NPLs disposal and the ECB won't exceed the amount of the pre-determined threshold);
   - Investors will express a total price for the portfolio plus their target IRR for the investment of its share.

   The winner of the auction is the investor that will offer the highest price for the portfolio at the given conditions.
   Let's suppose that the winner will project a total net recovery (net of servicing fees, legal costs and taxes) equal to 35% of the GBV (so €114bn if applied to the total stock; such percentage is in line with the 36% we had on the simulation of Banca Popolare di Bari) and will apply an IRR equal to 12%.
   In this example a similar same shape of the recovery curve of chapter 4.2 is kept, with an extension of 3 years to match the final 10 years.

Figure 25: 10ys recovery curve assumption



Anyway each private investor would develop and apply its own recovery curve, based on benchmarks and on the analysis of the portfolio.
As anticipated, in making its binding offer, the investor will have to take into consideration that ECB will invest the 90% of the final price with a senior reimbursement and a coupon of 0,5% interest rate.
In doing this it should create the senior repayment structure for the ECB (ECB investment in the table below) considering the initial outstanding as a function of the 90% of the total price.

Total price will be computed as the value that will allow the investor to reach its target IRR (12% in this case) after the reimbursement of the ECB senior tranche considering the Net cashflows obtained before.
For simplicity, costs and expenses won't be considered in the following simulations, but this won't affect the reasoning and the results, as it is assumed GCFs (Gross Cash Flows) will be higher than cost every year so NCFs (Net Cash Flows) will incorporate costs yet.
In the same way any expenses to be paid at acquisition time (i.e. due diligence costs and contracts setting) will be already embedded into the final price.

Summarizing, the investment would have the following economics:

Table 22: Simulation – NPLs transaction involving ECB (CFs & securitization structure)

						IRR 0,50%		*IRR 12,00%*	*IRR 3,3%*
		ECB investment					Investor		Total investment
Year	Forecasted NCFs (€bn)	Outstanding Balance (€bn)	Interest Payment (€bn)	Principal Payment (€bn)	Total cash back (€bn)	NCFs (€bn)	Total cash back (€bn)	NCFs (€bn)	NCFs (€bn)
0						-88,2		-9,8	-98,0
1	8,0	88,2	0,4	7,5	8,0	8,0	0,0	0,0	8,0
2	13,7	80,7	0,4	13,2	13,7	13,7	0,0	0,0	13,7
3	14,8	67,4	0,3	14,5	14,8	14,8	0,0	0,0	14,8
4	19,9	53,0	0,3	19,6	19,9	19,9	0,0	0,0	19,9
5	19,9	33,3	0,2	19,7	19,9	19,9	0,0	0,0	19,9
6	13,7	13,6	0,1	13,6	13,7	13,7	0,0	0,0	13,7
7	9,7	0,0	0,0	0,0	0,0	0,0	9,6	9,6	9,7
8	8,5	0,0	0,0	0,0	0,0	0,0	8,5	8,5	8,5
9	4,0	0,0	0,0	0,0	0,0	0,0	4,0	4,0	4,0
10	1,7	0,0	0,0	0,0	0,0	0,0	1,7	1,7	1,7

So the final investment for the ECB would be 90% of the price determined by the winning bidder of the auction (€88,2bn) while the investor would put the remaining 10% (€9,8bn). Also, the winning bidder will be in charge of the management of the portfolio, subject to the constant supervision of the ECB.
This will allow the investor to evaluate the portfolio basing the recovery assumptions and costs on its – hopefully - efficient and effective recovery strategy.
The low senior coupon would allow to lower the final IRR of the investment and, as a consequence, to increase the final price.

Cash flows will repay the Investor after the full repayment of the ECB Principal and interests so the share of the ECB will be reimbursed as senior while the share of the investor will be junior; this to prevent that the investor's valuation would be leaded by moral-hazard (the investor may overprice the portfolio since the largest share is on the ECB) and to allow the ECB to get back the forecasted recovery as per 1).

Summarizing, at the above conditions, the proposal applied to Italian NPLs would have roughly the following order of magnitude:

Table 23: Simulation - NPLs transaction involving ECB, Summary table

Italian banks NPLs stock (€bn)	325
Italian banks average Coverage Ratio	48,9%
Italian banks NBV (€bn)	166
ECB valuation/NBV	90,0%
ECB risk free threshold (€bn)	149
Private investor Total Net recovery on GBV	35,0%
Private investor Total Net recovery on NBV	68,5%
Private investor Total Net recovery (€bn)	114
ECB investment (€bn)	88
Private investor investment (€bn)	10
Total price (€bn)	98
Price-NBv gap (€bn)	68
Price-NBv gap/GBV	20,9%
Price-NBv gap/NBV	41,0%

Keeping as fixed assumptions:

- Investor IRR=12%
- ECB IRR=0,5%
- The shape of the recovery curve

With the support of VBA programming, a macro function has been created for developing a sensitivity analysis for simulating and studying the variations of the total price and consequently of the final Gap price-NBV at the combining change of:

- The ECB valuation/NBV (%)
  and
- The Private investor Total Net recovery/GBV (%)

Assuming as a floor for the investor Total Net recovery/GBV (%) a minimum value of 20% and a cap of 50% and a floor for ECB valuation/NBV (%) equal to 50% (ECB shouldn't trust less than 50% the banks' NBV) while the cap was set to 90% (100% is not realistic as we want to leave a room for private investors), the price change at the combined variation of ECB valuation/NBV and investor Total Net recovery/GBV (and as a consequence, Total Net recovery/NBV) would be the following (data in €bn):

Table 24: NPLs transaction involving the ECB, Sensitivity analysis – Total price change at the combined variation of ECB valuation on NBV and investor Total Net recovery on GBV

		ECB valuation/NBV				
		50%	60%	70%	80%	90%
Private investor Total Net recovery on GBV	20,00%	44,4	46,4	48,7	51,8	56,0
	30,00%	66,4	69,5	72,9	77,6	84,0
	40,00%	88,8	92,8	97,5	103,6	112,1
	50,00%	110,8	115,8	121,7	129,4	140,0

		ECB valuation/NBV				
		50%	60%	70%	80%	90%
Private investor Total Net recovery on NBV	39,14%	44,4	46,4	48,7	51,8	56,0
	58,71%	66,4	69,5	72,9	77,6	84,0
	78,28%	88,8	92,8	97,5	103,6	112,1
	97,85%	110,8	115,8	121,7	129,4	140,0

As a consequence, The gap price-NBV at the combined variation of ECB valuation/NBV and investor Total Net recovery/GBV (and consequently, Total Net recovery/NBV) would be the following (data in €bn):

Table 25: NPLs transaction involving the ECB, Sensitivity analysis – Price-NBV gap change at the combined variation of ECB valuation on NBV and investor Total Net recovery on GBV

		ECB valuation/NBV				
		50%	60%	70%	80%	90%
Private investor Total Net recovery on GBV	20,00%	121,7	119,7	117,4	114,3	110,1
	30,00%	99,7	96,5	93,1	88,4	82,0
	40,00%	77,3	73,3	68,6	62,5	54,0
	50,00%	55,3	50,3	44,4	36,7	26,1

		ECB valuation/NBV				
		50%	60%	70%	80%	90%
Private investor Total Net recovery on NBV	39,14%	121,7	119,7	117,4	114,3	110,1
	58,71%	99,7	96,5	93,1	88,4	82,0
	78,28%	77,3	73,3	68,6	62,5	54,0
	97,85%	55,3	50,3	44,4	36,7	26,1

What about the difference between the NBV and the final price offered for the portfolio purchase?
One of the main goals of this development was to avoid banks taking a large loss in the short term.
In order to achieve this goal, the clawback clause proposed by EBA has been revised and used as follows:

4) The seller/sellers of the portfolio may decide to take part of the loss (even up to the total amount) at sale time or not.

The difference between the final price and the NBV, less the eventual loss covered by the seller (voluntary), equal in the example to 21% of the GBV (€68bn), within the scheme of this proposal, would be anticipated by the ECB under the following conditions:

a. Once the private investor will have reached its target IRR, further profit (if any) will be split between the investor and the ECB keeping the same shares of the initial financing (in this case, 10% to investor, 90% to ECB).
   This mechanism would stimulate the investor to overperform and would allow the ECB to recover the remaining difference between the NBV and the price paid.

b. If after 10 years from the acquisition of the portfolio, the ECB won't have recovered such difference plus an interest rate, the clawback clause will be activated.
   However, the seller can reimburse partially or totally the outstanding debt at any time.

c. The clawback clause forces the original seller to cover the loss generated by the difference between the price paid and the original NBV plus the interests matured.
   In case the bank won't be able to cover such amount, in order to absorb these potential losses, banks should issue stock warrants that would allow the State (in a logic potentially similar to Alante) to subscribe new capital at an exercise price.
   For reducing moral hazard by participating banks, the strike price of the warrant should be penalizing for the issuer.

d. Since the State would cover the potential losses for the ECB, the risk of such investment for the ECB can be approximated to the acquisition of a bond.
   Considering the timing of the activation of the clawback clause (10 years), a 10ys Italian bond rate will should be applied by the ECB for such investment.
   In order to help the banking system, the ECB would be willing to fix a lower interest rate equal to 1% (this finds a similar precedents in the measures adopted by the ECB, the so called LTRO Long Term Refinancing Operations in 2011)

Keeping the assumption of before, three different scenarios (downside, base, upside) have been developed for illustrating how eventual losses or additional return would affects the ECB and the investor.
Also the price-gap and its interests structure is better detailed.

<u>Downside scenario:</u>
Investor and ECB made a wrong valuation of the NPLs, overestimating the recoveries, and the portfolio recovers only 80% of what projected at purchase time.
In addition, banks won't cover any loss at sale time.

Table 26: Downside scenario simulation – CFs & Securitization structure

						IRR 0,50%		*IRR -22,71%*	*IRR -1,6%*	*IRR 1,00%*
		ECB investment					Investor		Total investment	NBV - price gap
Year	Forecasted NCFs (€bn)	Outstanding Balance (€bn)	Interest Payment (€bn)	Principal Payment (€bn)	Total cash back (€bn)	NCFs (€bn)	Total cash back (€bn)	NCFs (€bn)	NCFs (€bn)	NCFs
0						-88,2		-9,8	-98,0	-68,0
1	6,4	88,2	0,4	5,9	6,4	6,4	0,0	0,0	6,4	0,0
2	10,9	82,3	0,4	10,5	10,9	10,9	0,0	0,0	10,9	0,0
3	11,8	71,8	0,4	11,5	11,8	11,8	0,0	0,0	11,8	0,0
4	15,9	60,3	0,3	15,6	15,9	15,9	0,0	0,0	15,9	0,0
5	15,9	44,7	0,2	15,7	15,9	15,9	0,0	0,0	15,9	0,0
6	10,9	29,0	0,1	10,8	10,9	10,9	0,0	0,0	10,9	0,0
7	7,7	18,2	0,1	7,6	7,7	7,7	0,0	0,0	7,7	0,0
8	6,8	10,6	0,1	6,8	6,8	6,8	0,0	0,0	6,8	0,0
9	3,2	3,8	0,0	3,2	3,2	3,2	0,0	0,0	3,2	0,0
10	1,4	0,6	0,0	0,6	0,6	0,6	0,7	0,7	1,4	75,1

Even in this disaster case, the ECB (that anyway made a wrong valuation) doesn't take any loss, since the senior tranche isn't affected by the performance of the portfolio.
Private investor would register a large loss.
Also the NBV-price gap isn't affected by the performance of the portfolio and at year 10 the bank and the State should handle a credit/debit of €75,1bn (because of interests accrued).

Base scenario:
Investor and ECB made a correct valuation of the NPLs and the portfolio recovers 100% of what projected at purchase time.
Banks take a loss equal to 10% NBV at sale time.

Table 27: Base scenario simulation - CFs & Securitization structure

						IRR 0,50%		*IRR 11,99%*	*IRR 3,3%*	*IRR 1,00%*
		ECB investment					Investor		Total investment	NBV - price gap
Year	Forecasted NCFs (€bn)	Outstanding Balance (€bn)	Interest Payment (€bn)	Principal Payment (€bn)	Total cash back (€bn)	NCFs (€bn)	Total cash back (€bn)	NCFs (€bn)	NCFs (€bn)	NCFs
0						-88,2		-9,8	-98,0	-51,4
1	8,0	88,2	0,4	7,5	8,0	8,0	0,0	0,0	8,0	0,0
2	13,7	80,7	0,4	13,2	13,7	13,7	0,0	0,0	13,7	0,0
3	14,8	67,4	0,3	14,5	14,8	14,8	0,0	0,0	14,8	0,0
4	19,9	53,0	0,3	19,6	19,9	19,9	0,0	0,0	19,9	0,0
5	19,9	33,3	0,2	19,7	19,9	19,9	0,0	0,0	19,9	0,0
6	13,7	13,6	0,1	13,6	13,7	13,7	0,0	0,0	13,7	0,0
7	9,7	0,0	0,0	0,0	0,0	0,0	9,6	9,6	9,7	0,0
8	8,5	0,0	0,0	0,0	0,0	0,0	8,5	8,5	8,5	0,0
9	4,0	0,0	0,0	0,0	0,0	0,0	4,0	4,0	4,0	0,0
10	1,7	0,0	0,0	0,0	0,0	0,0	1,7	1,7	1,7	56,8

Since banks took a loss equal to 10% NBV at sale time, the debt to manage at year 10 decreases, compared to the downside scenario, to €56,8bn (51,4bn plus the accrued interests).

Upside scenario:
Investor made a too conservative valuation of the NPLs and the portfolio recovers 120% of what projected at purchase time.
Banks take a loss equal to 20% NBV at sale time.

Table 28; Upside scenario simulation - CFs & Securitization structure

						IRR 0,50%					*IRR 14,01%*	*IRR 7,7%*	*IRR 1,00%*
		ECB investment					Investor				Total Investor	Total investment	NBV - price gap
Year	Forecasted NCFs (€bn)	Outstanding Balance (€bn)	Interest Payment (€bn)	Principal Payment (€bn)	Total cash back (€bn)	NCFs (€bn)	Total cash back (€bn)	NCFs (€bn)	Additional to ECB	Additional to Investor	NCFs (€bn)	NCFs (€bn)	NCFs
0						-88,2		-9,8			-9,8	-98,0	-34,8
1	9,6	88,2	0,4	9,1	9,6	9,6	0,0	0,0	0,0	0,0	0,0	9,6	0,0
2	16,4	79,1	0,4	16,0	16,4	16,4	0,0	0,0	0,0	0,0	0,0	16,4	0,0
3	17,7	63,1	0,3	17,4	17,7	17,7	0,0	0,0	0,0	0,0	0,0	17,7	0,0
4	23,9	45,7	0,2	23,7	23,9	23,9	0,0	0,0	0,0	0,0	0,0	23,9	0,0
5	23,9	22,0	0,1	22,0	22,1	22,1	1,8	1,8	0,0	0,0	1,8	23,9	0,0
6	16,4	0,0	0,0	0,0	0,0	0,0	16,4	16,4	0,0	0,0	16,4	16,4	0,0
7	11,6	0,0	0,0	0,0	0,0	0,0	11,6	1,1	9,4	1,0	2,2	11,6	9,4
8	10,2	0,0	0,0	0,0	0,0	0,0	10,2	0,0	9,2	1,0	1,0	10,2	9,2
9	4,8	0,0	0,0	0,0	0,0	0,0	4,8	0,0	4,3	0,5	0,5	4,8	4,3
10	2,0	0,0	0,0	0,0	0,0	0,0	2,0	0,0	1,8	0,2	0,2	2,0	15,0

In this case the additional returns would be split among the ECB and the private investor (respectively 90% and 10%).
Such additional return would decrease the total NBV-price gap that would finally be equal to €15bn.
Exceeding returns would increase private investor's IRR to 14%.

Assuming that the ECB would perform an accurate analysis of the portfolio, therefore no losses should be projected on the ECB's senior share even in the worst case.
Even if, none of the difference between the NPV and the price paid will be reimbursed in advance (i.e. in the worst case) such instrument would give 10 years of time to the Italian banking system for improving its financial conditions after being free of the NPLs stock.
Concluding, the proposal besides being pure theoretical still presents some weaknesses.
As per the EBA's proposal, pros and cons are listed and analyzed:

Strengths:

- The measure matches the necessity of a massive/systemic operation with potential effects in the immediate/short time;

- The measure would avoid the mutualization/burden sharing of the losses among the EU members (this is one of the main opposition emerged at EU level to the creation of a European ACM);

- Even if the measure isn't definitive and some could oppose (as per the EBA's proposal) saying that the losses are only postponed from the portfolio sale time to the activation of the clawback clause, this would give to the economic system a period of 10 years for improving and enforcing the system stability with all the benefits already described in chapter 3;

- As detailed in the case study (even in the worst case scenario) the ECB shouldn't be exposed to any loss on the senior tranche;

- The proposal would help in developing the secondary NPLs market, attracting private investors capital thanks to the incentive mechanism and the low coupon of the senior notes (subscribed by the ECB) that would allow to reach higher prices on the sale of the portfolio (thus raising the success of the operation);

- The participation of a private investor and the auction sale process should grant the adoption of the best management practice and of the most effective recovery strategies.

In addition, the auction should grant banks and the ECB to get the maximum price from the sale the market is willing to pay;

- The mechanism is studied for avoiding moral-hazard issues:
  - If the clawback is activated, and the State is called for subscribing a capital increase, for reducing moral hazard by participating banks, the strike price of the warrant should be penalizing for the issuer
  - In case additional returns (to the projection that would grant the target IRR to the private investor) would come, the private investor would get the benefit of such, within the share of participation to the investment (in this case 10%).
    This should grant the ECB, that the private investors has an incentive to extract the maximum value from the portfolio;

- Since the private investor will be appointed for the management (even through the use of third parties, but always under the supervision of the ECB) of the full portfolio, the ECB doesn't have to set up a platform for the management of the portfolio, with all the complexity (expenses, employees…) that this would imply.

- The ECB would keep a role of supervision since the beginning of the operation, coordinating in full the disposal process and enhancing the transparency of the trades.

Weaknesses:

As per the EBA's ACM proposal, the main weakness is related to the presence of the clawback clause could potentially prevent a full removal of loans from banks' balance sheets.

Starting from the weakness of the proposal above, the following idea has been developed in alternative to the clawback clause, also for avoiding States taking losses:

- In 2011 and 2012 through the LTROs (Long Term Refinancing Operations), the ECB lent to EU banks respectively €489bn (to 800 banks in 2011) and €529bn (to 800 banks in 2012).
  The financing was given to banks at low rate equal to 1% with a duration of 3 years.
  As a collateral for the operations, liquid assets were used (such as sovereign debt).
  A large portion of the financing provided to eurozone banks through the LTRO was used to buy periphery sovereign debt and the difference between the returns of the collaterals and the cost of financing (1%) was a direct profit to banks.

- Simulating such mechanism for refining the NBV-price gap for the 3 scenarios of above (downside, base and upside), it is possible to modeling the amount of financing needed from banks, to erase the gap using the difference between the rate of return (investment – cost of debt).

  Assuming:
  - ECB will lend the needed capital to banks at cost of capital equal to 1%
  - Banks would give as a collateral an equal amount of sovereign debt.
    It is assumed a return of 2,5% for the sovereign bond.
    The financing covers the whole length of the Recovery curve of the NPLs portfolio, so 10 years.

Downside scenario:

Table 29: Downside scenario – Additional ECB's investment requirements

	IRR 1,00%	***IRR 1,50%***
	NBV - price gap	**NBV - price gap**
Year	**NCFs**	**NCFs**
0	-68,0	-467,9
1	0,0	0,0
2	0,0	0,0
3	0,0	0,0
4	0,0	0,0
5	0,0	0,0
6	0,0	0,0
7	0,0	0,0
8	0,0	0,0
9	0,0	0,0
10	75,1	543,0

For matching the €75,1bn of price gap (€68bn plus the interest matured during the 10 years) an additional financing of €467,9bn at 1% interest rate from the ECB to the banks is needed. Banks would invest such additional amount in sovereign debt to match the collateral guarantee requested by the ECB.
Assuming a sovereign debt of 2,5%, the difference between the 2 return rates (1,5%) would allow banks to accrue the sufficient amount for repaying the €75,1bn of price gap at the end of year 10.

Base scenario:

Table 30: Base scenario – Additional ECB's investment requirements

	IRR 1,00%	***IRR 1,50%***
	NBV - price gap	**NBV - price gap**
Year	**NCFs**	**NCFs**
0	-51,4	-353,7
1	0,0	0,0
2	0,0	0,0
3	0,0	0,0
4	0,0	0,0
5	0,0	0,0
6	0,0	0,0
7	0,0	0,0
8	0,0	0,0
9	0,0	0,0
10	56,8	410,4

For matching the €56,8bn (lower compared to the downside scenario as banks accepted a loss equal to 10% of NBV at acquisition time) of price gap (€51,4bn plus the interest matured during the 10 years) an additional financing of €353,7bn at 1% interest rate from the ECB to the banks is needed.
Banks would invest such additional amount in sovereign debt to match the collateral guarantee requested by the ECB.
Assuming a sovereign debt of 2,5%, the difference between the 2 return rates (1,5%) would allow banks to accrue the sufficient amount for repaying the €56,8bn of price gap at the end of year 10.

Upside scenario:

Table 31: Upside scenario – Additional ECB's investment requirements & profit sharing

	Expected	**Actuals - Upside scenario**		
	IRR	***IRR***	***IRR***	
	0,99%	***0,99%***	***1,50%***	
	NBV - price gap	**NBV - price gap**	**NBV - price gap**	
Year	**NCFs**	**NCFs**	**NCFs**	**Profit**
0	-34,8	-34,8	-239,2	
1	0,0	0,0	0,0	
2	0,0	0,0	0,0	
3	0,0	0,0	0,0	
4	0,0	0,0	0,0	
5	0,0	0,0	0,0	
6	0,0	0,0	0,0	
7	0,0	9,4	0,0	
8	0,0	9,2	0,0	
9	0,0	4,3	0,0	
10	38,4	15,0	277,7	23,4

For matching the expected €38,4bn (lower compared to the downside scenario as banks accepted a loss equal to 20% of NBV at acquisition time) of price gap (€34,8bn plus the interest matured during the 10 years) an additional financing of €239,2bn at 1% interest rate from the ECB to the banks is needed.
Banks would invest such additional amount in sovereign debt to match the collateral guarantee requested by the ECB.
Assuming a sovereign debt of 2,5%, the difference between the 2 return rates (1,5%) would allow banks to accrue the sufficient amount for repaying the €38,4bn of price gap at the end of year 10.
As per assumption, the upside scenario overperforms compared to the base scenario, this would lead to a reduction of the final NBV-price gap to be covered at year 10 that would be equal to €15bn.

Concluding, such additional modification, would help to fix the accounting issues generated by the clawback clause, but would increase the involvement of the ECB that should finance larger amount of money in order to cover the NBV-price gap.
This may probably be opposed by some of EU members, underlying the same argumentations of the mutualization of the losses.

Anyway it is interesting and important to underline that the mechanism described above:

- Find a similar precedent in the the LTROs (Long Term Refinancing Operations) when the ECB lent to EU banks respectively €489bn (to 800 banks in 2011) and €529bn (to 800 banks in 2012).
  The financing was given to bank at low rate equal to 1% with a duration of 3 years.
  As a collateral for the operations, liquid assets were used since a large portion of the financing provided to eurozone banks through the LTRO was used to buy periphery sovereign debt.
  In 2012, Spanish and Italian sovereign 10ys bonds paid 4,9% annual interest. Eurozone banks able to borrow from LTRO at 1% interest could turn around and buy bonds at 4,9% for a profit spread of 3,9% (allowing what some defined a sort of "carry trade").

- Would allow the ECB to – indirectly - purchase sovereign debt of the specific member State (as the ECB would finance banks for purchasing sovereign debt).
  This would be in line with the QE (Quantitative Easing) measures adopted by the ECB, that since March 2015 started to purchase €60bn per month of European sovereign debt (then raised to €80bn in March 2016, despite the frequent oppositions of Germany).

- According to the ECB's estimation, Italy owes around €364bn to the ECB (data at March 2017); this is also a consequence of the QE measures adopted by the ECB in the last 2 years that have purchased a consistent stock of Italian sovereign debt.
  In accordance to the proposal made within this chapter, the same ECB could be also one of the seller of the sovereign debt that would be the collateral for the additional ECB's financing to banks as better explained before.
  This may allow the ECB to start freeing its balance-sheet from the accrued stock of Italian sovereign debt.

In doing so the ECB should always coordinate and supervise all the processes, monitoring the level of debt of Italian banks towards the Italian State.

5. CONCLUSIONS

Reducing the level of NPLs would be essential for restoring the health of the banking sector and supporting credit growth in Europe.
As seen, an high stock of NPLs locks up capital that could be injected into the real economy by supporting fresh lending.
Such credit crunch may originate business failures that push the NPE ratio further up, making banks even more reluctant to lend money, ending with the creation of a negative vicious circle.
The European €1tn NPLs gross stock is no more a neglectable amount and represents not only a micro-prudential supervisory problem, but an issue with broader macroprudential and financial stability implications.
While a number of improvements have been done on both supervisory rules and reforms, the development of an effective strategy for the disposal of the NPLs from banks' balance-sheets didn't see the light yet.
Within this scenario, Italy represents the 4th largest European economy, has the largest stock of NPLs among the European Countries (€325 billion NPLs, around 30% of the aggregate European NPLs stock) and a banking sector that in large part didn't recover yet from the 2008 financial crisis effects.
As better detailed in the paper, 114 Italian banks have a critical Texas ratio and, Monte dei Paschi di Siena, the world's oldest bank and the 4th largest Italian banks is facing a critical situation.
For all these reasons, Italian banking industry and , in particular, Italian NPLs are a cause of concern for the banking industry supervisors.
At the light of the distressed debt market inefficiency and of the ineffectiveness of the Italian initiatives, I believe a supranational and well organized measure would be more effective in the management of the Italian NPLs stock.
Besides the critics, the US example shows that a coordinated and massive monetary intervention may have a consistent impact in a short time in illiquid assets disposal.
The macroeconomic challenge, object of this paper, is then to deal with all the complexities in place, for setting up a successful NPL resolution strategy that would require necessarily a close coordination between EU, the ECB, and national competent authorities.
For achieving this goal, it would be necessary to convey the message that the interests in place aren't limited to the boards of a single Country's economy since EU members should cooperate as a single market and both the negative effects of the Italian NPLs issue as well as the possible benefits of its resolution would affect all the Countries involved.

Appendix I – Italian RE foreclosure process overview

The 2 main actors of the RE foreclosure procedure are the debtor and the creditor.
Thanks to the tools provided by the Italian legal system, the creditor can act against the debtor for the repayment of his credit starting a RE foreclosure procedure that ends with the sale of the assets owned by the debtor.
The RE foreclosure process, that is complex and moves within a dynamic legal framework, can have as object everything that is under the right of ownership or the usufruct right of the debtor.
The main phases of the RE foreclosure are (very simplified version):

i. **Decreto ingiuntivo (injuction decree):**
The creditor starts the legal action against the debtor by writing (with the help of a lawyer) the decreto ingiuntivo, so the legal document in which the due amount and the timing for the repayment are clearly expressed.
The document has to be signed by a judge within the geographical competence related to creditor's location.
The decreto ingiuntivo is intended to be an order by the legal system to the debtor for the repayment of its exposition.

ii. **Atto di precetto (enforcement act):**
Following to i), the atto di precetto is sent and notified to the debtor's domicile for advising him of the starting of the legal procedure.
Since the reception of the atto di precetto, the debtor has usually 10 days for fulfilling his debt avoiding the beginning of the legal procedure.
Otherwise the RE foreclosure process will start within 90 days (since the reception of the atto di precetto) without further notifications.

iii. **Trascrizione del pignoramento (transcription of the act of foreclosure):**
If after 45 days since ii) the debtor doesn't repay his exposure, the creditor can apply for the transcription of the act of foreclosure of the assets (object of the procedure) owned by the debtor for the amount necessary to cover the current debt plus interests and legal expenses.

If at the beginning of i) the creditor already had a mortgage on some assets of the debtor - as a guarantee of the open exposure between the debtor and the creditor - then he can't inscribe further mortgages on other assets of that debtor before the sale of those assets already subject to the existing mortgage.
In the pignoramento document the asset object of the procedure is described in detail; the document is notified to the debtor (that can't sell the asset anymore) and then a signed copy of the document is formally registered and published at the formal RE registries (conservatoria dei registri immobiliari).
After the final notification, the official of judge (ufficiale giudiziario) delivers to the creditor the original copy of the act of foreclosure (originale dell'atto di pignoramento) and the note of the transcription (nota di trascrizione).
Within 15 days (otherwise the RE foreclosure is invalid), the creditor consigns all the documents to the court within the correct territorial competence; the chancellor wraps up the full dossier, comprehensive of the judicial title (copie conformi del titolo esecutivo) delivered as well by the creditor.

iv. Pignoramento (Foreclosure):

If the asset is occupied by the debtor, this becomes the custodian of the asset itself, but he has no right to get any payment for this activity.
In case the asset is vacant, a formal custodian can be appointed by the judge if the creditor asks for it; the custodian has to produce a periodical report of the management of the asset but he can't rent the asset without the permission of the judge.

v. Istanza di vendita (Asset Sale):

After 10 days since 4) the creditor can ask for the sale of the foreclosed asset (istanza di vendita).
A professional delegate is appointed for the valuation of the asset and the production of a detailed appraisal (valutazione CTU).
The appraisal has to consider all the pending expenses and eventual damages the asset is affected by and it is normally the starting point for the first auction base price.
Since 2016, even if the 1st auction base price is equal to the valutazione CTU amount, bidders can offer a minimum value equal to 75% of such auction base price to participate to the auction.

The auction can be of 2 types:

- Con incanto: public auction with instant price increasing (minimum price increase is set by the judge).
- Senza incanto: The bidders have to deliver a secret offer into a closed envelope within a certain date with the deposit of a certified check (usually 10% of the offered price).

The winner of the auction has to complete the payment of the asset (paying the difference between the purchase price at auction and the deposit) within normally 60-90 days since the auction date (as set by the judge).
Losers of the auction will receive their deposits back.
If no valid offers have been received, then the judge can set further auctions with a lower ask-price for stimulating the demand and the sale of the asset; rebates have to be within a range of 0-25%; Normally each rebate is -25% on the previous auction base price but the judge can decide for a lower percentage for defending the creditor; also creditor can ask for this.

Example:
CTU appraisal: € 100.000
1st Auction base price: € 100.000
Minimum bid: € 75.000
Deposit for participating to the auction (in case of senza incanto auction): € 7.500
If the 1st auction is desert, the following auction can be set at a base price of € 75.000 (equal to 75% of 100.000) with a minimum bid of € 56.250 (equal to 75% of 75.000).

vi. Distribuzione (distribution):

The amount coming from the sale of the asset is then distributed among the creditors in respect of the seniority of the creditors.
Timing of distribution depends by the court (normally within 1 year)

Additional notes:

a) Each phase of the process can be subject to opposition by the debtor that extends timing and increases the uncertainty of the final outcome.

b) In the RE foreclosure a creditor will start the procedure as procedente (this means that he is the activator of the process) but others creditors can intervene in the same procedure within phase 4) and they can also solicit the phase 5) if they have the needed judicial title.
In case they intervene on late, intervento tardivo (after phase 4)), they will participate to the distribution as junior creditors getting money only after the satisfaction of the senior creditors.

c) The procedente (activator) will have to pay some procedure expenses to the court in the different phases;
For example the fee for the delegate for the appraisal will be paid by the activator.
These paid expenses will be refunded to the activator as pre-deduzione (privileged claim) on the top of the repayment waterfall.

Appendix II – The REOCO application to NPLs

As better described in the Appendix II if the recovery process on secured NPLs (see Appendix I, definition n. VI.I) Secured loans) arrives to its last phase without any interruption, it should end up with the foreclosure of the Real Estate asset of the debtor.
Assuming a theoretical scenario, where there's no intervention of the creditor, the outcome of the sale of the asset in auction can be considered dependent only on the dynamics of the market itself. The law of supply and demand will finally determines the sale price of the asset at auction and indirectly also the timing for sale (number of auctions needed for sell the asset).
Considering that the recovery of the credit directly depends on the collections coming from the sale of the collateral in auction and that the auctions market is not perfect (as per definition), the risks for the creditor behind such dynamics are high and consistent.
In fact, it's hard for the creditor to forecast when and at which price a specific asset can be sold at auction; this has obvious impact on the risk profile of such investments.
Summarizing, once an asset related to an NPL is foreclosed and put on sale, a professional delegate is appointed by the court for the valuation of the asset and the production of a detailed appraisal the so called, *valutazione CTU* (or simply the *CTU*).
The CTU represents the starting price of the sale at the first auction.
If nobody attends the auction and this goes desert, then the judge will set an additional auction (generally within 6-8 months) applying a 25% discount as a rebate on the starting price of the following auction for stimulating the demand.

For better explain the mechanism a classic and simplified example of a mortgage non-performing loan is here explained:

Creditor 1:
Gross Book Value: €80.000
1st lien mortgage: €80.000

Creditor 2:
Gross Book Value: €40.000
2nd lien mortgage: €40.000

CTU amount: €120.000

Assuming that:

- *the judge will set an auction every 6 months;*
- *the GBV won't change along with time;*
- *no expenses are considered;*
- *the judge won't stop the rebates even if the asset is strongly depreciated, but won't set more than 10 auctions in total.*

Since creditor 2 has only a 2nd lien mortgage, it is less senior than the Creditor 1, and its credit will be reimbursed only if there will be still remaining cash from the sale of the asset after the reimbursement of the more senior creditor (creditor 1 in the example).
The creditors have the right to receive the cash collected from the sale of the asset according to their mortgage lien and amount.
For simplicity, in the example above the mortgage amount is equal to the GBV.

In case the GBV is higher than the mortgage amount, then the difference is considered as an unsecured claim and this is reimbursed only after all the secured (with a mortgage) claims get reimbursed.
In the cascade, the unsecured claims are the ones with the lowest seniority.

Projecting in the future the path of the example above, if nobody will purchase the asset at auction, then it will register losses on its value till reaching less than the 50% of the value of its original CTU valuation within 18 months.

Table 32: Simulation – Auction rebates and residual recovery on GBV

			Creditor 1			Creditor 2		
Auction number	**Reserve price**	**Auction price/CTU**	**GBV**	**1st lien mortgage**	**Recovery/GBV in case of purchase**	**GBV**	**2nd lien mortgage**	**Recovery/GBV in case of purchase**
1	120.000	100%	80.000	80.000	100%	40.000	40.000	100%
2	90.000	75%	80.000	80.000	113%	40.000	40.000	25%
3	67.500	56%	80.000	80.000	84%	40.000	40.000	0%
4	50.625	42%	80.000	80.000	63%	40.000	40.000	0%
5	37.969	32%	80.000	80.000	47%	40.000	40.000	0%
6	28.477	24%	80.000	80.000	36%	40.000	40.000	0%
7	21.357	18%	80.000	80.000	27%	40.000	40.000	0%
8	16.018	13%	80.000	80.000	20%	40.000	40.000	0%
9	12.014	10%	80.000	80.000	15%	40.000	40.000	0%
10	9.010	8%	80.000	80.000	11%	40.000	40.000	0%

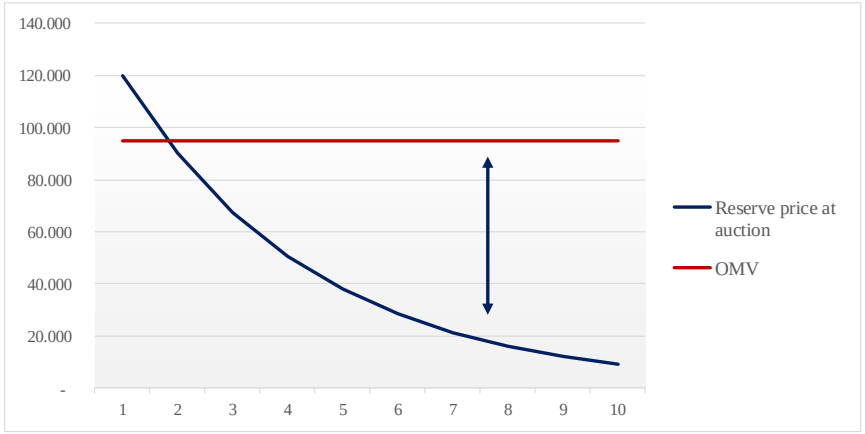
At the same time, also the possible recovery for the creditors decreases along with time if all the auctions are desert.
For creditor 1, the recovery compared to its GBV, goes from 100% in the case of sale at 1st auction to 9% in case of sale at 10th auction, while creditor 2 won't get any recovery after the 2nd desert auctions.
Clearly the auction mechanism has also an upside scenario for the creditors, when the players competing in the auction raise the initial price.
But assuming that the CTU value should fairly represents the asset value, there shouldn't be reasons to pay an asset at auction more than its value; we can assume this as an exceptional case and again neither this upside risk is not forecastable by the creditors.
Also, as anticipated, the auction market is not yet very popular and known in Italy and participating to auctions is not always easy due to the legal environment, and it's also riskier (i.e. often assets are occupied, or internal inspection are restricted so the internal situation of the asset is not always clear) so people normally prefer to purchase assets in the open market.
For all the reasons explained above, the downside risk for creditors to collect less than expected from a secured claim because of the market imperfections is consistently high.
In order to reduce the risks explained above, specific instruments and active strategy have been developed; an example of such instruments is the REOCO (Real Estate Owned Company).

A REOCO is a company that is specifically designed and built to purchase RE assets in the competitive bidding process (the auctions) that aims for the final sale of the collateral underlying the NPL (Scardovi, 2017).
Its involvement in the process isn't limited to the auction itself but can be extended to the whole duration of the recovery activity.
In fact, besides the acquisitions, the REOCO is also responsible for the active management of the RE assets till the final resale process.
Simplifying, the aim of a REOCO is to fully and truly contribute to the RE assets value maximization.

The aim of this appendix is not to illustrate all the applications of the REOCO, but only to focus on the defensive REOCO strategy put in place within the NPLs world, in order to defend the credit and prevent the creditor from the potential losses that were shown in the example above.

Once an investor acquires a secured NPLs claim/portfolio (or before, during the valuation and pricing of such claim/portfolio), for designing a correct portfolio management strategy and/or for properly evaluating the portfolio, he has to assess the value of the assets (all or a representative sample) within the portfolio.
Normally Real Estate appraisals (desktop, drive-by, drive-by with internal inspection depending on the budget that the investor wants to allocate on such activity) are performed for understanding the value of the assets.
The output of such valuations may vary, depending on the investors requests and on the services provided by the appraisers, but besides the collateral outputs (such as geographical area analysis, economic/financial analysis, number of sales in the area…) the main result is the asset value, the so called OMV (Open Market Value).
The OMV is supposed to represents the value at which the evaluated asset can be sold in the open market at the current conditions.
Keeping the assumption of the example 1 and assuming an OMV of €95k for the same asset, the sale of the asset in the auction process may have the following path:

Figure 26: REOCO – Strategy and application



Auction number	Reserve price at auction	OMV
1	120.000	95.000
2	90.000	95.000
3	67.500	95.000
4	50.625	95.000
5	37.969	95.000
6	28.477	95.000
7	21.357	95.000
8	16.018	95.000
9	12.014	95.000
10	9.010	95.000

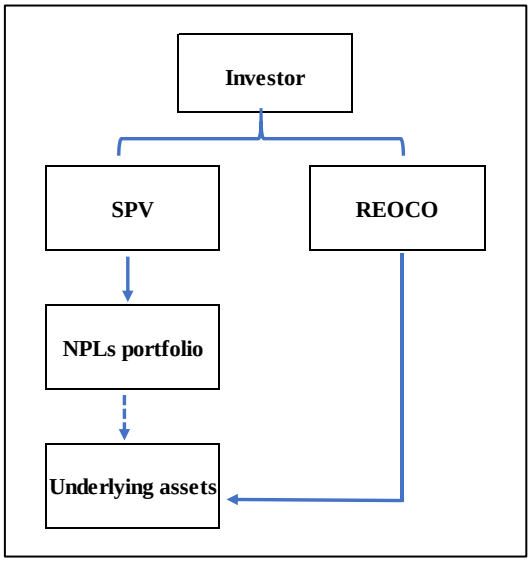
Assuming that the OMV doesn't change with time, starting from the 3rd auction, the increasing difference between the auction price of adjudication and the OMV at which the repossessed asset may be sold in the open market, can create the conditions within the REOCO is willing to operate.
For evaluating the convenience of acquiring an asset at auction, considering only the above gap is not enough; the valuation has in fact to consider also the expenses and costs for participating to the auction, taxes, the REOCO management costs (both fixed and variable) and all the expenses related to the management of the asset after the sale (i.e. property transfer costs, liberation of the asset if occupied, cleaning expenses, taxes, condominium expenses…) plus all the unexpected expenses in case the asset is affected by any issues (both cadastral, legal or structural).

Also, for increasing the value of the asset, the REOCO may consider to put in place ad-hoc projects for the development of the purchased asset; these may vary between the fractioning of the asset, the restructuring and internal and external structure intervention (capex).

In these cases, at the time of the appraisal, an additional analysis and a detailed business plan for the development of the asset is done, considering all the costs and expenses, to finally arrive to the "potential OMV", so the OMV increased by the effects of the development projects.

As anticipated above, the appendix focuses on the REOCO application on the NPLs environment, in particular, in the case when the owner of the credit is setting up a defensive REOCO strategy for defending the value/recovery of its credit.
In these cases, the creditor is also the owner of the REOCO; this clearly implies a different perspective on the use of the REOCO and peculiar cash-flows structures.

Figure 27: REOCO – Investment structure



With this structure, when the REOCO acquires an asset at auction that is fully and only linked to one or more claims owned by the SPV, there's actually no cash-out since the REOCO should reimburse (with the price paid at auction) a claim owned bye SPV, but both the SPV and the REOCO are owned by the investor.
In practice, for participating at the auctions it is required to the bidders to pay to the court the 10% of the starting auction price of the asset as a deposit; such deposit is reimbursed to the bidders that won't win the auction.
So this should be the only actual cash-out within this scenario.

Keeping the example 1, the paper will now show a simplified comparison between the "wait and see" scenario, so the judicial path where there's no REOCO intervention and the REOCO scenario, to understand how and the REOCO can be useful to the creditor in terms of defensive strategy.

Considering the situation of creditor 1, under the assumptions of:

- *Time for distribution of the price paid for the asset to the creditor is 6 months*
- *IRR for discounting the CFs is 10%*
- *The selection of the strategy is based on the NPV comparison only and NPV is computed as following:*

$$NPV = \sum_{i=0}^{T} \frac{NCFi}{(1+IRR)^i}$$

Where NCFi is the net cash flow of period I; T is the period that identifies the last cash flow of the series.

- *No legal expenses are considered*

Below the summary table for the "wait & see" / "Judicial" scenario for the first 10 auctions, where the assets is purchased by 3rd parties investors:

Table 33: REOCO – Simulation of the wait&see/Judicial scenario

Auction number	Asset sale price	1st lien mortgage	Judicial case collection	Distribution timing	IRR	NPV
1	120.000	80.000	80.000	6	10%	76.927
2	90.000	80.000	80.000	6	10%	73.318
3	67.500	80.000	67.500	6	10%	59.007
4	50.625	80.000	50.625	6	10%	42.179
5	37.969	80.000	37.969	6	10%	30.174
6	28.477	80.000	28.477	6	10%	21.569
7	21.357	80.000	21.357	6	10%	15.426
8	16.018	80.000	16.018	6	10%	11.027
9	12.014	80.000	12.014	6	10%	7.888
10	9.010	80.000	9.010	6	10%	5.639

Considering the first 3 auctions, this is how the projected collections would look like:

Table 34: REOCO – CFs simulation of the wait&see/Judicial scenario (auction 1,2 & 3)

Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12
-	-	-	-	-	80.000	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	80.000
-	-	-	-	-	-	-	-	-	-	-	-
Month 13	**Month 14**	**Month 15**	**Month 16**	**Month 17**	**Month 18**	**Month 19**	**Month 20**	**Month 21**	**Month 22**	**Month 23**	**Month 24**
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-	-	-	-
-	-	-	-	-	67.500	-	-	-	-	-	-

The REOCO intervention may affect both CFs and timing.

Under the following simplified assumptions:

- *Expenses at auction are 5% of the price paid for the asset*
- *The management period, defined as the period between the purchase of the asset and the time of resale of the asset, lasts 18 months*
- *The management expenses are quantified as the 3% of the OMV per year of management*
- *No development expenses are considered*
- *No expenses at the time of resale are considered*

Table 35: REOCO – Simulation of the REOCO intervention scenario

Auction number	Asset purchase price	OMV	Expenses at auction	Time for paying the residual price (purchase price - 1st lien) to 2nd lien	Distribution timing	Management period	Management expenses total	NPV
1	120.000	95.000	6.000	3	6	18	4.275	- 68.505
2	90.000	95.000	4.500	3	6	18	4.275	- 13.120
3	67.500	95.000	3.375	3	6	18	4.275	14.134
4	50.625	95.000	2.531	3	6	18	4.275	26.441
5	37.969	95.000	1.898	3	6	18	4.275	34.457
6	28.477	95.000	1.424	3	6	18	4.275	39.496
7	21.357	95.000	1.068	3	6	18	4.275	42.377
8	16.018	95.000	801	3	6	18	4.275	43.811
9	12.014	95.000	601	3	6	18	4.275	44.176
10	9.010	95.000	451	3	6	18	4.275	43.871

In the first 2 cases, we have a negative NPV; this is due both to the fact that the OMV is lower (case 1) or very close (case 2, so the additional costs erase the margin) to the asset purchase price and that the creditor 1 has also to reimburse the creditor 2 for the difference between the asset purchase price and the 1st lien mortgage amount (€40k in case 1 and 10k in case 2).
So there's no convenience to use the REOCO in those cases.
All the other cases have finally a positive NPV where the maximum is in case 9; after that the incidence of costs of management is higher than the margin.

Again projecting the CFs for the first 3 cases we have:

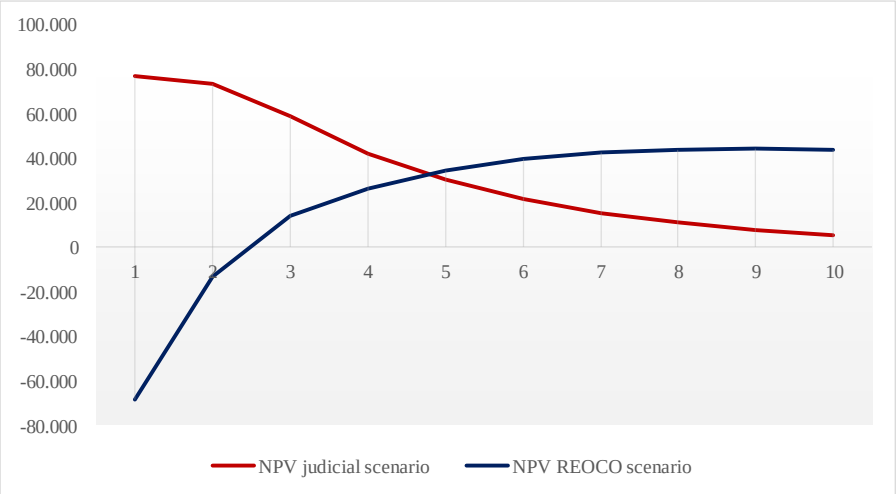
Table 36: REOCO – CFs simulation of the REOCO intervention scenario (auction 1,2 & 3)

Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12
-	-	-	-	-	- 18.000	- 238	- 238	- 40.238	- 238	- 238	11.763
-	-	-	-	-	-	-	-	-	-	-	- 13.500
-	-	-	-	-	-	-	-	-	-	-	-
Month 13	**Month 14**	**Month 15**	**Month 16**	**Month 17**	**Month 18**	**Month 19**	**Month 20**	**Month 21**	**Month 22**	**Month 23**	**Month 24**
- 238	- 238	- 238	- 238	- 238	- 238	- 238	- 238	- 238	- 238	- 238	- 25.238
- 238	- 238	- 10.238	- 238	- 238	8.763	- 238	- 238	- 238	- 238	- 238	- 238
-	-	-	-	-	- 10.125	- 238	- 238	- 238	- 238	- 238	6.513
Month 25	**Month 26**	**Month 27**	**Month 28**	**Month 29**	**Month 30**	**Month 31**	**Month 32**	**Month 33**	**Month 34**	**Month 35**	**Month 36**
-	-	-	-	-	-	-	-	-	-	-	-
- 238	- 238	- 238	- 238	- 238	4.763	-	-	-	-	-	-
- 238	- 238	- 238	- 238	- 238	- 238	- 238	- 238	- 238	- 238	- 238	27.263

Finally, comparing the two alternative strategies, the point of indifference is where the 2 curves cross, basically after the 4th auction.
After that moment the REOCO scenario is preferable.

Figure 28: Simulation – REOCO vs wait&see/Judicial scenario NPV

Auction number	NPV judicial scenario	NPV REOCO scenario
1	76.927	- 68.505
2	73.318	- 13.120
3	59.007	14.134
4	42.179	26.441
5	30.174	34.457
6	21.569	39.496
7	15.426	42.377
8	11.027	43.811
9	7.888	44.176
10	5.639	43.871



Under all the assumptions above, an investor should finally wait and see if the assets is sold before the 5th auction, otherwise it will participate to the 5th auction for purchasing the asset with the use of the REOCO.
Of course the attitude of the investor won't be totally passive before the 5th auction; in fact many additional services, for the auction stimulation can be put in place in order not to leave the market depreciate the value of the asset at auction.

Assuming that the RE appraisal has expressed a correct OMV, and that the asset is enough liquid to be sold in the open market in a quite short period, than the REOCO tool allows the investor to handle and contain the downside risks that characterize the Secured claim recovery.

Appendix III – The securitization process

The general definition of securitization is the process of taking an illiquid asset, or group of assets, and through financial engineering, transforming them into a security.
Through the securitization process, a financial entity can pool together various types of contractual debt such as residential mortgages, commercial mortgages, auto loans or credit card debt obligations (or other non-debt assets which generate receivables) and can then sell their related cash flows to third party investors as securities, which may be described as bonds, pass-through securities, or collateralized debt obligations (CDOs).

In Italy, the reference law that regulates the securitization process is the n. 130/1999 subsequently modified in May 2005.

For effect of the securitization, investors are repaid from the principal and interest cash flows collected from the underlying debt and redistributed through the capital structure of the new financing.
Depending on the asset type, securities backed by mortgage receivables are called mortgage-backed securities (MBS), while those backed by other types of receivables are asset-backed securities (ABS).

Focusing on NPLs, in terms of a basic structure, NPL securitizations are relatively straightforward.
The first actor involved into the process is the "*Originator*", a bank that originated the NPLs or, in case of transfer, the lender of record of the NPLs.
The originator is typically a company looking to either raise capital, restructure debt or otherwise adjust its finances, transferring a pool of bad or illiquid assets.
Under traditional corporate finance concepts, such a company would have three options to raise new capital: a loan, bond issue, or issuance of stock.
The securitization process allows to break these constraints avoiding the consequent disadvantages that the three options have: stock offerings dilute the ownership and control of the company, while loan or bond financing is often prohibitively expensive due to the credit rating of the company and the associated rise in interest rates.

The originator sells the NPLs pool, identified as "*the portfolio",* to an unaffiliated vehicle, "*the issuer*", for an agreed purchase price, which is typically a fraction of the face value of the NPLs (or Gross Book Value).
The issuer is typically a "special purpose vehicle" or "SPV", that is "bankruptcy remote", meaning that if the originator goes into bankruptcy, the assets of the issuer will not be distributed to the creditors of the originator.
In fact, the sale should be a "true sale"; this means that the subsequent insolvency of the originator does not result in the sale being adversely affected, through being re-characterized as a secured loan to the originator or on the basis of any other transaction-avoidance.
The issuer funds the purchase of the portfolio, and so the purchase price, through the issuance of debt instruments to investors in different tranches "*the notes".*
The payment of the interest component, plus the repayment of the principal of the notes, as well as the payment of the costs of the securitization structure, is done using the cash flow generated by the NPLs collections.
The performance of the securities is then directly linked to the performance of the assets.

Credit rating agencies can rate the securities which are issued to provide an external perspective on the liabilities being created and help the investor make a more informed decision as well as express an opinion on the risk linked to the new instruments (CDO, MBS, ABS…).
Some deals may also include a third-party *guarantor* which provides guarantees or partial guarantees for the assets, the principal and the interest payments, in exchange of a fee (see GACS) and an *arranger*, typically an investment bank, when the financial structure is very complex.

The whole activity, such as the following SPV management, is typically managed in behalf of the issuer by a Master servicer (see chapter 2.2.4) while the task of collecting the cash flow is undertaken by a third party special servicer (see chapter 2.2.4).

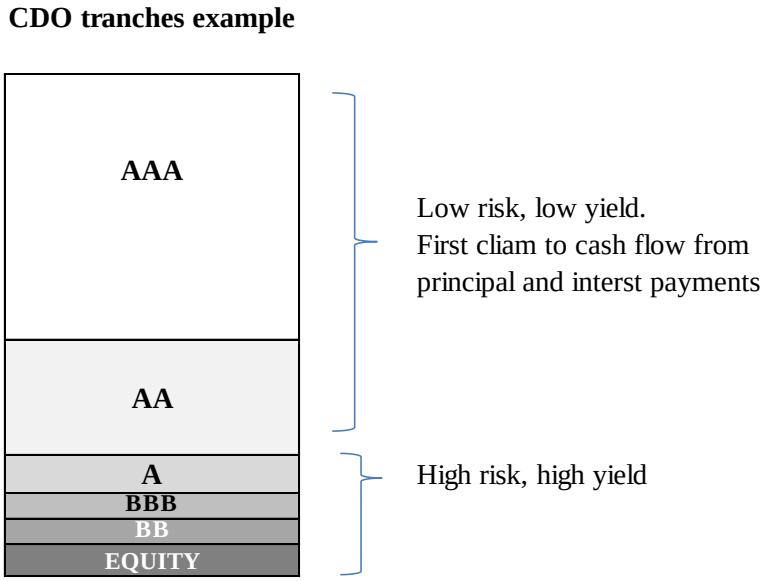
The securities can be issued with either a fixed interest rate or a floating rate; fixed rate instruments set the "coupon" (rate) at the time of issuance, in a way similar to corporate bonds, while floating rate securities may periodically adjust up or down according to a designated index such as the EURIBOR.
The floating rate usually reflects the movement in the index plus an additional fixed margin to cover the added risk (risk premium).
The issued securities, the notes, are often split into tranches, or categorized into varying degrees of subordination.
Each tranche has a different level of risk exposure and the general structure is composed by:

- a senior class of securities
- a mezzanine tranche
- and one or more junior subordinated classes that function as protective layers for the senior class. This tranche is often called the equity class.

The senior classes have first claim on the cash that the SPV receives, and the more junior classes only start receiving repayment after the more senior classes have been repaid.
Because of the cascading effect between classes, this arrangement is often referred to as a cash flow waterfall or simply waterfall.
In case the underlying asset isn't enough to make payments on the securities (e.g. because of loans default within a portfolio or because of a drastic change in the economic scenario and/or a mistake in the evaluation of the future cashflows), the loss is absorbed first by the subordinated and junior tranches, and the upper-level tranches remain unaffected until the losses exceed the entire amount of the subordinated tranches.

If a rating agency is involved into the process, the senior securities might be AAA or AA rated, signifying a lower risk, while the subordinated classes receive a lower credit rating, signifying a higher risk; this is not due to a lower quality of the asset that specifically backed such subordinates classes but to the whole credit risk of the portfolio, that in case of default or partial repayment will in fact be absorbed by the junior notes (while the senior notes shouldn't be affected by the loss).
In fact, the most junior class is the most exposed to payment risk and in the worst scenario the equity class can also receive no coupon (either fixed or floating), but only the residual cash flow if any after all the other classes have been paid.

Figure 29: Securitization structure - Tranching example



In some cases (i.e. vendor financing) the equity class is a special type of instrument which is retained by the originator as a potential profit flow.

As explained above, due to the structured financial scheme and to the number of subjects involved, the securitization process is very complex.
Summarizing, all of some of the following parties can participate to the financial structure of a securitization operation with different roles:

Basic actors:

- Originator
- Issuer
- Investor
- Master servicer
- Special servicer

Optional:

- Arranger (i.e. Investment bank) for complex operations
- Rating agency for rated operations
- Guarantor/Insurer

Appendix IV – Basel III in synthesis

Basel III is an extension of the existing Basel II Framework, and introduces new capital and liquidity standards to strengthen the regulation, supervision, and risk management of the whole of the banking and finance sector.
As for the previous Basel I and II, also Basel III requirements are in response to the deficiencies in financial regulation experience after the 2000's financial crisis.
This appendix is intended to give a simplified and synthetic summary of the measures within Basel III, rather than a full analysis in order to give the reader an adequate guidelines for better understanding the matters treated within the paper.

Basel III - Capital requirements:

According to Basel III bank are required to keep a minimum Common Equity Tier 1 (CET1) ratio of 4.5% .
This ratio is calculated as follows:

$$\frac{CET1}{RWAs} \geq 4{,}5\%$$

Where CET1 is composed by common shares, stock surplus, retained earnings (from the previous exercise) net of losses and adjustments.
RWAs are risk weighted activities, so the sum of all the activities (i.e. credit, notes…) weighted in function of the solvency rate of the counterparty (i.e. consumer credit have an higher weight than residential mortgages or other rated instruments) according to the rules of Basel III.

Adding the Additional Tier I (AT1), that is mainly composed by preference shares and other hybrid instruments that have a capability of contain absorbing bank's losses similar to CET1 (AT1 is considered worse in quality compared to CET1 but better then TIER2), to CET1 we have Tier1 (T1).
Basel III requirement is a minimum Tier1 capital ratio of 6% (where T1 is composed by CET1 plus AT1):

$$\frac{T1}{RWAs} \geq 6\%$$

Adding T2 to T1 we obtain the Total Regulatory Capital ("Patrimonio di Vigilanza totale").
Total Regulatory Capital ratio has to be greater than 8%.
T2 is composed by hybrid instruments that have not the minimum characteristics to be comprehended into T1; mainly subordinated/junior bonds with a maturiry longer than 5 years.

Besides having increased the threshold for CET1 ratio (from 2% to 4,5%) and for T1 ratio (from 4% to 6%) and for the Total Regulatory capital, Basel III introduced two additional capital buffers:

- A mandatory "capital conservation buffer", equivalent to 2.5% of risk-weighted assets to be met by the CET1 Capital.
- A "discretionary counter-cyclical buffer", allowing national regulators to require up to an additional 2.5% of capital during periods of high credit growth.
  The level of this buffer ranges between 0% and 2.5% of RWA and must be met by CET1 capital.

Basel III - Leverage ratio

Basel III introduced a minimum "leverage ratio" calculated by dividing Tier 1 capital by the bank's average total consolidated assets (sum of the exposures of all assets and non-balance sheet items).
The banks are expected to maintain a leverage ratio in excess of 3% under Basel III.

$$\frac{T1}{Total\ Exposures} \geq 3\%$$

Basel III - Liquidity requirements

Basel III introduced two required liquidity ratios:

- The "Liquidity Coverage Ratio" was supposed to require a bank to hold sufficient high-quality liquid assets to cover its total net cash outflows over 30 days and is expressed as follows:

$$\frac{High\ quality\ assets}{\text{Total net cash outflows over 30 days}} \geq 1$$

  Where the high quality assets can't be binded to the bank and their liquidity-generating capacity is assumed to remain intact even in periods of severe idiosyncratic and market stress. The total net cash outflows is estimated based on the events of the crises of 2008.

- The Net Stable Funding Ratio was to require the available amount of stable funding to exceed the required amount of stable funding over a one-year period of extended stress.
  This funding ratio seeks to calculate the proportion of long-term assets which are funded by long-term, stable funding.
  Stable funding includes: customer deposits, long-term wholesale funding (from the interbank lending market), and equity:

$$\frac{Available\ amount\ of\ stable\ funding}{\text{Required amount of stable funding}} \geq 1$$

Appendix V – Dictionary

I) Gross Book Value (GBV):
All the Italian banks (Notes on financial stability and supervision), like the main European banks that adopt international accounting principles (IAS-IFRS), calculate the nominal or book value of their loans by using the amortized cost method, which provides for the discounting of future expected cash flows over the life of the loan.
This method takes into account the time value of money and, according to IAS, the original effective interest rate, i, of the loan itself must be used as discount factor.
In formulas, the GBV of a loan is equal to:

$$GBV = \sum_{t=1}^{N} \frac{ft}{(1+i)^t}$$

Where f(t) is the expected cashflow at time t.

II) Net Book Value (NBV):
When a debtor has difficulty repaying a loan, the bank must assess:

i. the probability of having a loss because it will be not possible to recover the entire amount (including interest) by the due time;
ii. the recoverable amount, which largely depends on the guarantee backing the loan (if there's any);
iii. the cash flow recovery time (n), which usually differs from that stated in the loan contract.

This assessment involves a new estimation of the parameter f'(t), which normally translates into a write-down in the profit and loss account (P&L) for the year and must taking into account the direct costs of managing NPLs (i.e. the costs of collecting and selling the collateral).
Therefore, the NPL net book value (NBV) equals:

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

III) Value Adjustment:
The value is equal to the difference between GBV and NBV:

$$VA = (GBV - NBV)$$

Over time, the position might become performing again (in this case the bank will record a recovery equal to VA), or it might deteriorate further (in this case the bank should record further write-downs).

IV) Coverage Ratio:
The coverage ratio is the ratio between the provisions accrued by the bank and the amount of the gross book value of the loan; an higher ratio means the bank can withstand future losses better.
In general, banks can record losses on non-performing loans in two ways.

The first one consists of setting up provisions against the portion of the exposure considered as unrecoverable; the second one involves directly writing off that portion of the exposure.
Banks generally choose the write-off when the loss is confirmed by indubitable, objective and specific elements; otherwise they prefer to set provisions.
The choice between the two methods is irrelevant to the value of the loans entered in the balance sheet, in both cases net of losses.
However, from the accounting standpoint, the write-off results in an underestimation of the effective coverage ratio, since it does not show the decreased riskiness of the non-performing loans remaining on the balance sheet after the write-off.
An example is presented here below for a matter of clarity.
Consider the case of a bank which for a specific loan has a value (GBV) in its balance sheet of €100 and an expects loss of €30 (unsubstantiated by indubitable, objective and specific elements), so it makes a provision for the amount of the expected loss (€30).
This means that the coverage ratio is 30% (€30 of provision out of €100 of GBV).
If, subsequently, the bank finds out, based on indubitable and specific elements, that the €30 is not more recoverable and decides to write it off (lowering by that amount both the value of the non-performing loan and of provisions), it will show a coverage ratio of nil.
In fact, in both cases, a share equal to 30% of the credit has already been accounted for as a loss in the financial statements.

V) NPE ratio:
One of the main topics on which the ECB is focusing on in the last two years is the monitoring of the NPE ratio.
The NPE ratio for a specific financial institutions is defined as the total amount of NPEs over the total amount of loans:

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

VI) Secured and Unsecured loans:
For the market operators, the NPLs world can be mainly split into two main categories the Secured loans and the Unsecured loans.
Generally speaking two basic loan transactions have evolved in private markets: unsecured and secured transactions, and when a distressed portfolio is put on sale and need to be classified by the market, the first check operators use to do is to understand if the largest part of its GBV is secured or not.
This has a great impact in terms of value as it will be explained later in this paper.
If a borrower offers an unsecured promise to pay, the lender must rely on the borrower's reputation, on the information collected about the borrower, or trust that the borrower will pay back the loan in order to have access to future loans (see Centrale dei Rischi register), in this type of lending there's no asset involved at origination.
It's important to underline that the border that divides secured and unsecured world is thin and not definitive over time.
Also loan classification is a critical point when we talk about NPLs, because it leads (as it will be showed and detailed later) both the valuation of the investors in phase of modeling, investing and purchase and the ones made by the banks in phase of credit coverage, devaluation and sale.

In general, it’s rational to assign to a secured loan a lower risk for the lender while to an to assign an higher risk to the unsecured loans, but the reality is complex and sometimes not linear also because the quality of the asset itself may vary overtime.

VI.I) Secured loans

Secured loans are those loans that are protected and guaranteed by an asset or collateral of some sort.
The item purchased by the debtor and financed by the lender, such as a home or a car, can be used as collateral, and a lien/mortgage is placed on such item.
The finance company or bank will hold the deed or title until the loan has been paid in full, including interest and all applicable fees.
As explained above, in secured transactions, promises to repay are backed by collateral that lenders can seize and sell in the event loan payments are not made as agreed.
Collateral can be:

i. Real estate - in case of mortgage loans
ii. Tangible personal property – in case of leasing loans - such as
iii. Inventory
iv. Equipment
v. Livestock
vi. cars (in case of leasing loans)
vii. Intangible personal property such as:
viii. unsecured accounts owed to merchants - accounts receivable
ix. secured agreements (chattel paper)
x. personal guarantees

In a sane economic system secured loans should be the best way to obtain large amounts of money since the presence of the collateral reduces the risk of losing money for the lender.
In fact, a lender is not likely to loan a large amount without assurance that the money will be repaid, but unfortunately this is not always translate into realty, mostly when banks have a lot of liquidity and so pressure to invest their money (as experienced during the recent 2007-2008 financial crisis).
Putting a debtor’s home or other property on the line is a fairly safe guarantee that the borrower will do everything in his power to repay the loan.
Secured loans usually offer lower rates, higher borrowing limits and longer repayment terms than unsecured loans.
As the term implies, a secured loan means you are providing "security" that your loan will be repaid according to the agreed terms and conditions.
It's important to remember that, if the debtor is unable to repay a secured loan, the lender has recourse to the collateral debtor has pledged and may be able to sell it to pay off the loan.
The mortgages liens and the rights claimed by the lender may vary in terms of seniority and amount within the terms of the contract signed between borrower and lender.

VI.II) Unsecured loans:

Unsecured loans at origination are loans that are issued and supported only by the borrower's creditworthiness, rather than by any type of collateral (see Centrale dei Rischi).
So an unsecured loan is one that is obtained by a debtor without the use of property as collateral for the loan, and it is also called a signature loan or a personal loan.

Borrowers generally need to have high credit ratings to be approved for certain unsecured loans or at least they need not be registered as bad payers, so not having previous defaults in their credit history.
As obvious, because an unsecured loan is not guaranteed by any type of property, these loans are bigger risks for lenders and, as such, typically have higher interest rates than secured loans for balancing the risk taken by the lender.
Unsecured loans mostly include:

i. credit cards (that switched into overdraft once defaulted);
ii. student loans
iii. personal loans/consumer finance
iv. special purpose loans

and these loans can be revolving or term loans.
A revolving loan is a loan that has a credit limit that can be spent, repaid and spent again.
Examples of revolving unsecured loans include credit cards and personal lines of credit.
Term loans, in contrast, are loans that the borrower repays in equal installments until the loan is paid off at the end of its term.
It's important to understand that the nature (secured/unsecured) of the loan is yet defined at origination but it may change over time; i.e. if the collateral linked to a secured loan is sold then the loan is not more secured but it switches to be unsecured, this kind of loan is defined by the market as "deficiency".

VII) Deficiency/Downgraded secured loan:
This is not yet a recognized neither a formal category, even if the market is aware that there's a big difference between an unsecured loan at origination and a loan that became unsecured after having lost its collateral.
In fact, generally speaking, it is rational to think that once a loan loses its backed asset (because this went sold or destroyed), the capability of the debtor to repay his debt becomes lower in the future, as well as lender's expectation on future recovery.
Coeteris paribus, this is not true for a loan originated as unsecured, while the lender has examined the borrower situation before lending money and it has an idea on the possibility of recovery in case of debtor's default without initially linking the recovery to any assets.

VIII) Promissory note ("cambiale"):
An example of a transformation of an unsecured loan into a kind of secured one is the promissory notes case.
It's now common practice to restructure defaulted unsecured loan by agreeing with the debtors new promissory notes plans (i.e. through home collection activities).
In doing this, the creditor is willing to agree a new plan for a lower amount than the actual GBV, in exchange of the signature of a promissory notes plan by the debtor, that will represent a sort of new guarantee.
Cambiale, often translated in english as promissory note, is a tool used in Italy by creditors in order to have a bank title of credit.
It is a bearer security, so who has materially the cambiale has the right to receive the payment.
Many banks and credit servicers obtain payment plan based on cambiali with future scheduled date, normally with monthly scheduled payments.

Usually, cambiali are an outcome of home collections activities (recovery based on visit to debtor in house/office):
The bill collector proposes a payment plan to the debtor and after negotiation the debtor signes cambiali on site (the bill collector has always with him blank cambiali to be filled and signed);
Signed cambiali are delivered to collector who finally deposits the cambiali in dedicated caveau.
If unpaid, cambiale automatically becomes a title for judicial recovery action by the creditor.
This means that the creditor can skip a phase of the legal procedure, as he doesn't need to obatin the title.
Cambiali payment flow is managed by banks or by specialized servicer which are in charged for the management of payment (presentation of cambiale to the bank for the collection), and also for activities related to unpaid.

IX) Texas ratio:
Developed by Gerard Cassidy and others at RBC Capital Markets, the Texas ratio is calculated by dividing the value of the lender's non-performing assets by the sum of its tangible common equity capital and loan loss reserves.
In analyzing Texas banks during the early 1980s recession, Cassidy noted that banks tended to fail when this ratio reached 100%.
Simplifying, the ratio indicates the capacity of the bank to cover losses due to devaluation of the non performing exposures.

X) Bail in:
A bail-in is rescuing a financial institution on the brink of failure by making its creditors and depositors take a loss on their holdings.
A bail-in is the opposite of a bail-out, which involves the rescue of a financial institution by external parties, typically governments using taxpayers money.
Both the European Union and the U.S. have restricted the use of government bail-outs, which effectively makes bail-ins default option for a bank in distress.
The sentiment behind it was that taxpayers should not have to pay for the big banks' mistakes.
It became a source of resentment that during the financial crisis governments paid trillions of dollars of taxpayer's money to rescue the big banks, while ordinary people lost their jobs and homes.
A bail-in, forces the borrower's creditors to bear some of the burden by having part of the debt they are owed written off and it takes place before a bankruptcy and under current proposals, regulators would have the power to impose losses on bondholders.

XI) Burden sharing:
Differently from the yet illustrated bail-in (Appendix I, X)), the burden sharing can't transform into equity the senior bondholder (neither partially) and can't have access to none of the clients deposits, independently from their amounts.
Therefore the burden sharing affects only the junior creditors.

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