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The financial advisor's perspective on NPE securitisations: deal structuring and portfolio pricing

Prof. Leopoldo Attolico

Supervisor

Prof. Andrea Donzelli

Co-Supervisor

Andrea Cutrignelli

(ID No. 741181)

Candidate

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Introduction

John Maynard Keynes, the father of modern macroeconomics, once said: *"If you owe your bank a hundred pounds, you have a problem. But if you owe a million, it has"*. This quote enucleates the backbone principle underlying the present dissertation.

Any credit institution, when granting funds to natural or legal persons in order to finance their cash needs, takes on what is known as "credit risk". Credit risk is a type of financial risk arising from the possibility that a debtor may fail to pay back contractual obligations. Accordingly, interest payments from the borrower can be considered a "reward" to the lender for bearing credit risk. Conversely, when a borrower defaults on their financial obligations, a credit institution typically incurs a loss, generated by the combined effect of the interruption of cash flows (i.e., principal and interest payments) and the increased costs of recovering the exposure. Through internal credit risk management frameworks, based on probabilistic models, lenders are able to lower this possibility and obtain fairer compensation for the degree of credit risk of the transaction (i.e., higher credit risk leads to higher interest payments). However, even the most accurate and sophisticated risk management model cannot predict exactly who will and when. Therefore, credit risk can be mitigated but never eliminated and the lender will always be exposed to the risk of default by its borrower.

The rationale behind Keynes' quote, therefore, is now clear. If a borrower owes the bank a large sum of money, the bank will be interested in the borrower being able to continue to run their business in order to easily settle the obligation. As a consequence, if the borrower has difficulty meeting loan obligations, this is a "problem" for the bank that might be willing to restructure the debt, trying to recover as much money as possible. In this light, the "problem" is much more of the bank losing money than of the borrower getting a "discount" on the financing repayment. In the banking industry, this problem has a name, which is "non-performing exposure" or "NPE", namely a credit exposure for which the inflows of interest and principal payments have been interrupted or delayed.

This thesis aims to describe how banks can tackle this "problem" by delving on a specific solution, namely the securitisation of these non-performing exposures.

In the aftermath of the 2008 Global Financial Crisis, credit institutions were in dire need of eliminating bad credits from their balance sheets and until 2019 they successfully achieved this goal, aided by banking regulators. However, the stock of NPEs increased again worldwide due to the COVID-19 pandemic, the effects of which caused a large number of borrowers to default on their repayments.

To manage this new challenge, banks can achieve their deleveraging goals through three different avenues:

1) Securitisation;
2) Straight sales of loans;
3) Credit funds.

Of these three options, securitisation is the most widely employed and effective so far. A straight sale of the NPE portfolio, besides historically resulting in lower pricing and thus higher losses, does not allow banks to retain an interest in the disposed assets. Selling the portfolio directly to third parties may be a suitable and cost-effective solution for small commercial banks that are not structured enough to handle the complexity of a securitisation. In contrast, credit funds are becoming increasingly important as a deleverage tool for banks. To briefly provide some context, when a securitised NPE portfolio is sold to a credit fund, the bank receives a payment in kind instead of a price, which is a shareholding of the credit fund. This allows banks to remove the distressed credits from their balance sheet while retaining an interest in the portfolio via the stake in the fund. However, this deleveraging opportunity is not yet well developed, as setting up the credit fund and 'feeding' it through various securitisations is a complex process. Moreover, the bank retains only an indirect interest in the securitised portfolio since, among the balance sheet's assets of the fund, the sold NPEs are bundled together with the NPEs of other banks that have undertaken the same process. Finally, the transfer to a credit fund implicitly involves a securitisation, which therefore remains the most relevant tool for freeing up distressed debt from credit institutions' balance sheets.

During my last internship experience, I had the chance to join the Corporate Finance FSI team of Deloitte Financial Advisory in Milan and to work on a € 700m NPE securitisation.

This thesis encapsulates the knowledge I gained on distressed securitisations during this work experience, with the ultimate objective of providing a generic overview of these types of transactions and the perspective of financial advisors in structuring and pricing them, with a focus on the leading NPE market, which is the Italian one.

The topics addressed by the thesis are organised into chapters as follows:

1. Non-Performing Exposures (NPEs);
2. NPE securitisation in Europe and Italy;
3. Deal structuring;
4. Portfolio pricing.

The first two chapters of the essay aim to lay the groundwork for the topic by describing what non-performing exposures are and what securitisation is. In particular, the first chapter outlines what types of loans NPEs generally originate from and how a loan is secured. The second provides a general framework on NPE securitisation, its origin, how it is regulated and recent trends in the market for bad credits.

The second part is more empirical and builds on the notions outlined in the first two chapters, with the purpose of explaining what is the role of financial advisors in NPE securitisations, from setting up the deal workflows to portfolio valuation.

Chapter 1

Non-Performing Exposures (NPEs)

The first section lays out the definition of non-performing exposure in the European banking framework and how and why this definition has been further developed by the Italian banking regulator.

The second paragraph elaborates on the concept of NPE by outlining the types of loans that commonly make up an NPE portfolio. Understanding which exposures are usually part of a securitised NPE portfolio is key, as it has major implications on the transaction scheme to be adopted and how to manage the NPEs after closing.

Finally, the chapter at hand discusses the collateralisation techniques common to almost all jurisdictions. These are pivotal for NPE securitisation, as secured exposures, even if impaired, are those which generate most of the securitisation cash flows. From the standpoint of financial advisors, it is crucial to have a comprehensive understanding of how collateralisation works in order to carry out sound and fair collateral valuations.

1.1 Definition of NPEs

Non-performing Exposures (NPEs), as defined by the European Banking Authority (EBA), are those credit exposures that satisfy either or both of the criteria hereunder:

1. Material exposures which are more than 90 days past-due;
2. The bank deems it is highly probable that the contractually owed capital and/or interest will not be repaid in full without realisation of collateral[1].

Each credit institution should establish appropriate internal guidelines to define a group-wide mechanism for determining days-past-due and unlikeness to pay criteria, in order to recognise NPEs.

Moreover, the Bank of Italy has decided to provide more granularity on NPE classification, by dividing them into the three sub-categories hereinafter.

- **Non-performing Loans (NPL)** or **Bad Loans** are exposures to debtors that are insolvent or in substantially similar circumstances. The borrower has defaulted on their repayment obligations and the exposure has reached the "*non-performing*" status.

- **Unlikely-to-pay (UTP)** are those exposures in respect of which banks believe the debtors are unlikely to meet their contractual obligations in full, unless action such as the enforcement of guarantees is taken. Differently from NPLs, the borrower has not yet defaulted on interest and capital payments and, therefore, the exposure is in between the "*performing*" and "*non-performing*" status.

- **Overdrawn and/or past-due exposures** are those credit facilities that are overdrawn and/or past-due by more than 90 days and for above a predefined amount.

[1] Specific indications for default criteria are set up by the European Banking Authority (EBA) in the report "*Guidelines on the application of the definition of default under Article 178 of Regulation (EU) No 575/2013*"

The third category "Overdrawn and/or past-due exposures" has only statistical implications because of its low volume compared with the other two batches. In NPE securitisation practice these exposures are typically included in NPL or UTP clusters.

Bank of Italy's classification is extremely relevant, as the Italian distressed market is by far the most active in Europe[2] and, therefore, a significant number of NPE deals, even if include international investors, are carried out pursuing Italian law. Additionally, as far as the securitisation process is concerned, the division of NPE into NPL and UTP offers a greater degree of accuracy in deal structuring and portfolio pricing. In fact, unlike NPLs, UTPs are not defaulted loans since the borrower is in a temporary crisis and can return to the "*performing*" status. When a lending institution manages UTPs its aim is to help the borrower to bring the loan back to the "*performing*" status through different restructuring strategies. On the contrary, a bank managing an NPL will only try to recover as much cash as possible from the position, since the borrower is insolvent and therefore there is no chance of them returning to the "*performing*" status. Finally, for the aforementioned reasons, UTPs have obviously a higher book value on banks' balance sheets than NPLs.

These differences are material and extremely relevant, hence Bank of Italy's categorisation will drive the definition of non-performing exposures throughout the whole dissertation. Nevertheless, please note that in most of the cases EU regulators group UTPs and NPLs together in the NPEs cluster, using the acronyms NPEs and NPLs interchangeably.

1.2 Main types of Credits originating NPEs

Credit exposures underlying NPEs are mostly made up of the so-called "cash credits", where the bank lends to the borrower an amount of cash. The borrower will pay back the amount financed, the principal, plus the interests. Essentially, the following are the traditional types of loans and, on a purpose-based classification, they can be divided into three macro categories.

[2] According to the report "NPL securitisations and related governmental guarantee schemes in Europe" issued by Deloitte UK in October 2020, Italy accounts for the 75% of total NPEs deal volume from 2016-2020 on the EU market.

1. Commercial Loans;
2. Residential Loans;
3. Consumer Loans.

1) Commercial Loans

These loans are mainly aimed at financing companies' capital expenditures (CapEx) and short-term working capital needs.

- **Working Capital Loans**

  These types of loans is mainly used by corporates to face their short-term operating financing needs. Specifically, the types of credits hereinafter are the most likely to trigger an NPE.

  - **Revolving credit facility:** Also called *"line of credit"*, this is a widely used form of credit issued by a financial institution that provides the borrower with the ability to draw down or withdraw, repay, and withdraw again. The line of credit can be both secured or unsecured with a maturity ranging from 6 months to 5+ years. A typical revolving requires the debtor to pay the creditor an annual commitment fee on the entire line in order to keep it available for future use. In some instances, banks can require borrowers to repay the facility in full before allowing further draw-downs or renewals (*clean up call*).

  - **Checking account overdraft facility**: The bank provides the company with a line of credit that can be freely used to cover short-term financial needs at any time and in any way. Differently from a common revolving credit facility, this credit line is settled on a checking account, giving high flexibility to the customer. By granting this credit line, the lender will be entitled to receive repayments only related to the cash amount effectively drawn. Usually, this is an

unsecured exposure, but a company with a low credit rating[3] could be asked to provide guarantees for the credit line to be granted[4].

- **Accounts Receivables Financing (or Invoice Financing)**: The credit institution offers to a company a cash advance against receivables' invoices. Most terms request payment to be made between 30 and 90 days after the date the invoice is issued, which leaves businesses vulnerable to unexpected costs that may arise while waiting for the money to come in. Commonly, the cash advance is not granted for the full amount, but the bank retains a 20-30% margin as a guarantee. Of course, the credit institution earns interests on the cash advance amount until the receivable is paid back.

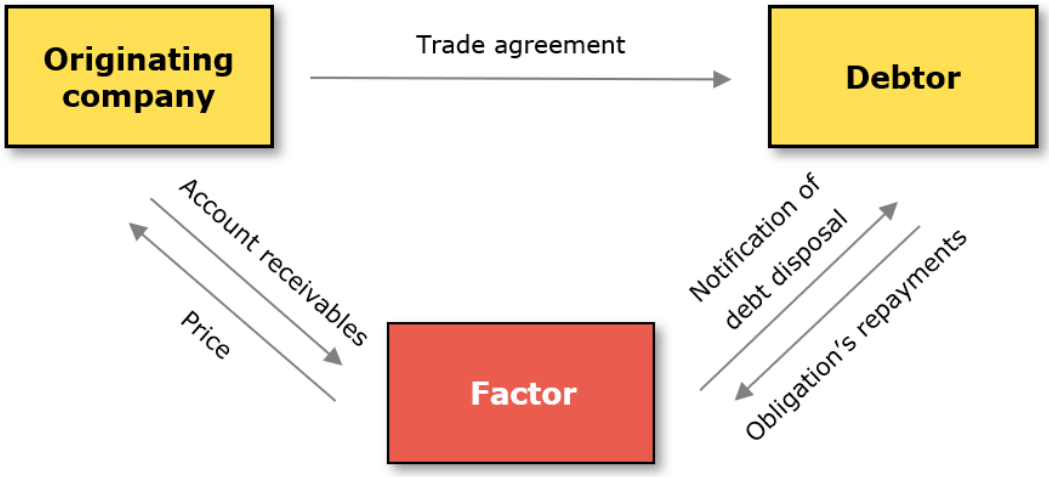
  This financing product is widely used since traditional business lending models, which tie in borrowers for a long period, are expensive and slow to put in place. Invoice financing is a fast way of accessing cash which can be used to pay an unexpected bill or invest money back into the business.

Another banking product that is becoming increasingly important among working capital financing instruments is the so-called **"Factoring**" (Figure 1). Essentially, through a factoring agreement a company sells to a specialised intermediary - the "*factor*" - its account receivables on an ongoing basis. The factor pays the receivable to the company, discounting it and retaining a percentage as a guarantee. Afterwards, it will manage and collect the receivables, by carrying out all the relevant recovery activities. This is not thus a "pure" banking product since an additional service is added to the actual financing.

[3] **Credit Rating** is a measure of an obligor's financial strength based on an assessment of financial standing, performance, and prospects. The same applies to individuals, who instead have a **Credit Score** representing their relative degree of creditworthiness.

[4] This may be also the case of asset intensive companies (e.g. retailers) which may use **Asset Based Lending (ABL) facilities**. ABLs are secured by a first priority lien on all current assets (typically accounts receivable and inventory) of the borrower and may include a second priority lien on all other assets (typically PP&E).

Figure 1 – Factoring scheme



source: Author's elaboration

- **Commercial Term Loans**

  Differently from working capital loans, a term loan is fully funded on the date of closing and once the principal is repaid, it cannot be reborrowed. This type of loan has a specified long-term maturity that ranges from 1 to 15+ years and requires principal repayments according to a predetermined schedule[5], typically on a quarterly basis. Loans that fall into this category are usually employed to fund company's CapEx and may contain general or specific performance covenants[6]. The hereunder are the most common technical forms of commercial term loans.

[5] Generally, there are two prevailing forms of repayment schedule:

- **Bullet repayment:** The borrower pays monthly interests (computed as an annual percentage rate of the amount lent, divided by 12 months) and on the maturity date, they will pay the so-called "balloon payment", namely the whole chunk of the principal. The key features of a bullet schedule are that the principal is returned back to the credit institution when the maturity date comes and interest is calculated based on the total loan amount.
- **Amortised repayment:** Differently, with amortised loans the principal repayment will occur over the loan period and interest repayments are computed from the residual outstanding amount. Therefore, sooner availability of the principal benefits the bank, which reduce the risk associated to the loan and can use this amount to grant new loans and finance new businesses.

[6] A **covenant** is a clause in a loan agreement that requires the borrower to adhere to certain conditions. Violation of a covenant can result in the loan or being terminated and becoming immediately due and payable.

- **First Lien Commercial Mortgage:** A commercial mortgage loan is granted on a nonrecourse basis by a lender (or *mortgagee*) to a borrower (or *mortgagor*) seeking to purchase or finance a commercial property. Generally, this loan is secured by the property being acquired and its maturity ranges from 5 to 20 years. Thus, a bank which grants a first lien loan has a first priority lien over the collateral asset, namely a legal right or claim against the asset to satisfy the obligation. As a consequence of this right, mortgages are typically available at a lower interest rate than unsecured loans.

- **Second Lien Commercial Mortgage:** A floating rate[7] mortgage that is secured by a second priority security claim over the assets of the borrower.

- **Unsecured Loan:** A term loan where there is no mortgage lien or pledge over real assets, the lender thus has no protection that the repayment will occur. However, unsecured loans usually involve smaller funds than what might be lent against collateral and require interest rates substantially higher than secured loans.

- **Syndicated Loan:** A loan granted by a group of financial institutions (loan syndicate) to a corporate borrower. This type of loan is usually granted to large-cap corporates or to financing specific relevant investments. After origination, shares of syndicated loans can be traded in the secondary market, changing the composition of the loan syndicate.

- **Lease Agreement:** This is a newer credit facility than the previous ones mentioned so far. A lease agreement is a transaction that gives one party (*lessee*) possession

[7] - ***Floating rate***: An interest rate on a financial contract, asset, or liability that changes on a periodic basis, based on a specific benchmark rate that serves as a reference. The most common benchmark rate in the Eurozone is the Euro Interbank Offered Rate (EURIBOR), which is the rate at which a large panel of banks are willing to lend funds in the EU-based interbank deposit market.

- ***Fixed rate***: An interest rate on a financial contract, asset, or liability that remains stable during the life of the contract.

A mortgage which blends the concepts of fixed and a floating rate is called "***Hybrid adjustable-rate mortgage***" or "***Hybrid ARM***". With this type of loan, the interest rate will be fixed up to predetermined period (i.e., 10 years) and then begins to float.

and use of an asset for a period of time in exchange for periodic payments to another party (*lessor*). A lease agreement can be both capital or operating. The former is a long-term lease contract where the lessee accepts most of the risks and benefits of the leased assets. Typically, a capital lease ends with the lessee paying a redemption price to purchase the asset. Instead, the so-called operating lease has a contract period that is shorter than the expected economic life of the underlying asset and may be terminated early at lessee's discretion. Despite the fact that most lease agreements involve a single asset, Master lease agreements covering multiple assets can also be arranged.

2) Residential Loans

The main credit exposure falling in this category is the residential mortgage loan, namely a term loan secured by a first lien mortgage on the real estate asset being acquired. Typically, this mortgage loan aims at supporting the financing of a single-family residential property. A residential mortgage can be structured as a fixed, floating or hybrid rate mortgage, with a maturity that can range from 10 to 30 years. *Loan-to-value (LTV)*[8] is usually set at 80%, though this can be lowered for lower credit quality borrowers (*subprime borrowers*) or those who choose to disclose less financial information (*Alt-A borrowers*).

In addition, this category includes residential leases, which is a lease agreement where the leased asset is a residential property.

3) Consumer Loans

Intuitively, consumer loans are those credit facilities granted for consuming purposes. Therefore, individuals and families are the most common borrowers for these types of loans, although facilities like credit cards are widely used by companies as a benefit for some kinds of employees, as business travellers or managers.

Consumer loans can be either short- or long-term oriented.

[8] **Loan-to-Value (LTV)**: The percentage amount a bank is willing to lend against the appraised value of the asset being financed. The higher the LTV the greater the leverage granted to the borrower, and the lower the protection afforded the bank in the event the borrower defaults.

- **Credit card** is the most common revolving credit facility for consuming purposes and the one which is more likely to trigger an NPE. Credit cards allow individuals to make purchases without paying with their own cash. The settlement of the transaction is deferred to a future date. The holder, therefore, receives a credit for the period from the moment of purchase to the moment of the transaction settlement. Typically, banks earn from commissions due for the issuance of the card and its annual renewal. In addition, if the borrower defaults on their periodic settlement, the bank applies a high interest rate on the amount borrowed, on average a 16.45%[9] *annual percentage rate (APR).* Credit cards frequently underly unsecured exposures.

- **Long-term consumer loans** are essentially made up of personal and car loans.

- **Personal Loans**: A personal loan provides individuals with funds from a bank, in a lump sum that the borrower can use at their discretion, such as for a vacation, wedding, or home improvement. Generally, a personal loan is an unsecured credit facility, implying that the borrower needs an excellent credit score for the loan to be granted. In addition, the borrower's credit score also drives the loan amount and interest rate.

- **Car Loans**: Differently from a personal loan, a car loan is typically secured against the vehicle the borrower intends to purchase, which means the vehicle serves as collateral for the loan. Therefore, if the borrower defaults on repayments, the lender can seize the car. Commonly, car loans have a maturity which ranges from 3 to 6 years and pay a lower interest rate than personal loans since the latter are unsecured.

1.3 Collateralisation

Collateralisation is an agreement securing the payment of a debt. The agreement binds a specific asset, the collateral, that can be sold to recover the obligation undertaken in the case of default. Therefore, the collateral mitigates the credit and default risk for the lender in the

[9] Q4 2021 average credit card interest rate in US (https://www.federalreserve.gov/releases/g19/current/)

event that the borrower can no longer meet their debt obligations. Such collateral is either real if it relates to property (e.g. mortgage liens on real estate assets or commercial properties) or personal if it binds natural or legal persons with all their assets (e.g. sureties). Collateralisation plays a key role in NPE securitisation since it is the most relevant driver for NPEs' pricing.

The two predominantly legal forms for undertaking debt collateralisation are the lien and the pledge. Even though each country applies its own national law on collateralisation, the intrinsic features of these two security interest options are common across all jurisdictions.

- **Lien**[10]

A lien is the right that the lender has to retain the borrower's assets, property, or goods until the funds borrowed are fully repaid. If the borrower is unable to meet their repayment obligation the mortgagee has the right to seize and sell the collateral to repay the loan. Therefore, the lender only has a claim over the collateral, but not ownership or possession. In order for the claim on the collateral to be effective, generally, a mortgage deed must be registered.

The process through which a creditor "*repossesses*" and sells the property that the borrower put up as collateral is called "*foreclosure*". In most jurisdictions, this is a judicial process, therefore creditors have to file a lawsuit in court to foreclose. This legal process leads to different "*judicial auctions*", which are aimed at selling the collateral, where even the lender can bid on the asset. Judicial foreclosures typically take from one to five years to complete. Where the applicable law allows non-judicial foreclosures, the process may take less than 1 year. Whilst foreclosure typically applies to immovable properties, in the case of personal properties (e.g. a car) the lender can take repossession of the collateral without an in-court process, by simply retaking the asset. If the creditor is not able to find the personal collateral or repossess it without breaching the peace, an in-court process called "*replevin*" is required, in order to force the borrower to turn over the property.

For the purposes of an NPE securitisation, it is relevant to highlight that the mortgage lien, the unpaid debt and the cash-in from the judicial sale have often three different values. The

[10] Lien is also known as mortgage lien since typically it applies to mortgages.

creditor is entitled to receive the lower of these three values. Thereby, for instance, if the collateral is sold for € 100k, but the debtor has not paid just € 80k, then the lender will receive € 80k.

In some jurisdictions, like the US one, when a borrower is particularly risky, a lender may require the so-called "*blanket lien*", where more than one asset is collateralised. With a blanket lien, a creditor has a legal interest in all debtor's assets serving as collateral. Thus, this tool provides maximum protection to the lender and minimum protection to the borrower who can potentially lose all of their collateralised assets.

- **Pledge**

A pledge is a contract between a borrower (*pledger*) and a lender (*pledgee*) in which the borrower pledges an asset as a security to the lender. Differently from the lien, in a pledge, the borrower has to deliver the collateralised asset to the pledgee. However, the latter has the possession of the pledged asset while the ownership is retained by the pledger. If the pledger defaults on their repayments, the pledgee has the right to liquidate the collateral to repay the obligation. Despite the fact that the essence of a pledge agreement is similar for all types of collaterals, pledges over company's shares, receivables and bank accounts have some peculiar characteristics.

- *Pledge over company's shares*: The pledge must be registered in the shareholders' book of the company. Typically, the pledge covers dividends, new share issues, and share exchanges and the pledger usually authorises the pledgee to exercise voting rights.

- *Pledge over receivables*: Present and future receivables arising under an existing contract can be pledged. Typically, a company pledges its account receivables when asking for a revolving credit facility, hence for short-term borrowing. The credit institution usually limits the amount of the fund to be granted up to a certain percentage of the account receivables. This percentage decreases with the age of the receivables. For instance, a bank may not accept pledges over any account receivables which are more than 90 days past due or any receivables for which the company has granted unusually longer payment terms. On the contrary, for example,

the bank could grant a cash amount equal to the 80% of all receivables between 30 and 90 days old or to the 95% of all receivables that are 30 days or less past due.

- *Pledge over bank accounts*: A pledge can be granted over cash deposited in bank accounts. For recovery purposes, the lender should be aware that the pledge does not extend automatically over each increase in the balance of the bank account at the end. Therefore, the pledge on this increase may not exist until a new agreement is carried out. The new agreement should be considered a new and different pledge for all intents and purposes.

Furthermore, for small loans, commercial banks can ask a surety bond as collateral security. A surety bond[11] is a financial agreement where an insurer (*surety*) assumes the role of the borrower in repaying a credit if they default on their performance obligations. However, when dealing with non-performing exposures, personal collaterals to cover borrower's obligations are deemed as ineffective. This is so because if an exposure has reached the "*non-performing*" status, surely the original lender has already tried to force the surety to pay for the obligation without success. Therefore, in this context, non-performing exposures collateralised by sureties are considered unsecured.

[11] Please note that here the word "bond" does not have the meaning of financial obligation as in capital markets.

Chapter 2

NPE securitisation in Europe and Italy

The second section is aimed at describing the pillars of distressed securitisation, beginning with laying out the essential characteristics of this financial technique, when and why it came into being, and the reasons why securitisation has been singled out as the main culprit of the credit crunch in 2008. The second chapter, among others, provides an extensive explanation of the reasons driving lending institutions in pursuing this transaction. The latter is particularly relevant from the advisory side, as a key component of financial analysts' work in NPE securitisations is to analyse the impacts of the deal and whether the strategic deleveraging goals were achieved through the transaction.

Since the NPE market is highly regulated for obvious reasons, it is critical for financial advisors to be aware of the current regulatory framework and how it shapes securitisations of distressed debt. The section takes an in-depth look at the most disruptive EU regulations that guide European financial institutions in the management and offloading of NPEs, with a focus on the potential of governmental-backed schemes in enhancing NPE markets.

The chapter concludes with an outlook on the European NPE market, its main players, recent developments and upcoming trends. The same analysis is carried out for the Italian distressed market, which is the most active in terms of NPEs disposal.

2.1 NPE securitisation: Definition, origin and recent developments

Debt securitisation is a financing technique whereby banks and other credit institutions convert a batch of loans into marketable securities and sell them to a specially created third party (Special Purpose Vehicle or SPV). SPV uses the underlying loans as collateral to issue securities typically in the form of asset-backed securities (ABS) or mortgage-backed securities (MBS)[12] and sell them in financial markets.

Accordingly, an NPE securitisation is a specific kind of securitisation where the underlying assets of the ABSs are non-performing exposures.

There are many financial and strategic goals that a bank or a credit institution reaches by undertaking a debt securitisation. The following are the most relevant.

- **Improve funding mix:** Banks prefer not to rely on only one or a few sources of funding, as this can be risky in times of market liquidity difficulties. Consequently, securitisation may be a useful tool to diversify the funding mix and support rapid asset growth.

- **Reduce the cost of funding:** Following a securitisation, the cost of funding is lower, as the process decouples the credit rating of the originating institution from the credit rating of the securities issued.

- **Mitigate the maturity mismatch issue:** Usually, a commercial bank funds long-term assets like residential mortgages with short-term liabilities such as interbank funding or deposits. Securitisation can remove this maturity mismatch because the originating bank receives "immediate" funding from the sale of the assets, while the issued notes have a maturity coherent with that of the underlying loans.

- **Lower risk-based regulatory capital requirements:** Since securitisation results in lower credit risk for the bank, risk-sensitive capital guidelines require presumably

[12] Briefly, the underlying of **mortgage-backed securities (MBS)** are mortgage loans, while that of **asset-backed securities (ABS)** includes any other type of asset. Mortgage-backed securities make a distinct class since the loans have the backing of real property.

less regulatory capital in the case of securitisation than in the case of a portfolio of loans to be kept on the balance sheet.

- **Free up capital:** Debt securitisation is a powerful capital management tool since enables banks to create and sell new loans, by freeing up the capital that was set aside to cover the risk related to the loans being securitised.

- **Transfer Credit Risk:** Through securitisation, banks transfer the credit risk of the underlying loans to long-term investors.

- **Replace illiquid assets:** Assets that are otherwise considered relatively illiquid (e.g., non-performing exposures) can be removed from an Originator's balance sheet (the so-called "*asset derecognition"*) and included in a securitisation, thus providing liquidity.

- **Generate Servicing Fee Income:** After the closing of the securitisation, it may happen that the originating entity manages and recovers the exposures on behalf of the SPV, earning a fee on this activity. This can be deemed as a strategical benefit deriving from securitisation, but it is almost never the key driver for a bank to pursue a securitisation.

However, when a bank pursues an NPE securitisation the range of reasons behind this choice narrows. Indeed, by definition, a non-performing exposure is an asset that the bank wanted to keep on its balance sheet until it became non-performing. Therefore, there are no long-term strategic or financial goals in NPE securitisation, but it is mainly used as a liquidity and capital management tool. It enables banks to get rid of illiquid assets (i.e., the NPEs) and meet their regulatory capital requirements.

Debt securitisation has its roots in Europe between the late seventeenth and early eighteenth centuries when the British Empire restructured its sovereign debt by offloading it to its wealthiest mercantilist corporations, which in turn sold shares backed by those assets. By 1720, the South East Company and the East India Company, acting as SPVs of the British Treasury, held about 80% of the British sovereign debt. However, worries over the frailty

of securities led the British government to stop securitizing its debt, by focusing on a more conventional bond market to raise capital.

It was about 200 years later that the debt securitisation market really took off in the US. The first mortgage-backed securities arose from the secondary mortgage market in 1970, when the Government National Mortgage Association (GNMA), also called Ginnie Mae, guaranteed the first mortgage pass-through securities[13]. Government-backed pass-throughs became a revelation to secondary mortgage traders since they were deemed safe investments. Indeed, prior to Ginnie Mae, investors used to trade loans on the secondary market, but there was no interest in these securities since the underlying loans were not securitised. Ginnie Mae was soon followed by two other government-sponsored corporations, Federal National Mortgage Association (FNMA, commonly known as Fannie Mae) and Federal Home Loan Mortgage Corporation (FHLMC, also called Freddie Mac).

In 1983, Fannie Mae issued the first collateralized mortgage obligations (CMO). CMOs aimed at addressing the prepayment risk, which -for MBS investors- is the unexpected return of principal stemming from consumers who refinance the mortgages that back the securities[14]. In other words, commonly individuals are more likely to refinance their residential mortgages when interest rates are low and through refinancing the prepayment of MBS principal occurs. Therefore, investors are forced to reinvest the returned principal at a lower return. CMOs' main purpose was to solve this problem, allowing investors to lower prepayment risk with classes of securities that offer principal repayment at varying speeds. In 1986, US Congress fuelled the fire by creating the Real Estate Mortgage Investment Conduit (REMIC) to facilitate the issuance of CMOs.

[13] Mortgage pass-through security, also called a "**passthrough**", is a security created when one or more mortgage holders form a pool of mortgages and sells shares or participation certificates in the pool. The cash flow from the collateral pool is "passed through" to the security holder as monthly payments of principal, interest, and prepayments. When there are rules that are used to allocate the collateral's cash flow among different bond classes, the asset-backed securities are referred to as **pay-through certificates**.

[14] **Refinancing** is the process of renewing an existing financing facility. Essentially, the borrower takes out a new loan to pay off an existing one with different terms. Intuitively, refinancing is more likely to occur when interest rates decline.

By 2000, the trade in mortgage-backed securities has become a multi-trillion-dollar market and the structure of the debt securities had become more and more complex[15]. In the first year of the twenty-first century, the US subprime lending[16] rate rose dramatically to face high demand in debt securities, with the result that a large portion of the loans being pooled into securitisations was of poor credit quality. Consequently, securities backed by US subprime mortgages held by international investors lost most of their value, triggering the 2007-2008 global financial crisis. Understandably, securitisation was blamed for triggering the crisis when many of those underlying mortgages defaulted.

The impacts of the crisis rapidly spread globally. Indeed, even if European securitisation markets performed far better than the US market[17], they were subdued as well. Therefore, the crash in the European context was triggered by a combination of factors including stigma attached to securitisation and easy access to central bank liquidity rather than poor securitisation performance.

After many years of low trading volumes, the market for mortgage-backed securities came roaring back. By 2021, the MBS market was close to $12 trillion.

NPE securitisation markets followed almost the same path. Origination activity in the securitisation market shut down almost completely after the Global Financial Crisis.

[15] The debt securities commonly deemed as the "*crisis makers*" are the **Collateralised Debt Obligations (CDO)**. The CDO is a securitization structure that repackages risky exposures into tranches with unique risk and return profiles. A CDO can be created by a sponsoring bank or securities firm to transfer the default risk in its exposures to investor (known as "*Balance Sheet*" CDO) or profit from repackaging securities (the so-called "*Arbitrage*" CDO). Even though CDO looks similar to any other ABS securities, there are some differences between the two instruments. First, CDOs' underlying credit exposures (high-yield loans or bonds) are typically riskier than those underlying ABSs (mortgages or credit card receivables). In addition, the most important dissimilarity lies in the relationship with the Servicers. Indeed, when dealing with CDOs, there is no specific entity carrying out the servicing activity, instead the portfolio manager acts as a Servicer. Given the difficulty in collecting cash flows from such risky assets, the portfolio manager does not try to collect underlying's cash flow as a common Servicer would do, but instead actively manages the portfolio by sourcing higher-quality credits, selling positions before they deteriorate, and purchasing investments that are expected to appreciate.

[16] **Subprime loans** are those credit facilities offered at a higher interest rate than prime to individuals with poor credit ratings or other factors that suggest they are at increased risk of defaulting on their debt repayments.

[17] During the crisis, the worst performing EU securitisation products rated AAA saw only 0.1% defaults and the riskier BBB-rated securities defaulted in only 0.2% of the cases. Respectively, the same products recorded 16% and 62% defaults in the US market.

However, ten years later, largely facilitated by tailor-made regulatory measures and government-backed schemes, the NPE securitisation market saw a resurgence in Europe.

2.2 European Regulatory Framework for NPE securitisations

As securitisation market volume recovered in the years following the subprime crisis, European banking regulators focused on simple, transparent and sound structures, laying the groundwork for what was to become the European Securitisation Framework.

However, before introducing the EU securitisation-specific regulatory package, it would be worth analysing Basel capital requirements, as they have a relevant impact on how credit institutions set up their NPE strategy.

The aim of the paragraph is to carry out an in-depth analysis of the main pillars on which the EU NPE securitisation market is grounded.

1) Basel Accords;
2) EU Securitisation Regulation;
3) EBA Guidelines on NPEs management;
4) EU NPLs Secondary Directive.

2.2.1 Basel Accords

In 1988, the Basel Committee on Banking Supervision (BCBS) issued a package of international standards to measure and monitor banks' capital adequacy. Essentially, the central aim behind these standards was to unify international banking requirements, by comparing banks' assets and capital through a "one-size fits all" approach, to figure out if a credit institution could face a financial crisis or not.

In the aftermath of different revisions and amendments, the Basel Accord which currently leads is the third one, namely Basel III, which will be effective starting from 2023. It defines a bank's capital structure as follows.

- **Common Equity Tier 1 (CET 1)** is the sum of common shares, stock surplus, retained earnings, qualifying minority interest and other comprehensive income. CET 1 is the highest quality of regulatory capital, as it absorbs losses immediately when they occur.

- **Additional Tier 1 (AT 1)** is defined as perpetual instruments that are not common equity but are eligible for inclusion in this tier, such as convertible or hybrid security.

- **Tier 1 capital** is the sum between CET 1 and AT 1.

- **Tier 2 capital** is the bank's supplementary capital since includes less reliable instruments than Tier 1 capital. Specifically, Tier 2 embraces undisclosed funds that do not appear on a bank's financial statements, revaluation provisions, junior debt securities and general loan-loss provisions. In addition, it covers also hybrid capital instruments, but differently from AT 1, these instruments can have a maturity date. Tier 2 capital is also defined as "*gone-concern capital*" since when a credit institution fails, Tier 2 instruments are supposed to cover losses before depositors and general creditors.

After defining banks' capital structure, the Basel Committee set up an asset classification system, by introducing the concept of risk-weighted assets (RWAs). Essentially, when dealing with capital adequacy, banks are required to compute the value of an asset in relation to its credit risk. Thus, the risk-weighted value of the asset is its book value times the risk weight (%) associated with that specific asset class. For instance, since cash carries no credit risk its risk weight is 0%. On the contrary, a B + corporate loan has a 150% risk weight[18]. The risk weight associated with notes issued in an NPE securitisation is floored at 100%, but can reach 150% for junior notes.

Moreover, BCBS has allowed RWAs to be computed through two different methods.

[18] This applies using the Standardised Approach.

- **Standardised Approach (SA):** Under this approach, supervisors set the risk weights that banks apply to their exposures to determine RWAs.

- **Internal Ratings-based approach (IRB):** Each bank can develop internal risk management procedures and measurements to carry out customised risk valuation. This alternative method is better suited to the needs of the bank but produces less comparable results.

Basel III tries to reduce the use of the IRB approach, by requiring that the amount of RWAs computed through the IRB method must be at least 72.5% of the RWA computed through the Standardised Approach.

On the basis of capital and asset structure as above described, Basel III outlines the hereunder capital adequacy requirements.

- The **Common Equity Tier 1 ratio** needs to be higher than 4.5%.

$$CET\ 1\ ratio = \frac{CET\ 1}{RWA}$$

- The **Tier 1 capital ratio** is required to exceed the 6%.

$$Tier\ 1\ ratio = \frac{Tier\ 1\ capital}{RWA}$$

- The **Capital Adequacy ratio** must be higher than 8%.

$$Capital\ Adequacy\ ratio = \frac{Tier\ 1 + Tier\ 2\ capital}{RWA}$$

Basel III also introduces an additional 2.5% buffer capital requirement and an extra 2.5% as a countercyclical buffer, raising all the above-mentioned ratios by 5%. Up to date, European credit institutions are required to retain a 10.6% CET 1 ratio and a 15.1% Capital Adequacy

ratio[19]. Furthermore, Basel III requires banks to hold a non-risk-based leverage ratio higher than 3% and brings in new liquidity measures to face both short and long-term liquidity risk.

As concerning NPE securitisation, these standards are particularly relevant because a credit institution, by disposing its NPE portfolios, would effectively lower the overall risk of its assets, thereby meeting capital requirements more easily. This is one of the most significative elements driving a bank to undertake a securitisation.

In conclusion, as Basel III awaits its implementation, the BCBS has produced another set of provisions, unofficially known as Basel IV, aimed at "*restoring credibility in the calculation of RWAs and improve comparability of banks' capital ratios*". Therefore, Basel IV will further restrict the use of the IRB method and provide more granularity to the Standardised Approach.

2.2.2 EU Securitisation Regulation

As securitisation market volume recovered in the years following the subprime crisis, European banking regulators focused on simple, transparent and sound structures, laying the groundwork for what was to become the European Securitisation Framework.

Effective 1 January 2019, Regulation (EU) 2017/2402 (also known as "Securitisation Regulation") together with Regulation (EU) 575/2013 (the so-called "CRR Regulation") was designed to lay down a general securitisation framework aimed at identifying simple, transparent and standardised (STS) securitisations. According to the Securitisation Regulation, an STS securitisation must meet the below criteria:

- **Simple (Article 20):** The securitised exposures must be homogeneous, originated in the ordinary course of business and not be in default.

- **Transparent (Article 22):** The Originator must supply to investors a liability business plan and historical data on default and loss performance of the

[19] "ECB requires banks to hold marginally more capital in 2022", European Central Bank's press release on the 10th of February 2022.

underlying assets. An external verification on a data sample must be carried out by an independent third party.

- **Standardised (Article 21):** Requirements relating to standardisation are mainly focused on transaction documentation. The interest rate and currency risks deriving from the transaction need to be mitigated and any measures taken for that purpose must be disclosed. Furthermore, the transaction documentation must set out clearly appropriate early amortisation provisions. Finally, voting rights shall be clearly disclosed and assigned to bondholders, in order to facilitate the resolution of conflicts between different classes of investors.

Moreover, the regulation at hand has provided several key requirements for all those players involved in securitisation transactions.

- **Due diligence (Article 5):** Institutional investors are required to verify the processes and procedures which led the originating bank or credit institution to grant the credits underlying the securitization obligation.

- **Risk retention (Article 6)**: In order to align all involved parties' interests, either the Originator or the sponsor or the original lender[20] must maintain a material net economic interest in the securitisation of at least 5% (not subject to hedging,

[20] Article 2 of the Regulation (EU) 2017/2402 provide the following definitions:

- **"Securitisation special purpose entity"** or **"SSPE"** (commonly known as **SPV**) means a corporation, trust or other entity, other than an Originator or sponsor, established for the purpose of carrying out one or more securitisations and the structure of which is intended to isolate the obligations of the SSPE from those of the Originator.
- **"Original lender"** means an entity which, itself or through related entities, directly or indirectly, concluded the original agreement which created the obligations or potential obligations of the debtor or potential debtor giving rise to the exposures being securitised.
- **"Originator"** means an entity which, itself or through related entities, was involved in the original agreement which created the obligations underlying the exposures being securitized or purchases a third party's exposures on its own account and then securitises them.
- **"Sponsor"** means a credit institution other than an Originator, that establishes and manages a securitisation that purchases exposures from third-party entities, even if delegates the day-to-day active portfolio management activity to an authorised entity to perform.

credit risk migration). The retention shall be held and cannot be shared. In addition, if the Originator, the sponsor, or the original lender are unable to reach an agreement on who retains the risk, the risk retention shall be borne by the Originator.

- **Transparency** (**Article 7)**: Originators, sponsors, and SPVs are obliged to provide investors with all the documentation essential to understand the securitization transaction and carry out a sound due diligence activity. In addition, the aforementioned parties are required to deliver information on underlying exposures on a regular basis.

The EU Securitisation Regulation brought different benefits to the European capital market since it re-built investors' confidence in the securitisation entities, by providing them with a standardised risk valuation framework and by bringing in transparency and regular availability of information. Furthermore, it mitigated risk management issues through the abovementioned risk retention regulation and a more risk-sensitive framework for securitisation transactions.

In 2019, as of section 11 of article 20 about simplicity, non-performing exposures were initially excluded from this regulation. Indeed, "*The underlying exposures shall be transferred to the SSPE after selection without undue delay and shall not include, at the time of selection, exposures in default …".* However, two years later EU Securitisation Regulation has been amended to tackle the challenges that banking institutions were facing because of the COVID-19 pandemic. The aim was to extend the STS framework by including securitisations of NPEs in order to ease economic recovery. Therefore, since an increased number of borrowers was defaulting on their loan repayments due to the crisis, financial institutions were provided with a powerful tool to maintain or enhance their lending capacity.

2.2.3 EBA Guidelines on NPEs management

Along with the EU Securitisation Regulation, the European Council laid out in July 2017 an Action Plan to tackle NPLs in Europe. This Action Plan called on the European Commission (EC), the European Banking Authority (EBA), the European Central Bank (ECB), the European Systemic Risk Board (ESRB) and member states to develop and implement a number of measures.

Among the different parties, the European Banking Authority (EBA) has played a key role in framing how the EU banking sector should manage its NPEs, through the issuance of *"Guidelines on management of non-performing and forborne exposures"* in October 2018. The purpose of these guidelines is to carry EU credit institutions through the development and implementation of an NPE management strategy aimed at reducing bad credits on their balance sheets. Essentially, the report at hand lays out clear guidelines for managing NPEs, with specific requirements for banks "*with significant NPEs in their portfolios*". The latter definition applies to banks with an NPE ratio higher than 5%, which is to be assessed at both the consolidated level and at the level of the individual banks within a banking group.

The NPE ratio is be computed as follows:

$$NPE\ ratio = \frac{Non-performing\ exposures\ and\ advances}{Total\ gross\ loans\ and\ advances}$$

Regardless of their NPE ratio, all credit institutions are required to adhere to the guidelines hereunder.

- Identify and address any mismatch between their internal procedures and the EBA NPEs Guidelines. Specifically, this needs to be assessed in relation to the policies for NPEs recognition, through the set-up of an early warning system to identify potential non-performing exposures. In this regard, EBA guidelines expand the definition of NPE for recognition purposes, by including the so-called "*pulling effect*", meaning that if more than 20% of the exposures related to a single borrower are 90 days past-due, all the credit exposures related to the borrower need to be

deemed as non-performing. Moreover, in the case of re-forbearance measures[21] or recurring 30 days past-due occurring in a two-year probation period, the exposure automatically turns into non-performing status.

- Set up and adopt internal procedures for assessing and measuring impairments[22] and write-offs[23] on NPEs in accordance with EBA Guidelines on credit risk management. In this regard, EU banks should have in place common processes, systems, tools, and data. Additionally, financial institutions are required to account for expected credit losses and back-test their loss allowance estimations against actual losses.

- Carry out a structured evaluation of borrowers' capacity before granting forbearance measures. Banks are required to assess the benefits of forbearance measures compared to other workout options such as write-offs or sales.

- Entrust collateral valuation to independent and qualified appraisers. Appraisals are supposed to be carried out on a regular basis, in order to have up-to-date collateral valuations. In the case of immovable property, the appraisers are supposed to rotate after two valuations in a row. Moreover, EU credit institutions are required to

[21] **Forbearance** occurs when a counterparty is experiencing financial difficulty in meeting its financial commitments and a credit institution grants a concession that it would not otherwise consider. Consequently, re-forbearance occurs when forbearance measures have been granted more than one time.

[22] As of IAS 36, the central idea behind **impairment** is that an asset must not be carried in the financial statements at more than the highest amount to be recovered through its use or sale. If the carrying amount exceeds the recoverable amount, the asset is described as impaired. The entity must reduce the carrying amount of the asset to its recoverable amount, and recognise an impairment loss. However, for financial assets, the IFRS 9 principle applies, saying that expected credit losses are required to be measured through a loss allowance at an amount equal to the 12-month expected credit losses or full lifetime expected credit losses for a financial instrument if the credit risk of that financial instrument has increased significantly since initial recognition.

[23] A **write-off** is an accounting technique for the formal on-balance sheet recognition that an exposure no longer has value. Usually, loans are written off when they are fully provisioned and there are no realistic forecasts of recovery. As of IFRS 9, a whole or partial write-off is required if an entity has no reasonable expectations of recovering the contractual cash flows on a financial asset.

implement a back-testing procedure, namely a periodic comparison between actual cashflows collected and those expected by the collateral valuation.

Conversely, only banks "*with significant NPEs in their portfolios*" need to stick to the requirements hereinafter.

- Perform an in-depth analysis of their NPE portfolios to assess the key factors which drove past inflows of non-performing exposures.

- Carry out an upfront internal assessment of previous NPEs reduction measures and of the effectiveness of current forbearance, restructuring and workout strategies. Consequently, put in place accessible reduction plans for a minimum period of one to three years.

- Outline sound NPL reduction targets. The strategies to reach them should be implemented at the management body level and regularly monitored. Furthermore, banks are required to assess how these NPL reduction targets may affect the capital base and to set aside a sustainable loss budget to face these reductions.

Among the general guidelines above summarised, a specific mention is due to EBA indications for forbearance measures since they have long been used by banks as a tool to misrepresent asset quality or to postpone default and the relative measures to face asset quality issues. Therefore, the aim of EBA NPEs guidelines in this respect is to ensure that banks grant forbearance measures only if can prevent the borrower from defaulting due to a temporary liquidity shortage or facilitate a substantial repayment of the exposure in the medium to long term.

2.2.4 EU NPE Secondary Market Directive

In preparation for the upcoming growth in NPEs as pandemic support measures are phased out, fostering NPE secondary market has become a priority for EU regulators to clear the way for banking sector deleverage. The last major step towards this direction is the "*NPE Secondary Market Directive*" which was approved at the end of 2021 and will be adopted

by state members starting from 2024. This Directive is expected to boost competition among investors and facilitate banks in either freeing up their non-performing exposures or outsourcing them to third-party entities.

Basically, the innovative elements brought in by the NPE Secondary Market Directive are addressed to credit Servicers and purchasers.

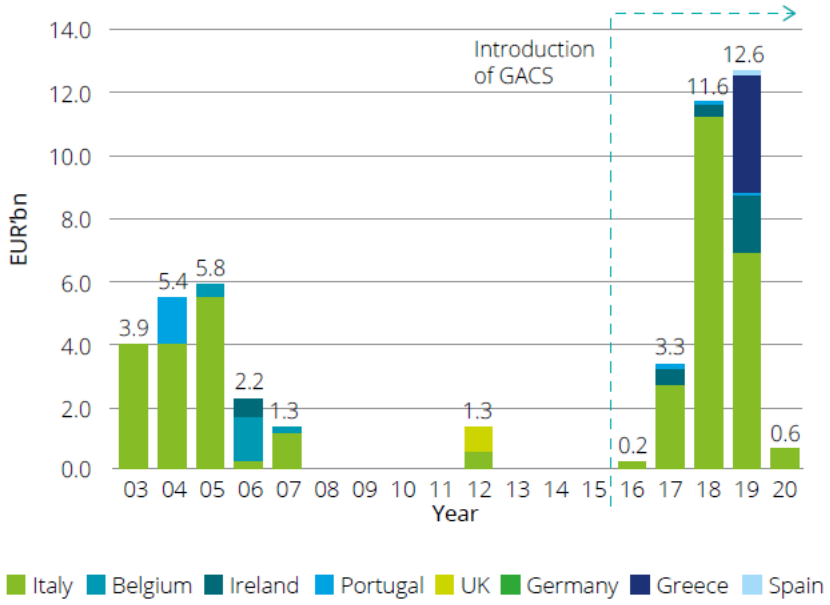
- **Servicers** will be subject to the requirements hereunder.
    - They will need to require a specific authorisation from National Authorities to perform servicing activities.
    - Credit servicing agreements must be compliant with the minimum content defined by the directive at hand, including data retention for a minimum of 5 years after the termination of the agreement.
    - The Directive has set out specific requirements for outsourcing. For instance, the outsourcing of all credit servicing activity at the same time is banned. In any case, credit Servicers pursuing outsourcing must inform in advance the Competent Authority.
    - Servicers will be able to carry out cross-border servicing.

- As concerning the buy-side, **credit purchasers** are called to align to the following provisions.
    - The directive has introduced consumer protection measures that require buyers to appoint a specialised player (such as a bank) to manage servicing activities.
    - Buyers will not have to ask for a specific authorisation to purchase credits, but they must disclose to the Competent Authority any relevant information regarding the entities appointed as credit Servicers and any further transfer of the exposures to different investors.
    - Moreover, credit purchasers will be entitled to receive from the seller full information about the credit agreements and, for secured exposures, about any underlying collateral.

2.3 Government-backed NPL securitisation in Europe

As mentioned earlier, government-backed securitisation schemes played a key role in facilitating NPE securitisation in Europe after the securitisation market stalled for ten years following the Global Financial Crisis (Figure 2). Briefly, an NPLs government-backed securitisation is a transaction with a state guarantee on the senior debt notes[24] issued by the SPV. The rationale behind this peculiar scheme is to provide banks with a material tool to accelerate the unwinding of NPLs from their balance sheets.

Figure 2 - European NPE securitisations volume 2003-2020 by notes' notional



source: "NPL securitisations and related governmental guarantee schemes in Europe", Deloitte LLP (2020)

The governmental guarantee that paved the way for these securitisation schemes is the Italian GACS (Garanzia Cartolarizzazione Sofferenze). The GACS scheme was launched in 2016 with the aim of supporting Italian banks' deleveraging plans, since their NPLs stock

[24] Typically, notes issued in the context of an NPE securitisation are ranked as **senior, mezzanine or junior notes**. This classification defines the priority held by the noteholder over the securitisation cashflows. Junior notes are subordinated to mezzanine and senior notes and the latter have the highest priority.

critically soared in the aftermaths of the 2008 subprime crisis and the European sovereign debt crisis.

The main features of GACS securitisations are the following.

- **Guarantee premium:** The Italian Government grants the state guarantee by issuing a credit default swap (CDS)[25] which must be paid by the SPV at market terms. The fee is addressed to the Ministry of Economy and Finance (MEF). If the senior securities have not been fully repaid by the end of the fifth year after the granting of the GACS, the SPV will pay a penalty which takes the form of a growing fee.

- **Type of exposures guaranteed:** GACS cover only NPLs, thus Unlikely-to-Pay (UTP) exposures are excluded by the scheme.

- **Number of tranches:** The structure of the transaction must provide the issuance of at least two different classes of notes. Moreover, senior and mezzanine tranches must pay a floating rate.

- **Servicer requirements:** The Servicer of the operation must be an external entity, independent and not connected in any way to the Originator, sponsor, or original lender.

- **Rating:** The GACS to be granted requires an investment grade or above senior tranche, hence a BBB or higher credit rating.

- **Minimum subordinated notes sold:** For the guarantee to become effective, the promoter of the transaction should sell more than 50% plus one security of the junior notes to private investors and achieve accounting derecognition of the NPLs, by selling a sufficiently large portion of the junior and mezzanine notes.

[25] A **Credit Default Swap (CDS)** is a swap involving the exchange of a deferred premium, usually in the form of a floating rate cash flow, for a lump-sum payment if the underlying reference credit defaults. CDS are traded over-the-counter.

A similar governmental guarantee that has taken hold recently in Europe is the Hellenic Asset Protection Scheme (HAPS), promoted by the Greek government.

Even if HAPS has been designed on the basis of GACS structure, there are few key differences between the two schemes that are worth analysing.

- **Rating requirements:** Differently from the Italian guarantee, HAPS accepts non-investment grade senior notes, but with a credit rating floored to BB –.

- **Guarantee: commission:** Fees earned by the Italian government for granting GACS are priced through a panel of single name CDS of Italian corporates with a risk profile similar to that of the guaranteed notes. Instead, HAPS pricing is linked to Greek government CDS.

- **Securitisation performance thresholds:** In GACS securitisations the underperformance threshold is set to 90% (i.e. Net Cumulative Collection Ratio is < 90% of the business plan), while in the Greek guarantee is set at 80%. In both schemes, if the threshold is not reached, Servicer fees and mezzanine interests are deferred. Moreover, the GACS provides that if the Net Cumulative Collection Ratio is lower than 100% for two consecutive payments, the Servicer will be replaced. Conversely, in Greek government-backed securitisation, the Servicer replacement occurs only if the ratio is below 70% for two consecutive payments.

- **Pay out timing:** Finally, the Italian government has nine months to pay out any interest or principal due to senior noteholders. In contrast, the Greek government has only 80 days.

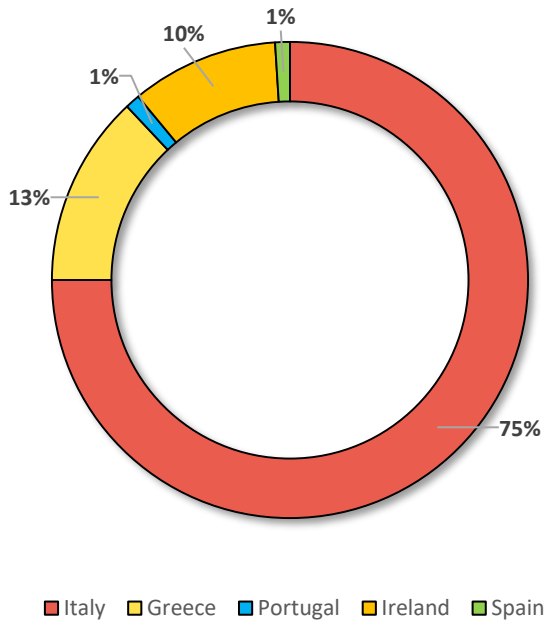
2.4 European NPE market

The largest and most active European NPE securitisation market is the Italian one, with a deal volume of € 21.2bn of GBV[26] during the 2016-2020 period, accounting for the 75% of

[26] **GBV** stands for **Gross Book Value**, which is the book value of a loan without impairments.

the overall transaction volume in the Eurozone (Figure 3). It is followed by Greece, Ireland, Spain, and Portugal, respectively.

Figure 3 - Country deal volume 2016-2020 by notes' notional



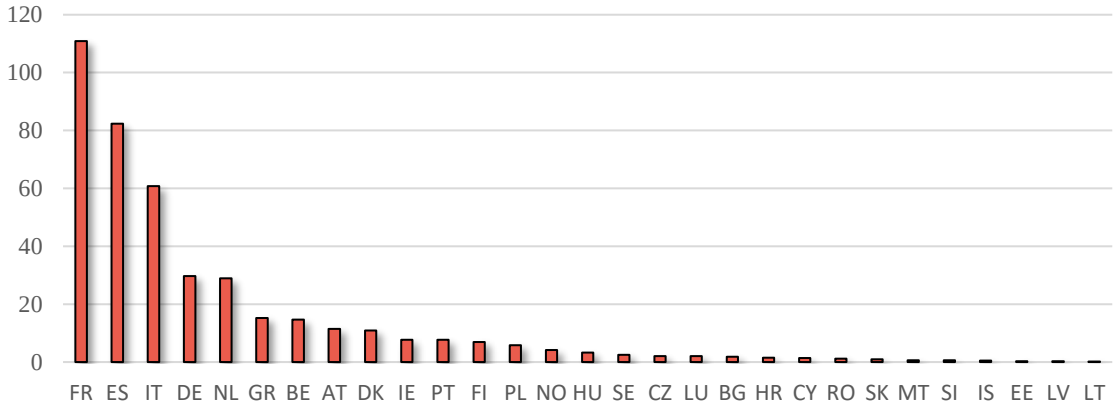
source: "NPL securitisations and related governmental guarantee schemes in Europe", Deloitte LLP (2020)

However, as illustrated by the below Figure 4, Italy is not the country with the highest NPE stock. Indeed, as of December 2021, the EU member state with the highest amount of NPEs is France (€ 110.9bn), followed by Spain (€ 82.4bn), Italy (€ 60.8bn), Germany (€ 29.7bn), Netherlands (€ 28.9bn).

In recent years, EU regulatory package has been truly effective in deleveraging European credit institutions. Suffice it to say that from 2016, European banking industry unwound 55% of NPEs in their portfolio, moving from € 1.1tn to € 0.4tn of GBV. Furthermore, while the total amount of loan on banks' balance sheet has increased by 40%, the stock of non-performing exposures has decreased by 60%, bringing the EU NPE ratio at an all-time low

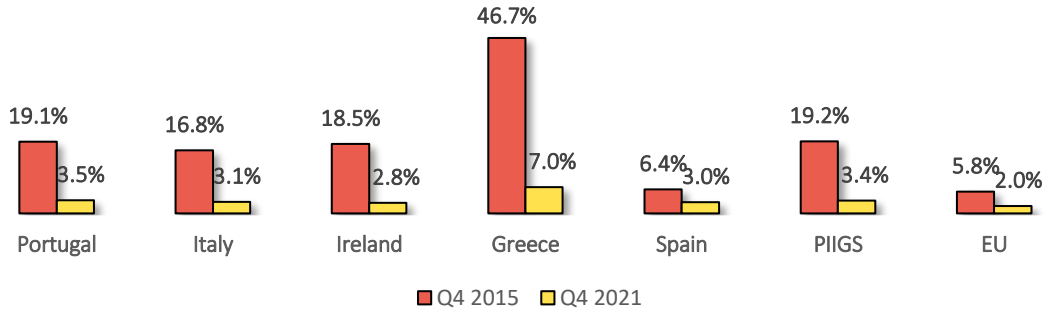
of 2.1%[27]. Even the so-called "PIIGS"[28] have successfully managed to lower the gap between their NPE ratios and the EU average (Figure 5).

Figure 4 – Q4 2021 NPE stock by country



source: EBA Q4 2021 Risk dashboard

Figure 5 – NPE ratio of the PIIGS (%), comparison 2015-2021



source: Author's elaboration on EBA Q4 2015-21 Risk dashboard data

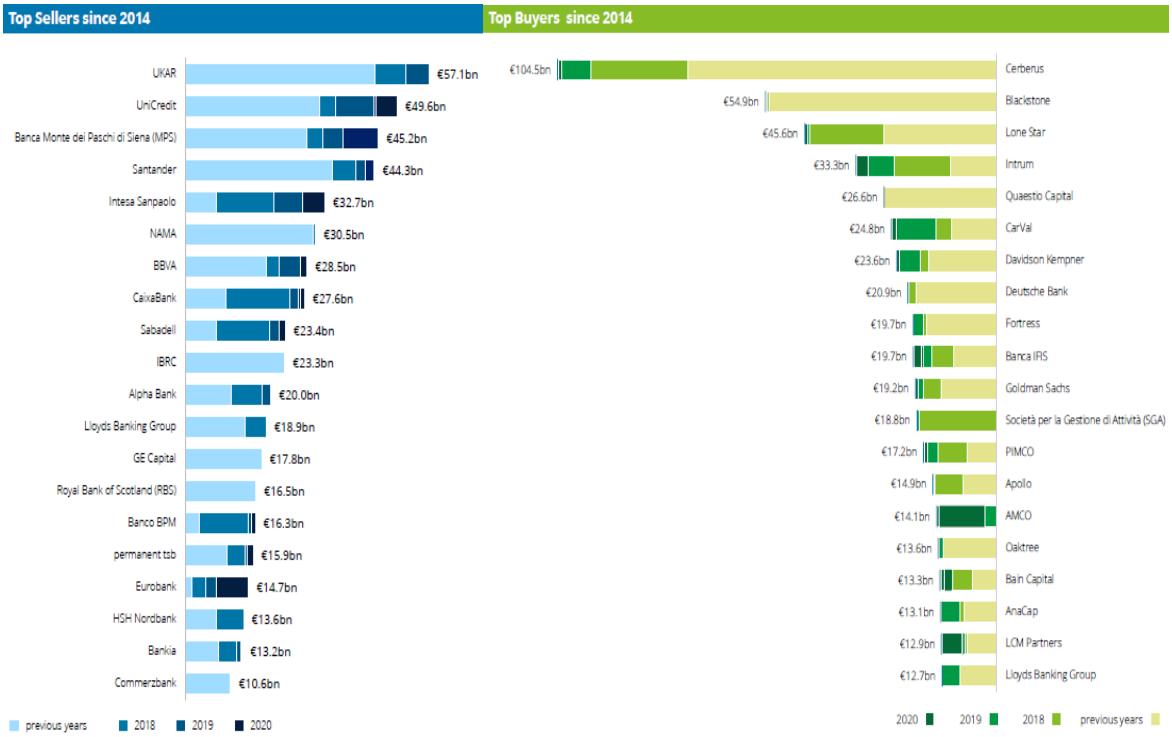
In this regard, between 2014 and 2020, the European sellers that disposed the largest amount of NPE portfolios were UK Asset Resolution (UKAR), UniCredit, and Banca Monte dei

[27] Author's elaboration on EBA Q4 2021 Risk dashboard data

[28] During the EU sovereign debt crisis, the term **PIIGS** was coined to refer to a group of member states that were financially unstable during the crisis. The acronym included Portugal, Italy, Ireland, Greece, and Spain.

Paschi di Siena (MPS). On the buy-side, the three most active investors were Cerberus, Blackstone and Lone Star (Figure 6).

Figure 6 – Top Sellers and Buyers in the European NEPs market from 2014 to 2020



source: "Deleveraging Europe", Deloitte (2021)

However, even though the EU deleveraging plan has been successful so far, market operators foreseen delayed pandemic impacts on European distressed market in the following years. Starting from 2022, a 33% increase[29] in the outstanding European Gross NPLs stock is awaited and consistently an average increase in the EU NPE ratio of 3%[30].

2.5 Italian NPE market

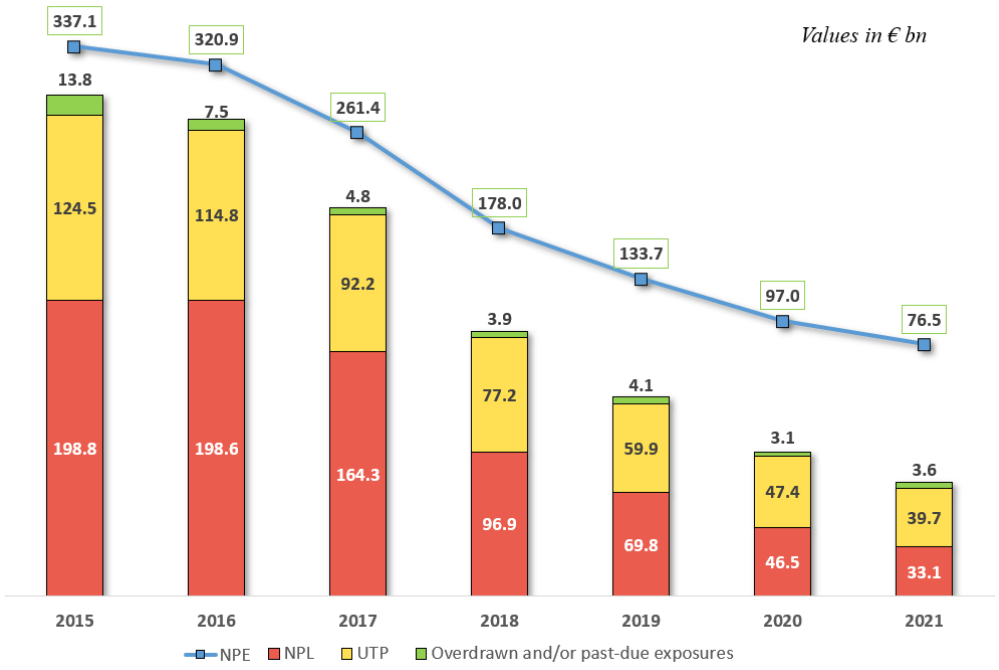
For a more in-depth analysis of securitisation market's dynamics, it is worth looking over the Italian NPE market, as it is the most active in the Eurozone. After the Global Financial

[29] "Market Watch NPL – February 2022", Banca Ifis

[30] Author's elaboration on KPMG projections in "Navigating European distressed markets", 2021

Crisis, non-performing exposures on the balance of Italian banks sheet soared at a CAGR[31] of + 22%, reaching a peak in 2015. Thereafter, the Italian distressed market experienced a specular and opposite trend, with the outstanding NPE stock shrinking at a - 22% CAGR[32]. Indeed, as Figure 7 below shows, the sheer volume of deals in recent years has led to a steadily declining trend in the national NPE stock, which plunged from € 337.1bn to € 76.5bn at Q4 2021. While NPLs has contracted proportionally to NPEs, the outstanding UTP stock experienced a more gradual decline. Starting from 2020, the UTP stock has exceeded the NPL carrying amount, emphasizing the importance of these exposures for the Italian banking sector.

Figure 7 – Italian NPE market Outlook



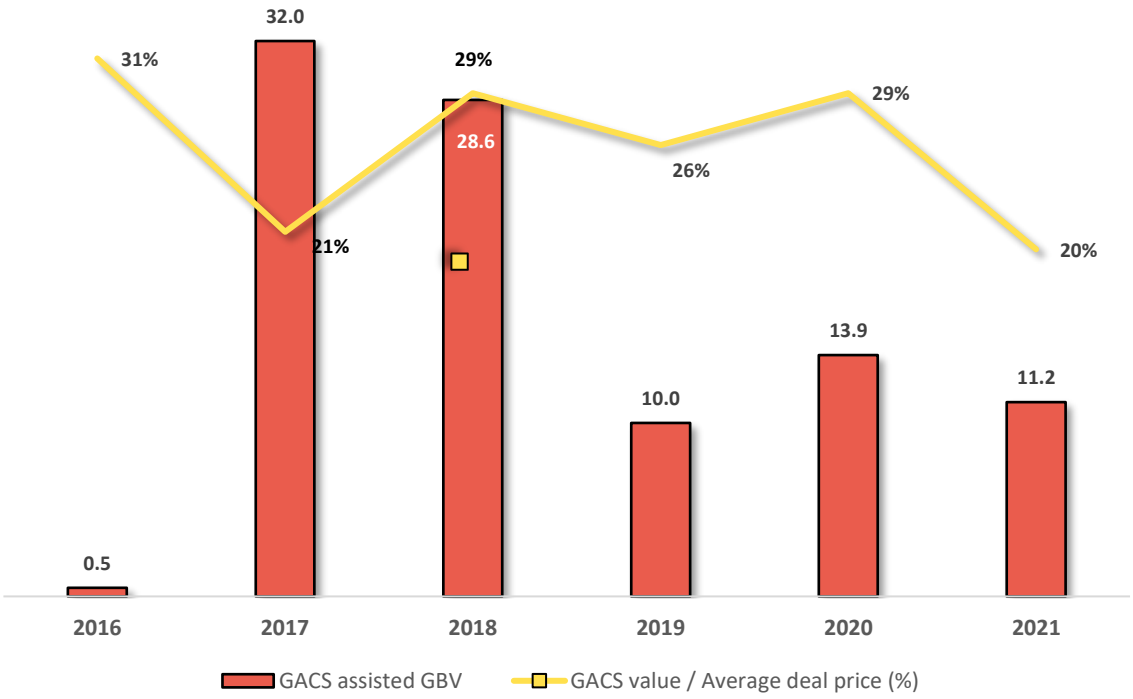
source: Author's elaboration on Bank of Italy's 2015-21 statistics

[31] $Compounded\ Annual\ Growth\ Rate\ (CAGR) = \left[\left(\frac{Ending\ Value}{Beginning\ Value}\right)^{\frac{1}{n\ years}} - 1\right] * 100$

[32] "The Italian NPL Market" – PwC (December 2021)

It is no coincidence that the Italian GACS has been introduced in 2016. Indeed, since this state guarantee was deployed, the Italian NPE stock has experienced a fast-paced decline with GACS deals accounting for approximately 36%[33] of total GBV disposed (€ 96bn). Moreover, GACS has backed approximately 25% of the average deal price and Italian government-backed securitisations have achieved excellent performances with an average 100.51% Net Cumulative Collection Ratio. Thus, the effectiveness of GACS in supporting Italian deleveraging goals clearly outlines the relevance of government-backed scheme in enhancing banks' asset quality.

Figure 8 – GACS assisted deals by volume and % GACS value over Average deal price

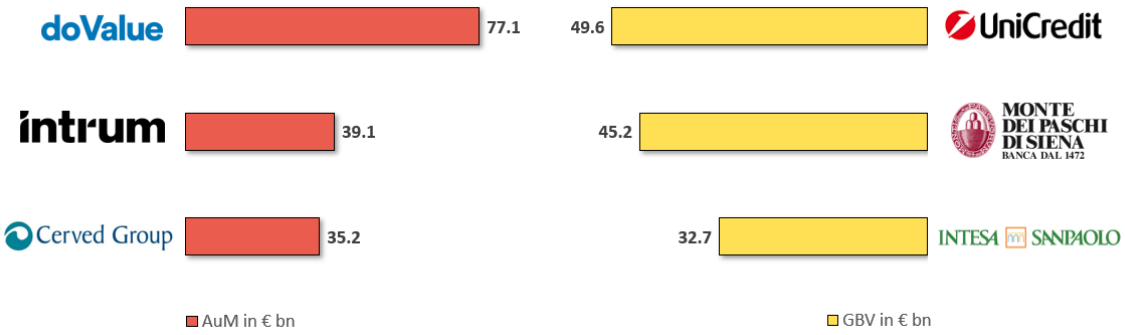


source: "Market Watch NPL – February 2022", Banca Ifis

[33] "Market Watch NPL – February 2022", Banca Ifis.

As concerning main market players (Figure 9), the Italian servicing market is ruled by DoValue with € 77.1bn AuM[34], followed by Intrum (€ 39.1bn AuM), and Cerved (€ 35.2bn AuM). With regard to Originators, the top three Italian sellers are UniCredit (€ 49.6bn GBV), Banca Monte dei Paschi di Siena (€ 45.2bn GBV), and Intesa SanPaolo (€ 32.7bn GBV).

Figure 9 – Top 3 Italian Servicers (by AuM) and Sellers (by GBV securitised)



source: Financial statements and "Deleveraging Europe" report by Deloitte LLP (2021)

[34] **AuM** stand for **Asset under Management.**

Chapter 3

Deal Structuring

This chapter introduces the empirical component of the thesis, by explaining in detail how NPE securitisations are realised in practice. The first topic to be addressed when discussing the structuring of an NPE securitisation is that of the different players involved and what is their purpose in the transaction. Indeed, deal structuring is a complex task, generally entrusted to senior managers or partners in the financial advisor's team, as it requires the skill, knowledge and authority to coordinate the work of all actors in the transaction.

Next, this section outlines the scheme of the transaction, that is essentially how these entities interact in an NPE securitisation and what their end result is. More specifically, after defining the general scheme these paragraphs drill down different securitisation options, ranging from government-backed securitisation to UTP securitisation leveraging the so-called "Fronting Bank" mechanism.

The last part of third chapter focuses on the most important workstreams in which financial advisors are involved and where they stand on the transaction timeline.

3.1 Main Players in a securitisation

Since securitisation is a complex structured finance transaction, before introducing the specific structuring issues of the deal, it is important to describe the legal entities involved in a securitisation and their role.

- **Originator**

The Originator (also referred to as the "*seller*") is the entity originating the non-performing exposures underlying the securitisation. Typically, the Originator is the party who originally underwrote the loans which are then sold to the SPV. However, the Originator may act as the securitisation "*sponsor*", meaning a third party who purchases the NPE portfolio from the original lender in order to securitise it thereafter. The role of the Originator in an NPE securitisation is not limited to just selling the portfolio to the SPV, but it usually provides further support to the vehicle in the form of liquidity, subordinated loans, or by supplementing yield (*credit enhancement measures*).

NPE securitisation transactions can be pursued by different types of Originators, which commonly are:

- Commercial banks;
- Insurance companies;
- Captive financial companies (e.g., car manufacturer groups);
- Leasing companies.

- **Arranger**

Another key role is played by the Arranger, which is normally an investment bank appointed by the Originator. The Arranger mainly carries out the process of structuring, underwriting and marketing the securitisation transaction. More specifically, the arranger ensures the transaction proceeds through each phase of the deal lifecycle, may provide credit and liquidity support, assesses how to maximise profit from the deal structure, and most importantly, finds counterparties who are willing to be involved in the deal.

- **Underwriter**

This entity usually coincides with the Arranger. The underwriter, in a structured finance transaction, serves as an intermediary between the SPV (issuer of the notes) and investors. The vehicle sells the securities to the underwriter at a discounted price for the risk taken and the latter market and resell them to institutional investors. Furthermore, the underwriter plays a key role in structuring and pricing the deal and also provides liquidity support in the secondary market.

- **Rating Agency**

When one or more rating agencies are involved, they play a pivotal role in the NPE securitisation process since help investors to take informed decisions by issuing a credit default rating to the different tranches. Mainly, in the context of an NPEs deal, a rating agency is charged with reviewing the elements hereinafter:

- Recovery track record of the Servicer and ability of the asset managers;
- Quality of the underlying NPEs with respect of their repayment ability, maturity diversification, and recovery rates;
- Analysis of the legal risks deriving from the process;
- Soundness of the transaction structure;
- Quality of credit enhancement measures.

As concerning quantitative aspects, any NPE securitisation is normally rated by combining a stochastic model for the unsecured positions which buils on historical portfolio performance and a bottom-up analytical approach for the secured positions, which are analysed one by one. Although rating agencies try to account for as many factors as technically possible in their rating methodologies, such models are not always able to perfectly match reality. Therefore, rating agencies adjust their model assumptions in order to mitigate such limitations. This may include "*haircuts*" on the expected collections or "*caps"* on recovery rates, assuming, for instance, a maximum recovery percentage on a defaulted property that goes into foreclosure. The outcome of this analysis is then used as

input for a cash flow model that simulates the distribution of available revenue streams through the payment waterfall of the transaction's structure.

Even though the core role of rating agencies consists in analysis and modelling, their activities are wide-ranging throughout the deal lifecycle. Indeed, the rating agency is usually involved in the early stage when a transaction is structured in order to better assess the Originator with its business model, the underlying assets and the operational setup, by undertaking a preliminary due diligence. Furthermore, the credit rating agency is also key after the closing, since carries out the post-deal surveillance and performance analytics, so it can update or even discontinue the rating during the lifetime of the deal.

Currently, Moody's, Scope Ratings and DBRS are the most active rating agencies in the distressed market. However, given the non-performing nature of the underlying assets in NPE securitisation, it is difficult for a financial institution to obtain a credit rating on the notes for non-government-backed transactions. Therefore, credit rating agencies are typically involved only in presence of a state guarantee over the senior tranche.

- **Special Purpose Vehicle (SPV)**

The SPV can either be a trust, a corporation or a form of partnership legally separated by the Originator, which is incorporated for the sole purpose of purchasing the NPEs receivables and act as a conduit for the payment streams. The SPV issues and sell to the investors the notes resulting from the securitisation process in order to fund the purchase of assets from the Originator. SPV's major function is to segregate the assets underlying the securities from the assets of the Originator by making them independent and "*bankruptcy remote*" from the credit risk of the Originator. The most important way in which an SPV preserves its solvency is to make all of its actual and expected liabilities "*limited recourse obligations*". Thereby, at any given point in time, SPV's obligations towards investors are limited in recourse to the cash available after paying off higher seniority notes. Payment of all subordinated debt is deferred to the extent cash is not available at the time. Therefore, if the SPV keeps no other liabilities beyond limited recourse obligations, it will never default on its obligations and remain solvent.

However, with regards to this last function of the SPV, also the existence and independence of vehicle's directors play a crucial role. As above-mentioned, the SPV must be "*bankruptcy remote*", hence the SPV should never enter into any type of insolvency proceeding and the insolvency of another entity (such as the Originator) should not affect the solvency of the vehicle. To this extent, directors are relevant because one way a company could enter into insolvency proceedings is for the directors to file for a resolution procedure to that effect. Therefore, in securitisation transactions, these directors are not required to make any decisions other than entering into the deal process. Once the SPV enters into securitisation agreements, the vehicle pursues its aim automatically, with cash flowing in and out and services being provided according to agreed-upon mechanisms[35].

Other key factors to assess when dealing with special purpose entities are its legal status and tax regime. Commonly, the SPV is a private limited company, but its legal status varies with the jurisdiction in which it is incorporated. In some countries the SPVs can be incorporated under general law, while in some jurisdictions these vehicles must be incorporated under specific legal regimes, such as "Law 130" vehicles in Italy or "Section 110" companies in Ireland. In addition, some jurisdictions may require SPV to obtain some specific licenses or regulatory permission, such as a consumer credit license to hold consumer loans or specific authorisation to process personal information. However, the mutual denominator for SPVs in all jurisdictions is that it is normally a separate legal entity and not legally related to any other participants in the securitisation transaction. Regardless of the legal status, the jurisdictions in which to incorporate such a vehicle is relevant also for taxation purposes. As a matter of fact, since SPVs are intended to be virtually cost neutral entities, they are likely to be incorporated in a low-tax or no-tax jurisdiction. For instance, countries that are particularly SPV friendly are Luxembourg, British Virgin Islands, Guernsey, Cayman Islands, Jersey, and Ireland.

Furthermore, in some countries, an NPE securitisation may involve more than one vehicle alongside the SPV. This is the case of the Italian law 130/99 on securitisation, which allows the involvement of two legal entities (*ReoCo* and *LeaseCo*) incorporated by the SPV that

[35] The most common SPV structure in NPE securitisation transactions is the **amortising (or pass-through) structure**, where the SPV pays principal and interest to investors on a coupon-by-coupon basis throughout the life of the security.

often play a relevant role in NPE securitisation. In fact, according to Italian law, an SPV cannot directly acquire the collateralised or leased assets, but can do so by means of these two vehicles. A ReoCo (*Real Estate Owned Company*) is a vehicle with the special purpose of acquiring, managing, and disposing the real estate assets and agreements that collateralise the non-performing exposures. Following the foreclosure process, a ReoCo usually bids during the auction sale, in order to enhance the value of the property or to buy it at a discounted price. If a ReoCo acquires the real estate asset, it typically manages or renovates the asset in order to realise a capital gain over the purchasing price. Similarly, a LeaseCo (*Leasing Company*) acquires and manages the lease agreements and leased assets underlying the securitised NPEs. This is a more straightforward process than the purchasing real estate collaterals since the LeaseCo acquires the assets directly from the lender that owns them, without need to wait for the foreclosure process. The activity of both vehicles, including operating expenses, is fully financed by the SPV. However, in both cases the only purpose of these vehicles is to serve the securitisation, by realising the highest possible price from the sale of the assets. These two companies have substantial benefits, since the acquired assets and agreements deriving from securitised NPEs are segregated from the liabilities of the vehicle itself. Therefore, the ReoCo's and LeaseCo's assets acquired following the securitisation will not be enforceable by creditors other than the SPV. In addition, these vehicles do not have to pay corporate tax on the income generated by the segregated assets.

- **Servicer**

Acting as an agent to the SPV, the Servicer is typically appointed by the vehicle, and their relationship is ruled by the servicing agreement. The key responsibilities include collecting principal and interest payments from obligors, enforcing overdue payments, and managing the portfolio after transaction closing. In addition, servicing includes customer service, payment processing, default management, collateral liquidation and monthly reports preparation. However, the Servicer is also heavily involved in the preparation of the deal as they set-up the quarterly business plan against which the collection performance will be measured. The Servicer may be replaced if it does not meet the business plan and the Net Cumulative Collection ratio is under a predetermined threshold set forth in the servicing agreement. This is often the case with government-backed securitisations, which have strict

requirements for the Net Cumulative Collection ratio threshold (i.e., higher than 90%). The Servicer is typically remunerated by the SPV through a complex fee structure, which includes both fixed and variable servicing fees.

It happens that the Originator or a subsidiary in the Originator's group acts as Servicer, but in most NPE securitisation the Originator appoints an external and independent Servicer to carry out the servicing activity. Normally, for primary market government-backed securitisations, an independent Servicer is explicitly required to manage the NPE portfolio. In contrast, for secondary market transactions, the Servicer typically remains the one currently managing the portfolio.

Often the Servicer is divided in two different legal entities usually belonging to the same group, *the "Special Servicer"* and the *"Master Servicer"*. The latter carries out an administrative and monitoring role and is responsible for ensuring that the servicing complies to the applicable law. Whilst the collection recovery is delegated to the "*Special Servicer*" which is therefore the operative player that directly manages the portfolio. Nevertheless, this distinction has no operative purpose but only an elusive one. As a matter of fact, in some jurisdiction, like the Italian one, the Master Servicer and the special Servicer are incorporated under different regimes[36], resulting in the Master Servicer being the only legal entity supervised by the relevant authority. Therefore, the legal entity under supervision, namely the Master Servicer, plays a merely formal role. In addition, typically the Master Servicer delegates the asset management task to the special Servicer through very complex contractual terms. All these elements put together makes it difficult for the supervisory authority to detect responsibilities and the parties involved in the recovery activity, especially in the case of collection's underperformance.

A third-party may be involved as concerning the servicing activity and it is the so-called "*backup Servicer*", which is a company that takes over the portfolio's work-out if the primary Servicer cannot perform it. Backup Servicers usually step in for Servicers when trigger events occur, like the insolvency of the primary Servicer. Trigger events are usually defined in the servicing agreement.

[36] Under the Italian law the Master Servicer owns a license pursuing art. 106 TUB, while the Special Servicer is an operator in charge of recovery activities, holder a licence pursuant to Article 115 TULPS.

When UTPs are included into the securitised portfolio, the role of the Servicer is slightly different. A Servicer managing NPLs, since the borrower is insolvent, only tries to recover as much cash as possible from the position by collecting payments and liquidating collaterals. Conversely, when managing UTPs, the Servicer aims at restoring the ability of borrowers to generate cash flow, trying to return their loans back to the *"performing"* status. In this light, Servicer's asset managers play the role of restructuring managers.

In conclusion, it is important to pinpoint that Servicers in NPE securitisation very often underwrite or purchase the issued securities, typically by means of a parent company. Alternatively, given their in-depth experience and knowledge of the market sometimes are responsible for structuring the deal, thus acting as Arrangers.

- **Borrowers**

Obligors are legally committed to provide the Originator with the payments on the underlying NPEs and, therefore, can be deemed as the ultimately responsible for the cash flows of the securitisation. Borrowers are often not required to consent to the transfer of their loans, but in some jurisdictions, they have the right to be notified by the Originator. This is particularly necessary when the customer relationship is managed by an entity other than the Originator.

- **Investors**

Investors (also referred as bondholders, or noteholders) purchase from the underwriter the securities issued by the SPV and are, therefore, are entitled to receive the collections generated by the underlying non-performing exposures in the form of principal and interest payments. Buyers in NPEs deals typically cover the spectrum of institutional investors meaning pension funds, insurance companies, investment fund managers, and commercial banks. The investors' relationship with the special purpose vehicle is governed by the securities purchase agreement, which set forth the contractual aspects for the purchase of the notes and the payment of the coupons.

- **Financial Advisors**

The presence of financial advisors in the preparation and marketing of NPEs deals is becoming increasingly relevant. Financial advisors can provide overall project management, gather data and prepare the loan data tape[37] preparation, set-up the virtual data room (VDR), build the financial model and assess the soundness of the portfolio business plan. Sell-side financial advisory typically consists in carrying the Originator through the whole process, from strategy and preparation of the deal to sales execution. On the contrary, buy-side financial advisory is usually more focused on the due diligence process, providing analysis, understanding and pricing of the portfolio.

- **Transaction lawyers**

Legal advisors are usually appointed by Originators and investors. They are present in the deal structuring to provide legal and regulatory advice on the proposed transaction structure in order to ensure the legal efficacy of the process. To this extent, legal advisors also provide guidance on the incorporation of the legal entities involved in the securitisation. Transaction lawyers are also present in the preparation of the legal documentation since their responsibilities include managing documentation-related legal aspects, drafting and negotiating the legal documents, and identifying any issues concerning the legal enforceability of the transaction documents. In NPE securitisation the legal advisor has a more relevant role than in other debt securitisations, as the legal due diligence over corporate non-performing credits is pivotal because of the distressed nature of the assets at hand.

- **Trustee**

A trustee may be appointed to provide fiduciary services and administer the duties of the SPV throughout the life of the securitisation, while at all times protecting the interests of the noteholders. In this light, the trustee carries out the day-to-day administration and, if necessary, also the enforcement of the issued securities. During the deal structuring, the trustee is responsible for ensuring that the vehicle has received clear title over the portfolio, that the security interests are perfected, and that the SPV is remote from bankruptcy. Post-

[37] In a nutshell, the **loan data tape** is a vast excel file containing the most relevant data on each exposure of the selected NPE portfolio.

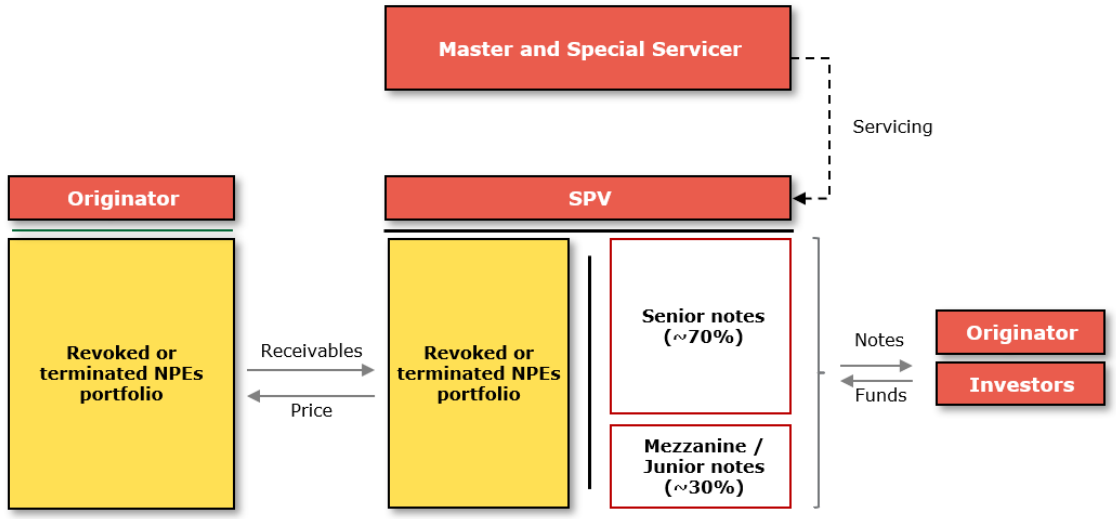
closing, the trustee is in charge of monitoring the compliance of other parties to their respective duties set forth in the deal documentation. In principle, these roles are largely passive, as the trustee is often alerted to breaches of trust and then informs all parties involved.

3.2 General NPE securitisation scheme

In their simplest form, NPE securitisations include only revoked exposures (the vast majority are NPLs) and follow the scheme illustrated in below Figure 10. The SPV purchases the NPE portfolio via a "*true sale*". A sale onto SPV's balance sheet needs to be undertaken so that it is recognised as a true legal transfer of the portfolio and, therefore, the NPEs are ring-fenced from the assets of the originating institution. Moreover, a true sale provides protection both to the buy- and sell-side. In the event the seller becomes insolvent, by means of the true sale, the NPE portfolio is segregated from Originator's assets and, thus, is be considered part of the bankruptcy. The receivables remain available to the SPV and its creditors (i.e., noteholders). Legally ring-fencing the assets also protects the seller, as investors can only have recurse to the SPV for payments due on the notes. The purchase is financed by the issuance of notes, which are typically tranched by seniority as senior, mezzanine and junior, although it's possible to have less or more tranches like the lower mezzanine. A minimum of 5% of mezzanine and 5% junior notes must be retained by the Originator to comply with risk retention requirements set forth in the EU Securitisation Regulation. In addition, the seller usually retains a great portion of the senior tranche.

Even if not required in non-governmental guarantee schemes, the Originator typically appoints an independent Servicer to manage the portfolio and carry out the recovery activity. All collections, reduced by servicing costs, are aggregated in one pool and are the subject to a single waterfall of payments. Interest payments are calculated on outstanding notes' notional value and can be made on an annual, semi-annual or quarterly basis.

Figure 10 – General NPE securitisation scheme

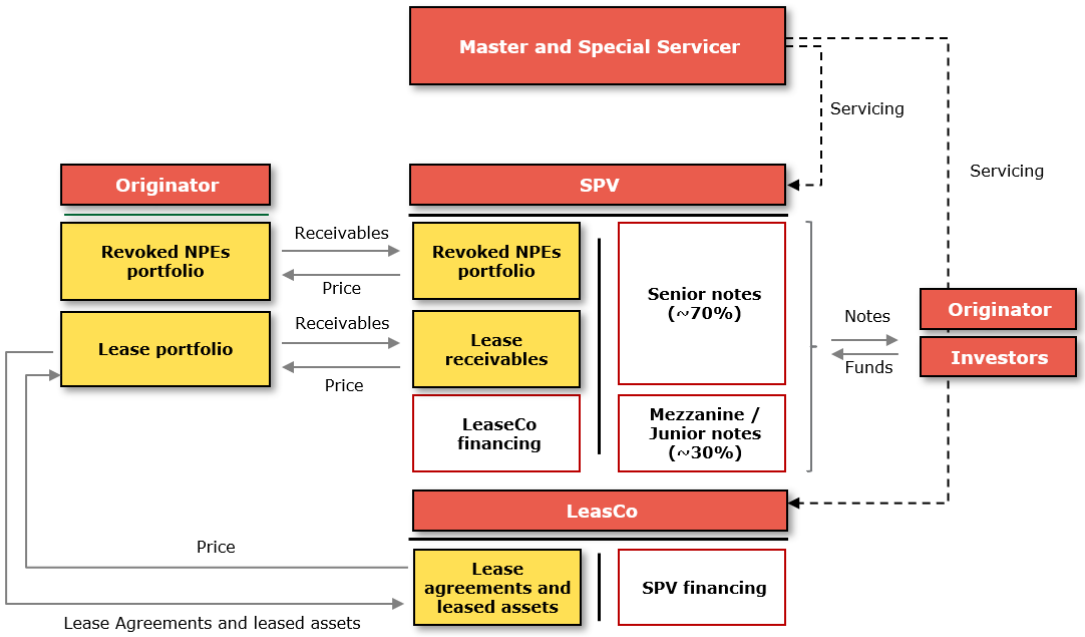


source: Author's elaboration

Nevertheless, since three out of four EU NPEs deals are carried out pursuing the Italian law, the securitisation scheme often includes the presence of a LeaseCo (Figure 11) or of a ReoCo or both. The two vehicles respectively acquire the leased and real estate assets with the associated agreements, funding the acquisition with an SPV financing. For simplicity the following Figure 11 illustrates the transaction scheme only with the LeaseCo, but usually one or more ReoCo are involved.

For certain reasons, such as difficulties with the transferability of assets, the originator may possibly consider a *"synthetic"* securitisation. The key difference between a synthetic securitisation and a true sale is that in the former the Originator does not transfer the legal right over the receivables to the SPV, meaning that the vehicle does not have to pay a price for the securitised portfolio. The Originator still the legal owner of the portfolio but securitises the exposures via the SPV and enters into a CDS with the vehicle in order to be backed in the case of default of the underlying exposures. Therefore, the legal risk is retained by the bank while the vehicle takes one the credit risk.

Figure 11 – General NPE securitisation scheme with a LeaseCo vehicle



source: Author's elaboration

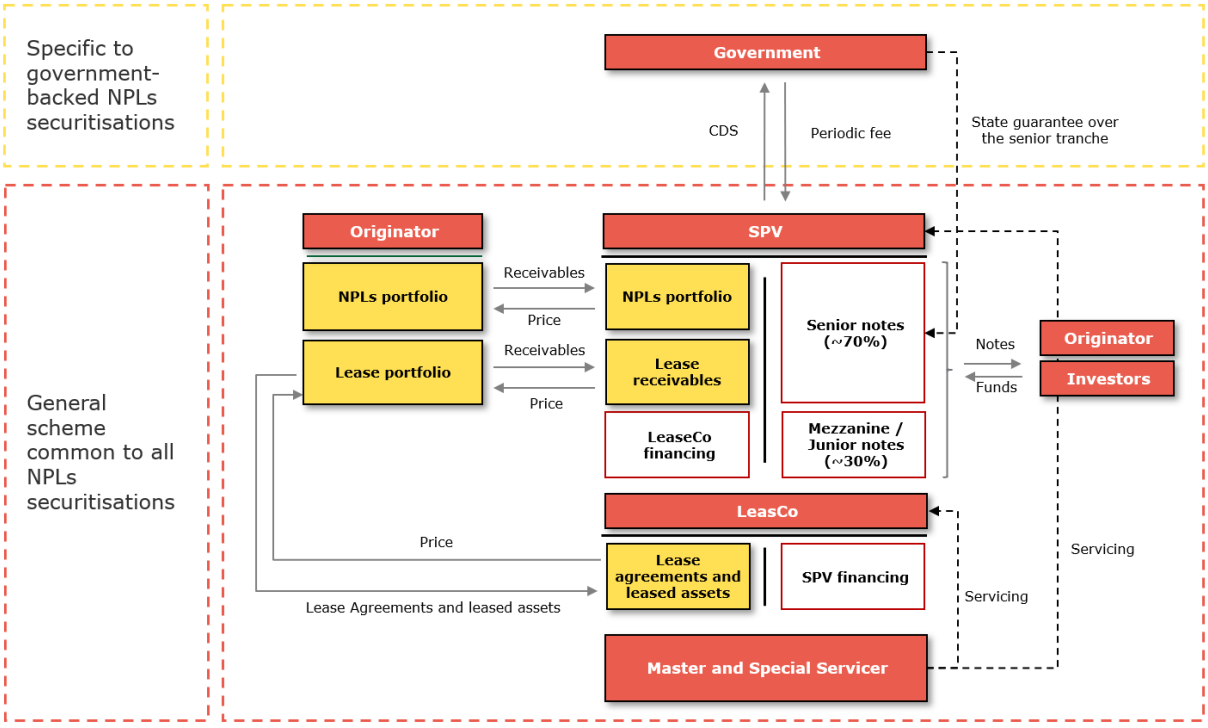
3.2.1 Government-backed NPL securitisation scheme

Government-backed NPL securitisation schemes slightly differ from general schemes. The only structural element which differs in the two options is that in government-backed transactions the government provides a guarantee to the senior tranche, in the form of a CDS contract between the State and the SPV. Therefore, the government agrees to back the senior notes if the SPV defaults on payments to the noteholders, while the vehicle pays a periodic fee to benefit from this guarantee (Figure 12).

However, the are several differences in how the deal is carried out. Most importantly, only NPL securitisations are eligible for state guarantees, while UTPs are excluded. Unlike general schemes, Servicers must be mandatorily external and independent to avoid possible conflicts of interest and enable rating agencies to assess the work-out capabilities of the selected Servicer. In addition to the Master and Special Servicer, a Back-up Servicer is typically added to government-backed securitisations in order to the de-risk the transaction, thereby achieving a higher credit rating. As a matter of fact, state guarantees are granted

only if the senior tranche is rated and its notional value assessed by an External Credit Assessment Institution (ECAI) approved by the ECB. To be eligible for the guarantee, the senior tranche should receive a rating equal to or higher than a predetermined target (BBB for GACS and BB- for HAPS). If the senior tranche is rated by more than one rating agency, the state guarantee can be provided only if both are equal to or higher than the target rating.

Figure 12 – Government-backed NPL securitisation scheme



source: Author's elaboration

3.3 Credit enhancements measures

Sometimes a mismatch between actual collections and interest payments on notes may occur. To protect the transaction from this potential issue, the so-called "*credit enhancement measures*" are put in place by the Originator or investors. These are powerful tools to enhance creditworthiness of the securities and obtain better rated notes. Credit enhancement mechanisms can be both internal and external.

- **Internal credit enhancements**

Internal credit enhancements are a best practice in NPE securitisation since are techniques structured within the transaction itself and, therefore, very easy to employ.

- *Subordination*: This is a must-have measure in any NPE securitisation and refers to the tranching of the issued securities in senior, mezzanine and junior note. Subordinated notes are repayable only after other classes with higher seniority have been satisfied.

- *Over-collateralisation*: The nominal value of the exposures in the pool exceeds the nominal value of the issued notes. Accordingly, if some of the payments from the NPEs are late or defaulted, repayments on the securities can still be arranged.

- *Reserve fund*: Reserve accounts are partially funded in the early stage of the securitisation, but are built up over time using the excess cash flows available after paying investors.

- *Excess spread*: This is the difference between collections generated by the securitised NPEs and the transaction expenses, such as payments to the noteholders, servicing and operating fees, and losses on the underlying assets. The monthly excess spread is used to cover expenses and any potential loss. If any surplus is left over, it flows into the reserve account.

- *Trigger events*: It may be set forth in the transaction's legal documentation that the occurrence of a specific event, such as the failure to achieve a predetermined level of performance, affects the waterfall of payments. It is therefore important that both occurrence and non-occurrence of such trigger events are frequently reported as part of the transaction's regular investor reporting.

- **External credit enhancements**

These credit measures, by definition, are not internally embedded into the deal structure, but are measures granted through external agreements and against the payment of a fee. For this

reason, they are less common than internal techniques. External credit enhancements can be provided by the Originator or by a counterparty, referred to as a "*credit enhancer*", such as a bank or insurance company.

- *Liquidity lines*: The Originator usually grants a credit line to the SPV, in order to manage mismatches between collections and payments due to noteholders.

- *Pool insurance*: These are policies provided by rated insurance companies to protect principal and interest payments for certain investors. Typically, these insurance policies are granted in the form of surety bonds and only on investment-grade securities.

- *Originator/Third-party guarantees*: The promoter of the securitisation or a third-party may provide a promise to reimburse the SPV for losses up to a specified amount.

- *Letters of credit*: A credit enhancer is paid a fee for providing a specified amount of cash to reimburse the SPV for any short-term lack of liquidity.

The implementation of credit enhancements may be particularly effective if the Originator prefers the notes to be rated. A rated transaction could bring several capital benefits to the lending institution compared to an unrated transaction, as by retaining the senior tranche, the Originator could effectively swap high risk-weighted assets with low risk-weighted rated securities. However, for market transactions (i.e., securitisations without governmental guarantee), obtaining a rating of an NPEs tranche may be difficult because of the impaired nature of the underlying assets, even if credit enhancements measures have been employed.

3.4 The Fronting Bank mechanism in Italian UTP securitisations

The paragraph hereinafter provides a more complex and comprehensive NPE securitisation scheme which includes UTPs. To this end, it is important to highlight that an exposure is composed by three distinct elements:

1. The receivable deriving from the exposure;
2. The lending agreement underlying the exposure;
3. The eventual collateral assets related to the exposure. Obviously, unsecured exposures do not present this element.

In a securitisation process these three elements may follow different paths, meaning that an exposure can be "unpacked" and each element may be distinctly disposed or transferred to different legal entities.

This distinction becomes particularly relevant when dealing with UTP securitisation in the Italian distressed market because UTPs exposures cannot be disposed or securitised through a straightforward general scheme.

UTPs, unlike NPLs, are not in default exposures, but credits that are likely to not be paid back, thus their agreements cannot be terminated or revoked, meaning that the exposures are still "alive". In the case of unlikeness to pay, the distressed borrower is just in a temporary crisis and the bank aims at bringing the exposure back to the "*performing*" status. Accordingly, managerial skills are needed to support borrower's turnaround through a debt restructuring process or by granting new funds, not with a speculative rationale but to revive borrower's business activity. Whilst the SPV or any other vehicle (i.e., LeaseCo and ReoCo) can own any kind of exposure's receivable and related assets on its balance sheet, it cannot legally own and manage non-revoked lending agreements since the vehicle is not aimed at actively supporting debtors financing needs. Therefore, in the context of a distressed securitisation carried out under the Italian banking regulatory framework, the lending agreements can be transferred to the SPV only if are expired, voluntarily terminated or revoked. As of the securitisation's cut-off date[38], only NPLs have such characteristics, as they are all exposures in default and thus already revoked by the lender.

[38] The **cut-off date** is the point in time beyond which all the events that may affect the NPE portfolio cannot modify some transaction elements, such as the price.

In contrast, lending agreements concerning medium/long-term and short-term UTPs[39], in most of the cases, are still in place even after the securitisation closing and therefore need two different solutions.

To bypass the first hurdle, medium-long term UTPs lending agreements are not be disposed to the SPV but to a financial intermediary with a "106 license", namely the Master Servicer, that is by law allowed to take on such agreements. The latter actively manages the position with a tailored one-to-one approach in order not to let the exposure falling in the "*non-performing*" status and, conversely, tries to seize new financing opportunities. To sum up, medium-long term UTPs agreements are transferred to the financial intermediary 106, while the related receivables inflow into the SPV's balance sheet.

On the contrary, when dealing with UTPs originated by revolving facilities, the process is much more complicated. Short-term UTPs cannot be transferred neither to the SPV nor to the financial intermediary 106. The reason is that, pursuing Italian law, only a legal entity carrying out the banking activity is entitled to manage operational short-term exposures since such exposures are typically settled on checking accounts on a daily basis and only banks can own checking accounts. The rationale behind this law provision is that if an entity actively managing a short-term exposure cannot address daily funding needs of the debtor, the latter would suddenly become insolvent on their short-term liabilities. As a matter of fact, corporate borrowers heavily rely on short-term funding to face working capital needs and a sudden and unpredicted lack of such liquidity could irreparably harm their business activity. Therefore, for a lending institution it is illegal to discontinue a short-term financing facility in the absence of sufficient criteria (i.e., default or natural expiration of the agreement). Additionally, beyond regulatory constraints, only banks have adequate IT systems and infrastructure to support the day-to-day operational financing needs of borrowers.

In conclusion, a bank is required to manage and monitor short-term UTPs since these are "dynamic" exposures with a balance that goes up and down every day. On the contrary, the

[39] Please note that **short-term and medium/long-term are not referred to debt maturity**. Liquidity provided through a short-term facility meets short-term financing needs, and vice versa for long-term loans.

Master Servicer can take on medium/long-term UTPs as they are "static" in nature since they relate to loans with a predetermined amortising schedule.

3.4.1 The Fronting Bank

Given the difficulty in disposing short-term UTPs, past UTP securitisations have always involved only exposures deriving from medium/long-term loans. Nevertheless, the Italian distressed market recently came up with a peculiar and innovative solution: the "*Fronting Bank*" (or "*Servicing Bank*").

This mechanism aims at transferring to the SPV all the risk and benefits related to short-term UTPs, even if the bank, acting as a Fronting Bank, retains and owns these exposures. In a nutshell, the Fronting Bank is a virtual entity which stands between the bank and the SPV because the former owns the exposure, the latter receives the collections, and the two entities jointly manage the position. All short-term UTPs that fall in the Fronting Bank management maintain a direct relationship with the bank but their collections are indirectly addressed to the SPV. The vehicle is entitled to receive the collections because it grants to the Originator a limited recourse loan (*SPV Loan*), which is paid back with the borrowers' principal and interest repayments, namely the portfolio's cash flows. Essentially, the revolving credit facilities underlying short-term UTPs are purchased with the granting of the SPV loan, instead of the "true sale" that occurs with NPLs and medium/long-term UTPs. Indeed, not surprisingly, the amount of the SPV loan equals the price of the short-term UTP portfolio.

Under the Fronting Bank process, the borrower remains a customer of the Originator, which thus maintains the commercial banking relationship by providing all those banking services other than term loans and revolving facilities (i.e., money transfer, debit cards, etc.). However, even if the Originator directly manages the short-term UTPs under predetermined guidelines outlined in the Fronting Bank agreement, some relevant decisions are shared with the Servicer.

3.4.2 SPV Loan and Cash Collateral

However, the Fronting Bank framework is not yet complete. Indeed, any revolving exposures is composed by two elements, the drawn and undrawn margin.

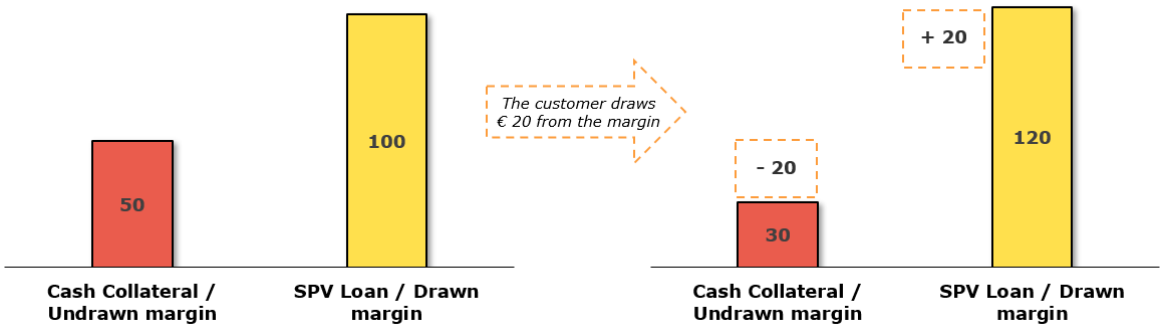
- The **drawn margin** is the amount of the revolving exposure that has been effectively used by the borrower at the cut-off date. The debtor has to repay only the cash drawn from the revolving credit facility plus the interests computed on this amount.

- Mirroring, the **undrawn margin** is the part of the credit line which has not been used by the borrower. Since the lending agreements related to UTPs still in place even after the securitisation closing, any borrower has the right to draw cash from the undrawn margin whenever they need it.

Therefore, the Fronting Bank is required to finance any further drawn of the borrower since, as aforementioned, one of the aims of the mechanism is to support borrowers' short-term funding needs. Nevertheless, the SPV Loan is granted to cover only the price of the drawn margin, while the undrawn component needs a different accounting entity to be settled. The solution is a "*cash collateral*" pledged on a bank's checking account. This is an amount of cash transferred from the SPV to the Originator and "blocked" in the bank. The latter takes out from the cash collateral the liquidity needed to fund any further drawn from the revolving credit facilities underlying the UTP portfolio, in order to meet borrowers' short-term financing needs.

Basically, the drawn margin is covered by the SPV loan and the undrawn margin by the cash collateral. Since drawn and undrawn margin are two sides of the same coin, the related accounting entities need to be the same. Indeed, SPV loan and cash collateral are ruled by a mirror and opposite accounting mechanism shown by Figure 13. When a borrower draws cash from the undrawn amount, the bank reduces the cash collateral to provide the liquidity to the borrower. Simultaneously, by definition, the drawn margin increases of the same amount and, therefore, an accounting entry to increase the SPV loan is required.

Figure 13 – SPV Loan and Cash Collateral mechanism



source: Author's elaboration

As a consequence, if all the margins of the revolving credit facilities in the portfolio are drawn, the value of the cash collateral is zero while the value of the SPV loan accounts for the entire exposure.

The value of the undrawn margin and accordingly the size of the cash collateral is estimated at the transaction date by looking at the historical utilisation of these margins. Therefore, the cash collateral's dimension is lower than the whole available margins. If the cash collateral will not be sufficient to cover all the utilisation of undrawn margins, the bank will provide a credit line to the SPV to meet this cash shortfall.

In conclusion, the set-up of the cash collateral is key for the Fronting Bank mechanism to work efficiently. As a matter of fact, by means of the cash collateral, the SPV takes on all the risks and benefits deriving from short-term UTPs. This element is extremely relevant since allows the Originator to proceed with the accounting derecognition of the exposures even maintaining the judicial ownership of the agreements.

The only drawback of the cash collateral solution is that the SPV is forced to keep a great amount of cash "locked" on a checking account. Therefore, the vehicle typically pushes the Fronting Bank to quickly revoke the short-term UTPs agreements in order to transfer the exposure on the SPV balance sheet as soon as possible, freeing up the capital set aside for the cash collateral.

3.4.3 Calculation Agent

To streamline the SPV loan and cash collateral reconciliation, another party comes into play. This legal entity is the "*Calculation Agent*" which is responsible for adjusting on a daily basis the size of the SPV loan and of the cash collateral. Generically, the role of the Calculation Agent in structured finance transactions is to calculate and report the distribution of interest and principal repayments. This agent usually produces a "*payment report*" which provides the SPV with instructions on how to allocate available funds to the noteholders and an "*investor report*" designed to keep investors updated on the evolution of collateral pool and the performance of the securitisation as a whole.

However, in the context of an NPE securitisation employing the Fronting Bank mechanism, the role of Calculation Agent is wider since it carries out also the activities hereinafter.

- **Gathering data:** Collect all the information and data made available by other players in order to compute the SPV loan and cash collateral amount.

- **Reporting:** Prepare the quarterly "*Revolving Facility Report*". This report contains, for each exposure, information on the lending agreement, on the size of drawn and undraw margins and on the SPV loan. Regarding the latter, the report provides computed data on the SPV loan amount, the difference with the previous quarter and the interest remuneration of the loan. Then the document is transmitted to internal accounting units responsible of the Fronting Bank to let them perform accounting adjustments and treasury payments.

- **Support function:** Assist the Fronting Bank in addressing Servicer's requests for clarification on the management or revocation of specific exposures.

3.4.4 Fronting Bank management

As aforementioned, the Originator manages the administrative activities of the relationships and lines in Fronting Bank, as the owner of the agreements. Nevertheless, some processes

and activities are jointly managed with the SPV, on behalf of the Servicer. The key pillars to be analysed to delineate how exposures are managed within the Fronting Bank are the decision-making process, the complaint management, and the customer relationship.

- **Decision-making process on credit services**

Typically, for greater efficiency and speed of the portfolio management, the Fronting Bank is allowed to independently authorises the granting or the revocation of some credit services that should be within the scope of the SPV's powers. This usually happens as long as the authorisation is granted in favour of a borrower who has not exceeded a certain threshold of default in the last quarter or if the transaction falls within the limits provided by the internal risk concentration guideline. Another example of decisions that do not require SPV's deliberation is the revocation of credit facilities in the presence of a judicial insolvency proceeding. In such a case, since an in-court process has determined that the borrower is insolvent, the Originator can independently and automatically proceed with the revocation of the credit facilities, giving notice to the SPV. There is no need for deliberation even for specific services (e.g., charging commission or management fees) that come out of the decision-making power of the parties and may allow automatic overdraft of the revolving credit facility.

On the contrary, some transactions cannot be carried out independently by the Fronting Bank since there is the need to deliberate on customers that present critical issues, so the servicer via the SPV is called in to decide whether to expose itself to this increased risk or not by authorising the transaction. Following a constant monitoring of the exposure performance, the SPV communicates, by means of a ticketing system, the decision to the Fronting Bank, which follows up on the authorisation and gives notice once it is executed. If, on the other hand, it is the Fronting Bank that preliminarily detects elements that require SPV action, they can make a request for action through the ticketing portal.

However, the bank acting as a Fronting Bank in any case can always not execute the decisions that are in contrast with the Fronting Bank agreement, the law, or the bank regulation. If one of these cases does not occur but the Fronting Bank still does not want to execute the SPV's decision, the clash of views on the decision will be tackled by a Joint

Committee[40]. The committee's resolution leads to the execution. Typically, before resorting to the Joint Committee, there is an informal confrontation between the parties on the decision and in most of the case a joint solution is found without committee intervention. When an agreement is not reached even with the Joint Committee intervention, if provided by the Fronting Bank agreement, the bank may have the option to lead (on a limited number of transactions) situations that come within certain levels of risk (e.g., reputational).

Conversely, if the risk requirements do not exist or if the threshold of bank-driven decisions has already been exceeded, the parties need to find a different solution. If the bank prefers to keep the revolving credit facility to follow up on its strategy, while the SPV would like to revoke it, the bank has the option of purchasing back the line of credit. Accordingly, the exposure is taken out from the SPV Loan. If, on the other hand, the SPV wants to keep the credit line it is allowed to find another bank to support it in managing the lines it wants to keep. The rationale is that since the Originator still retains the judicial ownership of the exposure, it must always have an exit strategy to avoid being legally harmed by the customers.

- **Complaint management**

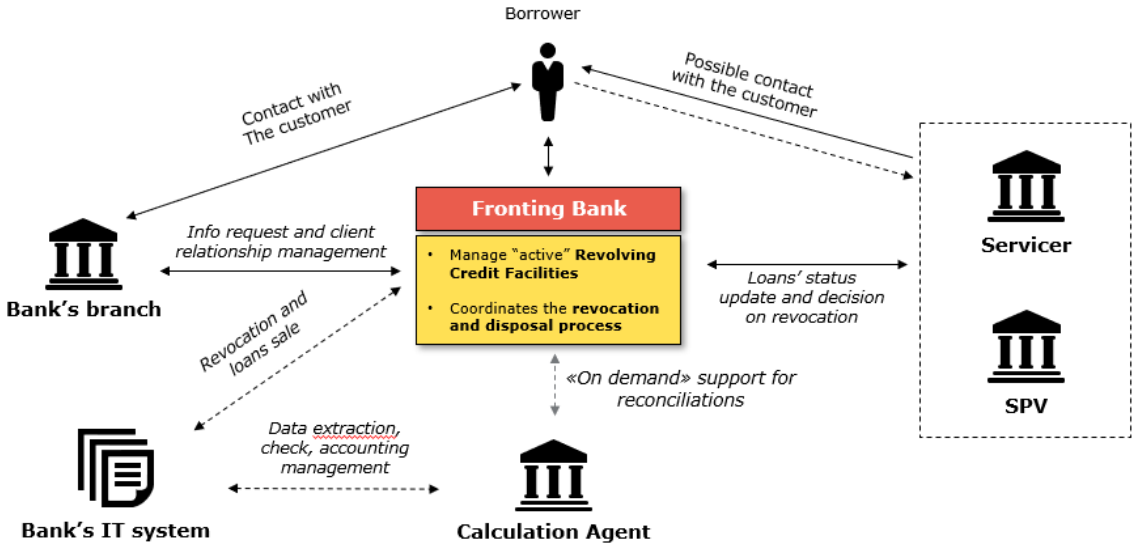
The first element to be analysed is the subject matter of the complaint and specifically whether it is related to pre- or post-securitisation's cut-off date. Generally, if the complaint's subject refers to the pre-closing period it is addressed by the Originator, on the contrary the SPV is responsible. When the complaint is received it is made known to both the Originator and the SPV. The two parties jointly agree that the subject of the compliant falls in only one party's jurisdiction based on the time period criterion, so the other party declares a lack of passive legitimacy and let the other party respond to the complaint. The party which manages the compliant also sends to the other party a copy of the response provided to the debtor.

[40] The **Joint Committee** is made up equally by members from both parties.

- **Customer relationship**

The daily operational management of the credit facilities within the scope of Fronting Bank are handled by the bank's branches, while the Fronting Bank takes on specialised credit services management. The Servicer is allowed to directly contact the customer if necessary, such as to collect relevant information on the exposure. The following Figure 14 shows an overview of how the banking relationship with borrowers in the Fronting Bank portfolio is generally managed after securitisation's cut-off date.

Figure 14 – Fronting Bank's customer relationship



source: Author's elaboration

3.3.5 NPE securitisation scheme with the Fronting Bank

Adding the Fronting Bank to the equation, the most comprehensive NPE securitisation scheme is the one represented in Figure 15. The process starts from the Originator that has a pool of on-balance sheet NPEs, that can be clustered in NPLs, medium/long-term UTPs and short-term UTPs.

- **NPLs** follows the general scheme described in the previous paragraph by Figures 10-11. The entire exposure, including the receivable, the agreement and any related asset, are disposed to a vehicle, namely the SPV, the LeaseCo or the ReoCo.

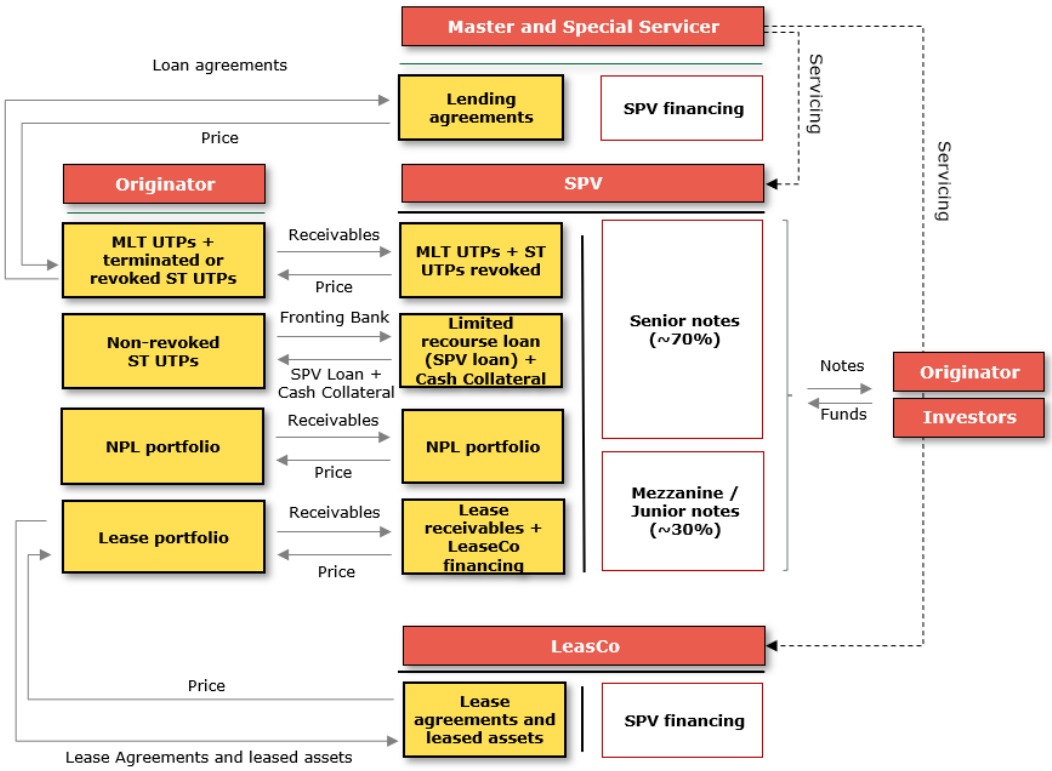
- **Medium/long-term UTPs and short-term revoked UTPs** follow a similar path, with the only difference that their agreements cannot be revoked or terminated and, therefore, are transferred to the Master Servicer instead of being transferred to the SPV. The borrowers' turnaround will be actively supported by the Master Servicer.

- **Short-term UTPs** are entirely retained by the bank. However, the SPV indirectly funds the revolving credit facilities by issuing the SPV loan and the cash collateral. The Fronting Bank manages the short-term UTP portfolio. This mechanism allows the SPV to take on all the risk and benefits related to the exposure even though the bank will retain the ownership.

All UTPs lending agreements will be transferred to the SPV once revoked or expired.

The first deal employing the Fronting Bank mechanism is "*Project M*", a securitisation of a € 3bn NPE portfolio promoted by Intesa Sanpaolo and carried out in 2019. Prelios acted as Servicer and major investor along with Davidson Kempner Capital Management LLC. The sell-side was advised by Deloitte Financial Advisory.

Figure 15 – NPE securitisation scheme with the Fronting Bank mechanism



source: Author's elaboration

3.5 Deal's workstreams and timeline

In any NPE securitisation, the deal is generally structured by the Arranger, the Servicer, and the advisors, which are responsible for carrying the Originator through the process. From a financial standpoint, the key workstreams to run an efficient and lean deal process are the following:

- Data gathering and due diligence preparation;
- Due diligence execution;
- NPEs' transferability analysis;
- Structuring and Pricing;
- Deal documents, marketing, and roadshow.

The above workstreams are not sorted by time of execution, since some of them may be executed in parallel. The itinerary of an NPE securitisation can be briefly schematised in three different phases.

1. **Preliminary phase**

Any securitisation begins with several internal meetings that drive the Originator's decision whether or not to undertake the process. Then, after appointing the parties to be involved, there is an all hand meetings to define the strategy which will guide the deal structuring. After these organisational meetings, the Originator, supported by the financial advisor, starts gathering and organising all relevant data that will be subject of due diligence.

2. **Servicer due diligence and documentation drafting**

At the second stage of the transaction the internal due diligence process begins. During this phase, the due diligence is typically jointly conducted by the Originator, the advisors and the Servicer. The latter plays a pivotal role as it is responsible for drafting the Business plan of the portfolio to be presented to investors, providing its views on the pool's collections. Transaction lawyers are highly involved in the second phase, as they are responsible for the legal due diligence and asset transferability analysis, as well as the beginning of the drafting of the transaction documentation.

3. **Marketing, pricing and closing:**

The last step of an NPE securitisation concerns investors' engagement and deal pricing. Typically, the Arranger, involving the capital markets team, introduces and proposes the transaction to institutional investors. The latter, if selected by the sell-side, perform an investor due diligence over the portfolio to produce the investor's business plan. Structuring and pricing are finalised taking into account the capital structure desired by the investors and their view on the portfolio resulting from investor due diligence**.** In conclusion, the transaction documentation is finalised and the counterparties can proceed with the deal closing.

Typically, a distressed securitisation is carried out in 3 to 9 months. Implementing the Fronting Bank could significantly slow down the process, as the set-up of this mechanism is time-consuming in terms of IT systems migration and coordination between the bank and the Servicer. Moreover, the Fronting Bank involves several internal functions of the bank which are required to cooperate and move in unison towards the same direction.

3.5.1 Data gathering and Due Diligence preparation

The first step in any structured finance deal is the portfolio selection. Generally, in an NPE securitisation, the Originator tries to dispose as much GBV as possible according to its target NPE ratio and deleveraging strategy. The portfolio identified tends to be well diversified in terms of borrower nature, type of exposure (commercial, residential, or consumer loan), GBV size of the exposure, and geographical area. Typically, the perimeter of the exposures is defined by a borrower criterion instead of an exposure criterion, meaning that if a distressed borrower is liable for more than one exposure, the debtor's entire portfolio will be disposed, regardless of the specific characteristics of any single credit. Accordingly, if a single exposure cannot be transferred for financial or legal reasons, the entire borrower will be excluded from the scope of the transaction. This is a best practise in distressed securitisations because it reduces significantly the complexity of the IT and accounting processes behind the securitisation. Furthermore, when dealing with UTPs, the transfer is even broader as it includes the whole economic group to which the borrower belongs.

Once the portfolio of distressed loans to be securitised has been defined, the financial advisor starts collecting all the relevant data from Originator's systems, in order to inflow them in a unique pool. After the data gathering, the Originator and the financial advisor elaborate these data to build the most important file of the transaction, the "*loan data tape*". The loan data tape is a file that synthetises all relevant information about each exposure in the portfolio to enable an efficient investor due diligence. The contents of the loan data tapes widely vary on the basis of which information the Originator wants to share with the counterparty. Commonly, a loan data tape contains:

- name and unique ID of the borrower (also known as "*NDG*" for Italian banks);

- classification of the exposure, which is typically based on the GBV size of the exposure and the nature of the borrower (individual, corporate, or real estate firm);
- credit performance data;
- loan amortisation and outstanding exposure in terms of GBV;
- revolving credit facility drawn and undrawn margin in terms of GBV;
- collateral related information such as loan-to-value and most recent appraisal value.

Intuitively, the role of data in debt securitisation is key. If the bank has low quality data or if these data are not the same on all different databases and IT systems, the accuracy of the portfolio's analysis and pricing will be negatively affected and, thus, the Originator may not be able to earn a fair price for the portfolio. In addition, the lack and inaccuracy of data could heavily slow down the transactions' workstreams.

As concerning the due diligence preparation, since the loan data tape may contain tens of thousands of exposures[41], the counterparties determine a sample of due diligence in order to reduce the number of positions to analyse "line by line". The aim is to speed up the process, by carrying out an in-depth analytical valuation only on a smaller number of positions. At the same time, the borrowers included in the sample should be relevant enough to provide significance to the due diligence activity. To figure out which NPEs should be included in the due diligence perimeter, the counterparties normally select the exposures with the highest GBV and forecasted collections according to the bank's Business plan. With regard to investor due diligence, the buyers may also be interested in analysing specific out-of-sample clusters or performing an analytical valuation over random exposures, in order to confirm whether or not its statistical pricing approach over the out-of-sample exposures is correct. The due diligence sample, although comprising only 10-15% of the borrowers, typically represents at least 50% of the entire distressed portfolio in terms of GBV.

In parallel with the above processes, the bank and the advisors set-up the Virtual Data Room (VDR). The VDR is a secure online repository for document storage and distribution to share exposures documentation with the counterparties. Usually, a VDR set-up for an NPE

[41] A high number of loans in the portfolio being securitised is often justified by the presence of individual borrowers with small exposures in terms of GBV.

securitisation contains a folder for each borrower and each folder provide the following documents[42]:

- dossier of the borrower;
- lending agreements;
- collateral's documentation, including appraisals carried out by the bank or by insolvency practitioners;
- documentation on any other form of guarantee such as surety bonds;
- debt restructuring agreements;
- judicial insolvency proceedings;
- financial statements;
- lawsuits in which the borrower is involved;
- extraordinary corporate transactions (e.g., M&A deals, capital increases, bond issuances etc.).

3.5.2 Due Diligence execution

Once the Originator opens the VDR, the due diligence process begins. NPE securitisation's due diligence process widely differs if the analysed exposure is in or out of the sample perimeter. Indeed, there are two "opposite" approaches to carry out the due diligence over an NPE portfolio.

- The **analytical due diligence** is performed over the sample NPEs, meaning that each exposure in the sample perimeter are evaluated individually. As concerning the analytical valuation of NPLs, the legal due diligence undertaken by transaction lawyers plays a key role since the borrower is defaulted and, therefore, involved in a bankruptcy or liquidation proceeding. Law firms perform an in-depth analysis over the insolvency proceeding the defaulted borrower filed for in order to assess the seniority of originator's credit with respect of other creditors. The legal due diligence also map asset transferability. Differently from NPLs, the UTPs analytical due diligence needs to be performed by Servicer's asset managers as a wide set of work-

[42] Please note that some of the documents mentioned concern only corporate borrowers.

out strategies may apply to UTPs exposures, not just a judicial recovery strategy as for defaulted borrowers. In parallel, financial advisors, supported by the real estate team, are responsible for the collateral evaluation to adjust and update Originator's appraisals. Accordingly, once investors are engaged, they perform the same process. Following the investor analytical due diligence over the sample, Q&A and roll-up sessions are scheduled to exchange views on the recovery strategies, cash flows' assumptions, collections' timing, and collaterals' valuation.

- The **statistical due diligence**, conversely, is conducted over the out-of-sample exposures. This process is less time-consuming than the analytical one since it essentially requires to build up a financial model. For secured positions the inputs of the model are on average coherent with the findings of the analytical due diligence on collaterals' valuation. Differently, unsecured positions are statistically evaluated applying Servicer's historical collections' curves in order to adjust the recovery forecasted by the Originator's business plan.

Both analytical and statistical analysis are executed for the Servicer's and the investor's due diligence, but at two different points in the transaction. The former is part of the second phase, while the latter belongs to the last stage and, accordingly, the output provided by the two analyses is different. The Servicer due diligence allows the Servicer's business plan to be set up, while the investor due diligence is aimed at building the investor's business plan, which ultimately leads to the final portfolio pricing.

The process eventually enables financial advisors to gather all the relevant assumptions regarding amount and timing of the collections and to include them in the financial model.

3.5.3 NPEs' transferability analysis

The Originator and the sell-side legal advisors are the main owners of this workflow. During the due diligence, the sell-side assesses the transferability or assignability of the NPE portfolio. The aim is to establish if a true sale of the portfolio to the vehicle can occur without notifying or asking the consent of any party in the lending agreement constituting the

receivable. A loan agreement may contain non-transferability covenants or restrictions on the nature or location of disposed borrowers in order to achieve no withholding tax payables on interest payments. The sell-side legal due diligence maps non-transferability clauses and provide a list of what consents must be sought and what notifications must be made. Furthermore, transaction lawyers assess which solution could bypass non-transferability issues, like managing the exposure in Fronting Bank waiting for the revocation or natural expiration of the agreement. Usually, the Servicer schedules periodic checkpoints to support the sell-side in assessing the most suitable solution for the scope of the transaction. Nonetheless, if there are no available options to legally transfer a relevant part of the exposures, the Originator could consider to rely on a "*synthetic*" securitisation instead of a true sale or may decide to drastically remove the non-transferable exposures from the securitised portfolio of bad credits.

3.5.4 Capital structure and Pricing

Determining the capital structure of an NPE securitisation is a key workstream which deeply affects the results of the transaction since it defines the technical form of the SPV liabilities, namely the ABS notes issued and provides different combinations of risk and return to noteholders. The goal of this phase is to determine the size of each note tranche and how many tranches are to be used. Commonly, in most NPE securitisations the senior tranche (class A) accounts for the 65-80% of the notional value of the notes issued, while mezzanine (~ 22.5%) and junior (~ 7.5%) notes (respectively class B and C) represent the remaining part. The mezzanine class can be eventually split into upper (class B1) and lower (class B2) mezzanine, with the latter subordinated to the former. It is often the case that the Originator underwrites the whole senior tranche and then resell the notes on the market. Furthermore, within the EU market, Originators are required to compulsorily retain 5% of the junior tranche in compliance with the risk retention rule set forth by article 6 of the EU Securitisation Regulation.

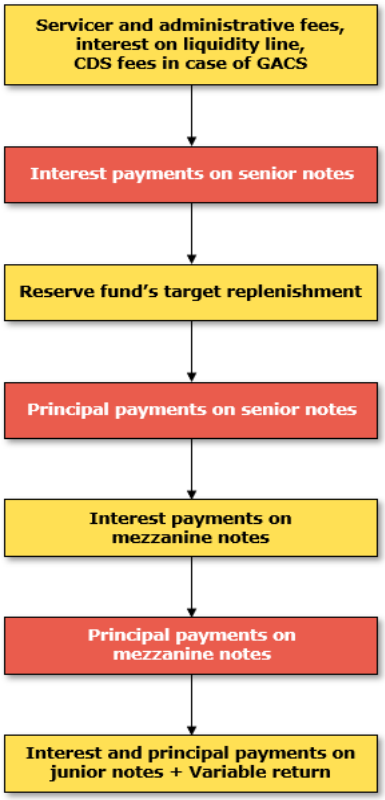
The Originator, together with its financial advisor, defines the capital structure to adopt considering several elements. Probably, the most relevant driver for establishing subordination levels is investors' appetite for certain levels of risk and maturity. Indeed, it

is often the case that funds' investments are bounded by internal credit requirements that prohibit them purchasing securities below a certain rating threshold. Alternatively, there may be interest for risk at lower tranches of the capital structure from investors with high internal "*hurdle rates*"[43]. Therefore, even though the Originator establishes independently the tranching, the investor's demand influences, and may lead to an adjustment of, the final securitisation's capital structure.

The most relevant implication of the bond classes thickness is the priority order of payments of each note class. The notes' tranching, indeed, determines the cash flows waterfall addressed to bondholders, whereby all the cash that is generated by the pool of non-performing exposures is paid in order of payment priority. In a nutshell, only when senior obligations have been met the mezzanine and then the junior notes can be paid. An independent third-party usually run "*coverage tests*" on the SPV to assess if there is sufficient cash to pay all obligations. However, distressed securitisations can have two different kind of pay-down structures. In the "*sequential*" pay-off structure (Figure 16) each class receives principal and interest payments sequentially, this means bond class A will be entirely paid first. Once bond class A is completely retired, all bond class B's obligations will be met until it is fully retired and so on with the other tranches. Differently, in the "*alternative*" pay-off structure (Figure 17) the interest payments of the mezzanine may occur before the senior's principal repayments if predetermined securitisation's performance-related metrics are achieved.

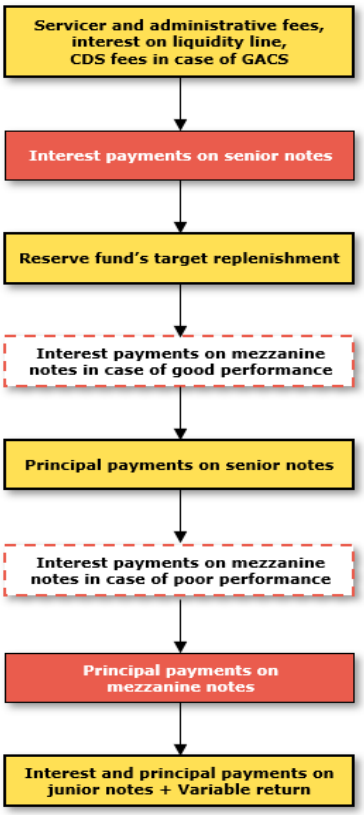
[43] Any fund may set forth in its internal investment policy a minimum internal rate of return (IRR) target, that is the so-called **hurdle rate** or **required rate of return**.

Figure 16 – *"Sequential"* pay-off structure



source: Author's elaboration

Figure 17 – *"Alternative"* pay-off structure



source: Author's elaboration

Moreover, the cash flow waterfall is also deeply influenced by internal credit enhancement measures. The credit support techniques which play a role in the pay-down structure are the following.

- **Reserve fund**: The pay-down structure may consider, at some stages, the replenishment of the cash reserve target, thus draining liquidity from the cash flow waterfall.

- **Early amortisation event:** This is a credit enhancement which includes a wide set of triggers leading to an early repayment of the notes' principal. These early amortization triggers may include the occurrence of a servicer termination event, a decrease in the loan-to-value (LTV) ratio, a reduction in the weighted average coupon (WAC) paid by the securitisation, or a shortfall of the reserve fund.

Nonetheless, performance triggers are the most likely to generate an early amortisation event.

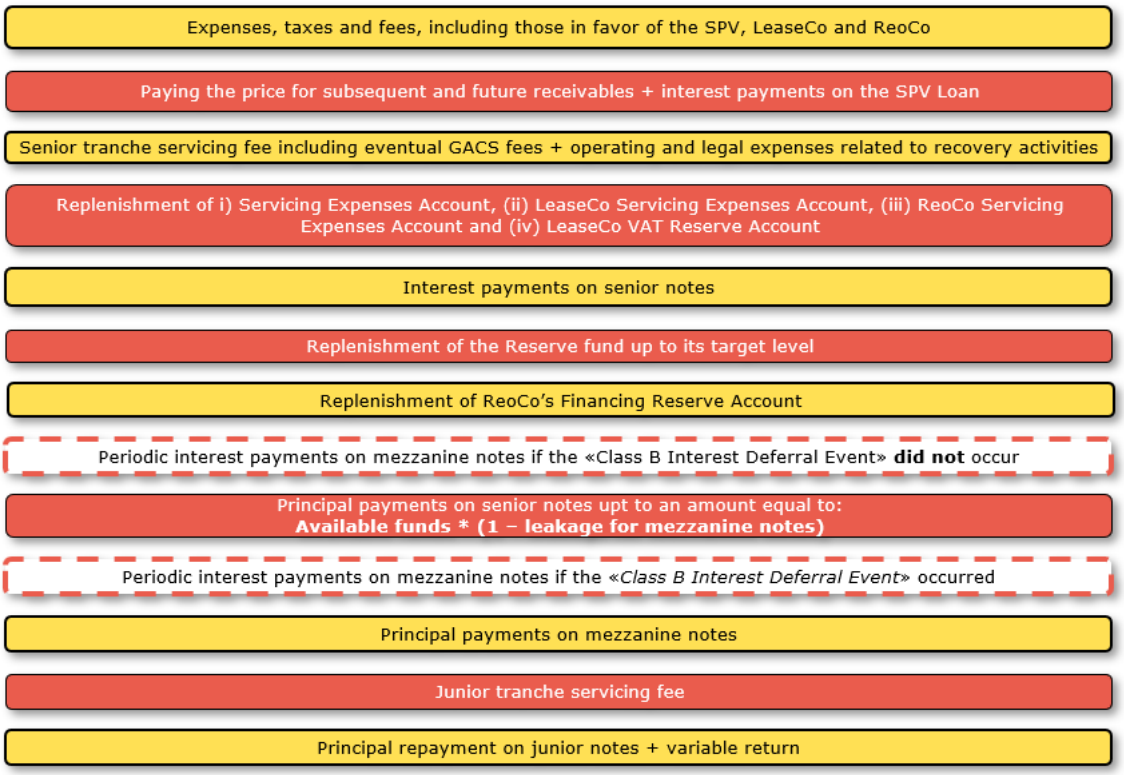
- **Class B interest deferral event:** This is performance trigger is the key element of "*alternative*" pay-down structures. Indeed, the class B interest deferral implies the subordination of interest payments on mezzanine notes to the principal payments of the senior tranche if the actual Net Cumulative Collection ratio is below the thresholds set forth in the key terms of the transaction.

- **Leakage for the mezzanine tranche:** This is another very common performance trigger in "*alternative*" structures which establishes that, if the performance levels stipulated in the key terms are not met, a higher amount of the available funds will be allocated to repay senior notes' principal at the expense of mezzanine interest. For instance, a 15% of the available funds can repay subordinated notes if Net Cumulative Collection ratio is greater than or equal to 85%. On the contrary, if the ratio is less than 80% or in the case of an early amortisation event, the available cash may be fully addressed to senior tranche's principal repayment.

- **GACS subordination triggers:** The 3rd prolongation of GACS introduced mandatory mezzanine interest and servicer fee (at least 20%) deferral when the Net Cumulative Collection ratio falls below 90%. Deferred payments can occur only if the senior tranche is fully repaid or actual collections are coherent with Business plan figures.

All these elements combined lead to a comprehensive cash flow waterfall which is way more complex than the two structures illustrated above in Figure 16 and Figure 17, as it may involve up to twenty different stages. The actual cash flow waterfall set up by financial advisors in a securitisation of distressed debt is the one illustrated below in Figure 18. In detail, the actual pay-down structure employed in an NPE securitisation needs to consider the above-mentioned internal credit enhancements, the presence of LeaseCo and ReoCo vehicles with the related expenses and financing, and the SPV Loan for the Fronting Bank management.

Figure 18 – Actual cash flow waterfall employed by financial advisors in NPE securitisations



source: Author's elaboration

The securitisation's capital structure is the last element contributing to portfolio pricing. Financial advisors perform several sensitivity analyses on the capital structure in order to determine the one which provides the best risk-return profile to investors and satisfy Originator's needs.

3.5.5 Deal documents, marketing, and roadshow

Transaction documentation can be divided into two categories: legal and marketing documents. Intuitively, the first are aimed at establishing legal obligations in the context of the transaction, while the latter at promoting the investment opportunity to potential bidders.

Law firms appointed by both sides are mainly responsible for producing legal documentation. The documents with contractual force used to establish and administer a securitisation of distressed loans are summarised below.

- **Receivables Transfer Agreement**

This document a form of sale and purchase agreement (SPA) which set forth the legal conditions driving the transfer of the NPE portfolio from the Originator to the SPV. Concretely, the receivables transfer agreement governs the mechanics of the receivables, assets and loan agreements transfer, the payment of the price, and the Fronting Bank management. The SPA is also pivotal since through this document the Originator provides specific representations and warranties concerning the underlying receivables. These representations and warranties allow the SPV to recourse to the seller if the receivables are not as established in the SPA. The vehicle may recourse to the seller either through a buyback mechanism or by asking damages for misrepresentation. However, in some cases, an indemnity clause can be established among the terms of the agreement. The SPV has the right to receive an indemnity from the Originator in the event of breach of representations and warranties or breach of the obligations and commitments undertaken. The vehicle can exercise the claim for indemnity within a predetermined period (i.e., 24 months) from the date of signing the Receivables Transfer Agreement.

The SPA is often preceded by the so-called "*term sheets*", which are nonbinding preliminary agreements that show the key terms and conditions of the NPEs transaction. The elements that make up the term sheet serve as a template for more detailed, legally binding documents such as the Receivables Transfer Agreement. A term sheet can also be used as a working document to initiate for more intensive negotiations.

- **Servicing Agreement**

This is an agreement pursuant to which the servicer is appointed by the SPV to manage the portfolio of distressed receivables on the vehicle's behalf. This document generally establishes the objective the servicing activity and the standard to which it must be performed. By means of specific threshold set forth within the document, the Servicer's

actual performance is typically compared against the Business plan of the portfolio. The latter is also included in the servicing agreement. Intuitively, a large number of pages in the document are devoted to describe the fees' structure which sometimes can be very complex since it can be affected by several factors, especially when dealing with real estate collaterals. The servicing agreement also governs the so-called "*termination events*", namely all those events which could lead to the servicing agreement termination, such as breach of Servicer's material obligations or of representations and warranties.

- **Trust agreement**

When a trustee is appointed, a trust deed is required. This document serves as a legal instrument that constitutes the issued securities and governs the relationship between the SPV and the trustee.

- **Issuer Security Document**

There would be one or more documents creating security over all of the SPV's assets (mainly made up of the portfolio of receivables) which form the security package favouring the investors. The issuer security document establishes the order in which cash flows deriving from the underlying portfolio are distributed to meet the vehicle's different secured obligations.

- **Underwriting Agreement**

When a party underwrites some of the issued notes, it enters into an underwriting agreement with the vehicle. Pursuing the underwriting agreement, the SPV commits to issuing the notes and the underwriter to subscribe them so that they can sell them on to the market. This document contains various protections for the underwriter, including representations from the vehicle and the Originator regarding the securities and the underlying assets. Most often, in NPE securitisation, the Originator acts as underwriter for the entire senior tranche.

Needless to say, the specific legal form of the above documents varies widely depending on the asset class being securitised and the jurisdiction at hand.

Moving on to the marketing phase, the Arranger is the main owner of the process, involving a capital markets team to start engaging investors. Typically, the Arranger relies on two relevant documents to market the transaction, namely the "*Confidential Information Memorandum*" (or "*Prospectus*" for public deals) and the "*Teaser*".

- The **teaser** is a preliminary brief document summarising the transaction. Due to its nature, it is designed to pitch only essential data about the investment opportunity avoiding the disclosure of any sensitive information. The Arranger sends out to major investors the teaser in order to gauge their interest in the transaction. If the teaser sparks interest, the sell-side may follow up with a preliminary prospectus of the deal.

- The **confidential information memorandum** is the most common document in private transactions and its aim is to present the deal to a prospective buyer. This document is typically a PowerPoint pitch book which, in NPE securitisations, conveys information about the Originator and its commercial banking business, the distressed local market, transaction highlights and the deal structure. Differently from the teaser, the information memorandum is a confidential document since it provides high degree of detail on the sell-side and the transaction itself.

  Conversely, in public deals the Originator and the Arranger drafts the **prospectus**, which is an offering document containing all information regarding the transaction and the receivables that a potential investor would require in order to drive its investment decision. Generally, this document is filed with the exchange since in a public deal the securities are listed.

Following the preparation of these two relevant documents the so-called "*roadshow*" takes place. The Arranger fixes a number of meetings with all the interested buyers which manifested their interest after reading the teaser. An investor can read the confidential information memorandum and access roadshow's meeting only after signing a "*non-disclosure agreement*" or "*NDA*", which is a legally binding document that set forth a

confidential relationship between the seller and a potential buyer interested in the investment opportunity. The parties signing the NDA agree that any sensitive information obtained in the context of the transaction will not be disclosed to any third-party. Then, the information memorandum is used as the key marketing instrument to support the roadshow, which is essentially a series of meetings in which the sell-side present the transaction to each potential investor. These walk-throughs of the transactions are usually led by the senior management staff from the bank together with the lead Arranger. The roadshow process, however, is not limited to private deals, as even in public transactions a relevant stake of the issued securities can be privately placed.

Thereafter, institutional investors deep dive over the NPEs pool's characteristics and its ability to generate cash flows through the investor due diligence. To perform their analysis on the portfolio, investors are enabled to access the VDR and review the business plan of the pool produced by the Servicer. The latter is one of the most significant documents of the transaction, since Servicer's performance will be measured against it and provides a guidance to investors on the forecasted cash flows of the portfolio. The business plan is an excel file containing a couple of spreadsheets summarising the recovery and the GBV décalage organised by borrower ID. This file is drafted by the Servicer as it is going to manage the portfolio of bad credits after the closing and, therefore, will be primarily responsible for the performance of the securitisation. To this end, the business plan of the portfolio must take into account the asset managers' views on recovery strategies to be adopted and collections estimates. Investors complete their due diligence activity with roll-up and pricing sessions with the bank and Servicer.

In conclusion, the SPV collects potential investors' binding offers and selects which of them to sell the securities to.

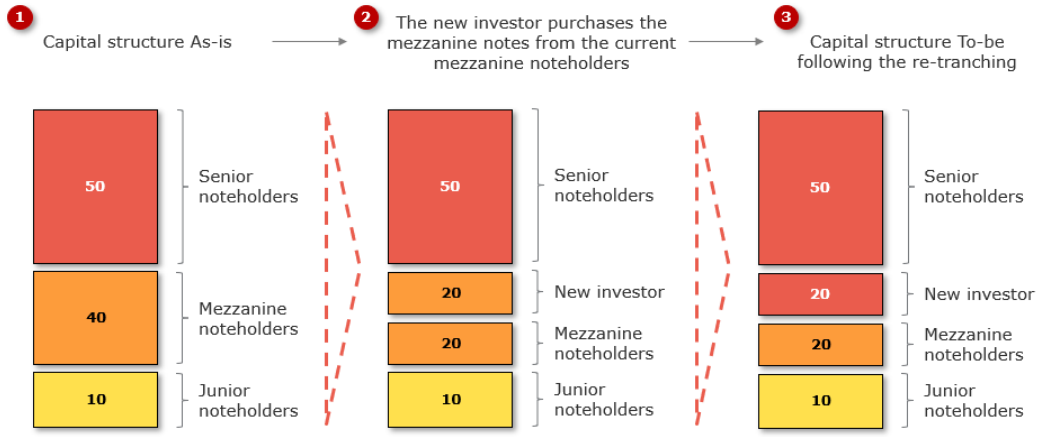
3.6 Re-tranching

Essentially, a re-tranching is an ex-post modification of the securitisation's capital structure. Typically, the re-tranching occurs following a secondary market transaction, meaning that a new investor purchases the securities from existing investors. In this light, a re-tranching could be useful to meet the risk-return profile of the new investors.

The following example may be useful to better understand re-tranching dynamics. Assume that in the initial capital structure of a securitisation, the senior class accounts for the 50% of the notes' notional value, but the current senior noteholders are not willing to dispose their securities. A private equity firm would like to invest in the securitisation, but cannot purchase subordinated notes because its internal policies does not allow investments below certain credit rating thresholds. The investor, in agreement with the counterparties, could promote the purchase of subordinated notes with a subsequent re-tranching. Therefore, the private equity firm purchases mezzanine notes, but then refinances these notes in the senior tranche, thus changing the original capital structure and ending up with senior rather than subordinated notes. It is relevant to pinpoint that the re-tranching can affect just one bond class, otherwise it would be considered a re-securitisation, which is prohibited by the EU Securitisation Regulation.

The process of re-tranching is schematised in the Figure 19 hereunder.

Figure 19 – Re-tranching scheme



source: Author's elaboration

Chapter 4

Portfolio Pricing

The final section of the dissertation tackles the different methodologies to evaluate a portfolio of NPEs in the context of a securitisation, with a focus on the role of financial advisors in the process.

The forecast of potential collections deriving from an NPE depends mainly on the recovery strategy pursued by asset managers to manage the exposure. Therefore, the first paragraph focuses on the viable recovery strategies that a credit institution can pursue to collect cash flows from a bad credit.

The potential recovery strategy to undertake and the gross cash flows deriving from the portfolio are estimated by two different types of valuation.

- *Analytical valuation:* The exposures in the sample of due diligence are evaluated one by one by asset managers, transaction lawyers and financial advisors.

- *Statistical valuation:* The collections deriving from the out-of-sample portfolio, instead, are forecasted through statistical models. This workflow is mainly owned by the financial analyst's teams.

Before defining the scope of these two valuations, it is worth noting that in an NPE securitisation, three different business plans are drawn up.

1) The Originator's business plan;
2) The Servicer's business plan;
3) The investor's business plan.

First, NPEs valuation begins with an in-depth analysis of the characteristics and composition of the portfolio to be securitised. Then, leveraging on the Originator's business plan as a benchmark, the Servicer performs the analytical and statistical valuations to set up its business plan. The latter is a crucial element in an NPE securitisation, as the Servicer is the

actual responsible for portfolio collections. Accordingly, its view on the securitisation performance is particularly relevant as probably reflects the Servicer's track record on similar portfolios. Then, the Servicer's business plan is presented to the investor, which carries out its own due diligence and, by applying its own assumptions on the portfolio performance, produces the investor's business plan. In parallel, the Originator also performs its own valuation, as its original business plan is often outdated, especially with regard to the valuation of collaterals. The Originator's ultimate goals in pursuing its own valuation is to build the ground for effective negotiations with counterparties, challenging their pricing assumptions.

To this end, the quality and granularity of data on Originator's systems is critical for a robust and fair valuation. In distressed securitisations, data reliability is able to largely speed up or slow down the process. For these reasons, the starting point for the Originator to obtain a price in line with its expectation is to provide high-detailed and trustworthy information on the exposures.

The chapter, and the thesis, conclude with an explanation on the most significant impacts that financial analysts are required to look at when analysing a distressed securitisation, both on the sell-side and the buy-side.

4.1 Overview on NPEs Recovery Strategies

Understanding NPEs recovery strategies is critical to portfolio pricing, as asset managers views on exposures management drives the cash flows of the financial model. Usually, well-structured commercial banks have dedicated work-out units (WUs) which takes on loans management when the latter reach the "non-performing" status. The WUs are separated from loan origination processes to avoid any possible conflict of interest between when setting up the work-out strategy. During the analytical due diligence, WUs' and Servicer's asset managers jointly decide which recovery strategy to apply to any specific exposure in the sample perimeter. Instead, for the statistical due diligence, they will provide a set of assumptions concerning the management of distressed credits that will be implemented in the statistical model. However, even though there is an exchange of views between Originator and Servicer on the work-out strategy to employ, the latter has the final say since it is responsible of drafting the Business plan on which to base securitisation performance.

The viable NPEs management strategies are described as follows, sorted from the best to the worst case from the standpoint of the entity holding the claim on payments.

- **Hold strategy**

This strategy assumes that the asset manager will not pursue any kind of action to recover cash flows from the positions, as they reasonably assume that the borrower will soon return to the "performing", or "sub-performing", status and pay back all, or most of, the obligation. Intuitively, it is very difficult for a bad credit to be managed through a hold strategy because of its impaired nature. Nonetheless, sometimes the asset manager may undertake this strategy if the pay-rate has been steady in the recent period and, in addition, the position is secured by a high loan-to-value.

- **Debt restructuring**

A debt restructuring (also referred as "*workout strategy*") is an out-of-court agreement between the lender and the borrower through which the debt is refinanced at different and more flexible terms. The goal of this strategy is to support the borrower's turnaround, by reducing the possibility of further financial distress or to avoid bankruptcy. Indeed, debt

restructuring is a less expensive alternative to borrower's default for both sides, because the company does not go out of business and the lender typically receive more than they would have from the bankruptcy estate. This strategy results in creditors with less value and more credit risk, and the company with a more manageable liability. A debt restructuring may be achieved through different forbearance measures:

- a *"waiver"*, which is a temporarily or permanently permission to breach a covenant of the financing agreement;
- the *"deferral"* of the principal and interest payments;
- rescheduling the interest rates;
- refinancing;
- a *"standstill agreement"*, namely an agreement whereby the creditor does not force the collection of payments;
- discounting the obligations;
- a *"debt-for-equity swap"*, through which the creditor cancels the company's debt in exchange of a shareholding in the business. Since the borrower is distressed, this debt restructuring instrument is highly risky, but could provide returns much higher than the debt repayment.

- **Voluntary liquidation**

A voluntary liquidation of the company's assets typically occurs when the financial turmoil of the borrower cannot lead to an in-court procedure and, as a result, the creditors' class "urges" the debtor to voluntarily liquidate their assets out-of-court. A shareholders or creditors meeting is typically held to appoint a liquidator, whose role is to realise the company's assets, pay all the fees and charges arising from the liquidation, and pay the creditors as far as funds allow in a strict order of priority. A voluntary liquidation is often part of a debt restructuring plan.

- **Discounted payoff (DPO)**

This is essentially the repayment of the obligation for less than the principal balance. DPOs are usually a last resort for lenders before collateral liquidation, as this strategy by definition

involves taking a loss. When a DPO strategy is performed to manage a collateral-backed loan the claim on the collateral reduces the risks for the lender. Indeed, on a secured exposure the lender may agree to a discounted payoff, while also exercising its right to repossess and liquidate the collateral. Accordingly, a DPO is always a better solution than the foreclosure since the payoff value will be always higher or at least equal to the market value of the collateral.

- **Foreclosure**

The foreclosure is the last option available to asset managers before initiating insolvency proceedings. This process leads to the foreclosure sale, which is an auction where the lender sells the collateral to pay off the unpaid obligation. It is often the case that, in the context of distressed securitisations, the ReoCo bids during the auction in order to purchase the asset at a discount or to undertake a restructuring and upgrading strategy of the property. Even though the regulation on foreclosure widely vary across countries, this procedure can be generally either judicial or nonjudicial. The latter may occur, in some states, when a borrower signs a mortgage loan agreement that contains a *"power of sale"* provision. This clause enables the lender to foreclose the collateral nonjudicially. The difference between an out-of-court and a judicial foreclosure is material, as the former takes a few months while the latter can take years and collections timing is critical to securitisation performance.

- **Insolvency proceedings**

Insolvency proceedings are court proceedings aimed at liquidating debtor's assets to pay off outstanding debts. The initiation of an insolvency procedure is probably the recovery strategy that varies most among different regulations, as this procedure can pursued through different legal forms. Nevertheless, some generic features of different insolvency proceedings are common to all jurisdictions. First, the basic principle in any insolvency proceeding is that all the fund collected by the process must be allocated fairly between creditors. The proceeding is generally initiated by the debtor (voluntary insolvency proceeding) or by the creditors (compulsory insolvency proceeding), who file a request to the court. The latter issues a judgement to approve the request and appoints an insolvency practitioner to manage the proceeding. The role of the insolvency practitioner includes

dealing with multiple and competing interests, but their main duty is to look after creditors' interests.

The technical form of insolvency proceedings to be undertaken depends mainly on the degree of financial distress of the borrower. For instance, if a borrower has a chance to rescue the business, but needs a formal in-court procedure to deal with indebtedness, a judicial arrangement with creditors might be suitable. Otherwise, if the borrower is defaulted and there is no chance to revive the business, the bankruptcy will be the best solution.

Insolvency proceedings are the worst viable option for creditors, since in most of the countries in-court procedures can take several years to complete. Accordingly, the assets being liquidated are often perished or have no market value because they are obsolete.

Intuitively, NPLs are typically managed through a judicial recovery strategy (i.e., an insolvency proceeding or a judicial foreclosure) since the borrower is insolvent. On the contrary, UTPs' payments can be recovered through any of the above strategies. Therefore, the aim of the asset managers and financial analysts when pricing UTPs is to understand in advance which recovery strategy would suit better the situation. This is why, generally, UTP portfolio pricing is way more labour-intensive than NPLs one, both for analytical and statistical valuations.

4.2 Analytical Valuation

The analytical valuation is an assessment *"line-by-line"* of the exposures in the sample of due diligence from a legal, real estate (for secured exposures), and procedural standpoint. The purpose of the analytical approach is to get a better understanding of the portfolio to be securitised and, more importantly, to come up with an accurate forecast of the *gross cash flows (GCF)* that the exposures in the sample portfolio will generate. Accordingly, through the analytical valuation the accuracy of due diligence is maximised and all fundamental aspects, as well as small details, of the positions in the sample are taken into account for the purpose of pricing the portfolio.

The key driver to evaluate analytically a position is the work-out strategy detected by asset managers. To define how to manage a position, asset managers commonly consider the following elements:

- pay-rate of the loan during the last two years;
- loan-to-value and, thus, value of the collateral (only for secured positions);
- financial metrics and ratios such as Interest Coverage ratio, EBITDA, Enterprise Value, debt-to-value, etc.;
- salary, when the borrower is a natural person;
- share of wallet, which the percentage of the borrower's total debt owned by the Originator;
- presence of forbearance measures.

There is great difference between analytical valuation for UTPs and NPLs.

When pricing NPLs, the underlying assumption is that the borrower is insolvent and, therefore, the only available options for asset managers are judicial recovery strategies (i.e., initiating an insolvency proceeding or undertaking judicial foreclosure). With this respect, transaction lawyers will play a pivotal role. In judicial foreclosures legal advisors will review the terms of the lending agreement to assess if the borrower has some ground to defence themselves from the foreclosure procedure. Moreover, when a company reaches the non-performing status by defaulting on its obligation, the likelihood of an insolvency proceeding is very high. Accordingly, transactions lawyers will carry out an in-depth analysis over the most relevant borrowers, in order to assess where the Originator stands among the other creditors in the insolvency proceeding and, thus, the potential collection from the liquidation of the borrower's assets. Along with legal considerations, secured exposures that are likely to end up with the sale of the collateral are subject to real estate advisors' valuation.

In contrast, UTPs analytical valuation is much more complicated because the borrower has the chance to be "performing" again. Consequently, all the NPEs management strategies outlined in the preceding paragraph may apply, ranging from the case in which the borrower fully pays off the obligation to the case in which defaults and files for an insolvency proceeding. Each asset manager has to review the available documentation on the UTP

position, the WU's business plan, historical repayments, and finally assess pros and cons of each possible recovery strategy to determine the most profitable and fastest one. For instance, if the most feasible strategy to recover a position is a debt restructuring, the asset manager will assume reasonable terms of the debt restructuring agreement and will use these assumptions to estimate analytically the GCF from the position. In addition, it is crucial to emphasise that the asset manager can undertake the preferred recovery strategy only if the Originator's share of wallet on the overall borrower's outstanding debt is the highest among all debtholders. That is, a creditor must hold a majority stake in a borrower's debt portfolio to lead the NPE management strategy. Otherwise, asset managers cannot guide the recovery process and, therefore, must assume during the valuation phase what strategy the majority debtholder is most likely to pursue. For all these reasons, analytical valuations are usually preferred to statistical ones when it comes to UTPs. Indeed, the analytical valuation captures details and nuances that a statistical model may fail to consider, resulting in a less accurate pricing. Therefore, the counterparties, to avoid mispricing, often try to include as much UTPs as possible in the sample portfolio, although this leads to a more time-consuming process.

As concerning workflows, the analytical valuation process has three stages:

1. **Documentation analysis:** Each counterparty analyses the documentation uploaded in the VDR for each single exposure in the sample of due diligence. This role is mainly carried out by asset managers, supported by the financial and legal advisors. Real estate advisors are engaged to appraise the collateral for secured positions. To facilitate and improve the quality of the financial analysis component of this phase, the Originator may enable counterparties to take a look at the *"one-pager"* of each debtor. The one-pager is essentially an excel spreadsheet containing a detailed business plan of the borrower, including past and forecasted repayments, a cash flow statement of the bank on that position, tax details, if new financing has occurred and its terms, write-offs, and GBV dècalage. In the case of missing information or if the asset manager examining the position has a doubt, a question can be submitted directly via the Q&A tool embedded in the VDR. An asset manager from the bank's WUs will tackle the issue. Each potential bidder can submit a limited number of questions.

2. **Q&A sessions:** If some specific and relevant questions cannot be addressed via the Q&A tool, the counterparties generally ask for detailed Q&A session with the Originator's asset managers, in order to analyse as deep as possible each single position. Typically, this phase occurs when the documentation review is concluded, but some Q&A sessions, if particularly relevant, may take place in parallel with the documentation analysis.

3. **Roll-up sessions:** During this phase the Servicer produces a preliminary estimate of the GCF of the portfolio. The sell-side reviews this first assessment and then set up different debating sessions to discuss all those exposures which have been mispriced or are deeply misaligned with the bank view. The ultimate goal is to find common ground on the potential GCF deriving from the discussed positions and set up the business plan.

Since by the time investors are engaged the business plan has already been defined, the Q&A and roll-up sessions are not indispensable during investors' analytical due diligence.

4.2.1 Collateral Valuation

Financial advisors' main responsibility in analytical valuation is to assess the GCF deriving from the sale of collaterals. Collateral valuation is pivotal for NPE portfolio pricing, since secured exposures account for most of the nominal GBV of the transaction. Normally, to carry out collateral valuation, the financial advisor is internally supported by the real estate team. This type of valuation is needed for all those exposure in which the collateral liquidation is the most accredited recovery strategy.

The workflow of the collateral valuation process begins by considering the most recent *"open market value" (OMV)* of the assets. This information is contained in the loan data tape and, specifically, in the "Assets" tab, which is the excel sheet where all the data about collaterals of the NPE portfolio are summarised. The OMV can be determined by:

- a bank appraisal, that is the lender's internal valuation of the collateral;

- a judicial appraisal (i.e., the auction opening bid), deriving from foreclosure or insolvency proceeding;
- the last auction value, which is available only in the mid of a foreclosure sale process.

The collateral value expressed by the last auction is the leading one, followed by the judicial appraisal and finally the bank appraisal. The latter is the less reliable source for determining the OMV of an asset because of a clear valuation bias arising from an appraiser's lack of independence from the bank. In addition, it is often the case that the Originator internally evaluates the collaterals shortly before the securitisation is undertaken, for the sole purpose of upwardly valuing the value of the asset. Even in-court property appraisals, like those deriving from the insolvency proceeding or performed by the foreclosure judicial appraiser, can be unreliable. Indeed, they may be outdated, carried out through simplified valuation models (e.g. statistical valuations), or fail consider the negative effects of the judicial procedure. However, in most of the analytical valuation the OMV set forth by a judicial appraiser is deemed as reliable. Finally, the collateral value attested by the last auction is the most trustworthy and, thus, it is never challenged by the counterparties.

In view of the above, the final purpose of collateral valuation in NPEs deals, especially for the Servicer and investors, is to analyse only those collaterals for which there is no auction opening bid value or last auction value. Therefore, starting with the bank appraisal's OMV as a reference point, the aim of the real estate advisor is to compute a reliable and up-to-date fair OMV for each collateral in the sample of due diligence. Although analytical valuation of collaterals in NPE securitisation is performed when the bank appraisal is the only source of OMV, this procedure affects 90-95% of the secured exposures in the portfolio, as they have neither a judicial appraisal nor, of course, a last auction value.

The most common valuation methodology for real estate collaterals is the Discounted Cash Flow model (DCF). To build a real estate financial model and find the OMV, advisors are required to consider several elements such as rental incomes, expenses, or renovation investments. More in detail, here is how the financial modelling exercise for collateral valuations is usually conducted.

- **Cash inflows**

The cash flows generated by a real estate asset mainly take the form of rents and lease[44] income. In estimating potential rents, if the property is already rented at the time of valuation, the financial advisor may easily rely on actual rents paid by the tenants. Otherwise, they have to build up a brief panel of comparable real estate assets in the same location and with the similar features, in order to assess the average potential rent. However, especially in offices or commercial buildings, all viable spaces may not be rented at the same time. Thus, the so-called *"vacancy rate"*, which is the percentage of the building that will not be rented out, has to be considered. This is usually an input value of the model and, again, it is generally computed by considering the average vacancy rate of similar assets in the same location or by applying benchmark vacancy rates curves. If the collateral is a new building, it is also key to assess how long it will take to find tenants to rent the space. This would defer the cash flows, thus lowering the OMV.

Turning all these considerations into numbers, the appraiser can compute first line of the model, that is the *Net Rental Income*.

$$Net\ Rental\ Income = Gross\ Potential\ Rent - Vacancy$$

This value will be enhanced by non-core income streams to get the *Net Income*.

- **Cash outflows**

Expenses on real estate assets are made up of a fixed component that is unrelated to occupancy and includes management fees, personnel, SG&A[45], insurance, repairs and maintenance, marketing, and property taxes and by variable costs such as utility expenses. Furthermore, expenses projections may be affected by:

- reimbursements, which are expenses incurred by the owner that will be reimbursed by the tenant pursuing rent agreement terms (e.g., utility reimbursements);

[44] Please note that, when dealing with **leased properties**, financial modelling is way easier since the appraiser can rely on the terms of the lease to set out the assumptions of the DCF model.

[45] **SG&A** is the accounting acronym for **Selling, General and Administrative expenses**.

- expense stops, namely contractual provisions to protect the landlord from increases in operating expenses beyond a predetermined level. Any increases beyond that threshold have to be paid by the tenant;
- rent turnover, or the economic effect generated by a vacancy due to a tenant moving out.

- **Sustainable growth rate (SGR)**

Unlike most assets, real estate assets, by their nature, generate cash flows over a large number of years, hence estimating the expected growth rate in both rents and expenses is critical for the valuation process. The key factor in determining the sustainable growth rate is the expected inflation rate. In a stable real estate market, the inflation rate is the best approximation for long-term growth. However, in the case of real estate market shortages, a low vacancy rate may lead the growth rate to outperform the expected inflation rate, while the reverse may happen in markets with high vacancy rates.

Therefore, to apply their own view on the real estate market to which the collateral belongs, the appraiser may develop an internal framework to estimate long-term SGR. The model may consider metrics related to property affordability and profitability, private sector indebtedness, population dynamics, long-term macroeconomic performance and long-term real estate prices.

- **Renovation CapEx**

The financial model needs to account also for the renovation investments that will be realised during the asset lifecycle. As concerning properties, capital expenditures are generally made to address the following issues:

- physical deterioration;
- functional and structural obsolescence;
- external obsolescence, which accounts for influences outside the immediate property site.

To take these elements into account, an on-site visit may be necessary.

This point is crucial for NPE securitisation, as the ReoCo acquiring the real estate assets often pursues a renovation strategy to enhance the asset value and generate higher gains. Therefore, the appraisal needs to include at time 0 the cost of this investment in the model.

- **Cost of equity**

The basic tenets for choosing the discount rate for cash flows in a real estate model are similar to that of any other valuation model. However, when dealing with collateral valuation, the appraiser needs to make allowances for some specific sources of risk that arises from real estate asset class that are not properly considered by conventional risk and return models. These risk factors can be included in the discount rate by computing the cost of equity through one of the below methods.

- Even for collateral valuations, the CAPM[46] remains the most reliable method for estimating risk factors. Nevertheless, to appraise properties, it can be adjusted by regressing returns on the real estate class against market returns. In this light, the NCREIF index[47] is a good proxy for the historical returns of commercial and residential properties.

- The appraiser may decide to rely on risk parameters of traded real estate securities (e.g., REITs[48]) as a proxy to determine the cost of equity. The limitation of this approach is that these securities are issued by securitising investments in different classes of real estate assets. Therefore, the appraiser is required to find a REIT limited to investment class of the collateral being appraised (e.g., the REIT focuses only on commercial real estate).

[46] **CAPM** refers to **Capital Asset Pricing Model** and is the most used method to compute the cost of equity.

[47] **NCREIF** stands for **National Council of Real Estate Investment Fiduciaries**. The **NCREIF Property Index** measures the performance of real estate investments on a quarterly basis and assess their rate of returns in the market.

[48] A **REIT**, or **Real Estate Investment Trust**, is a firm that owns or finances income-generating real estate assets. REITs were created to fix the illiquidity problem typical of real estate investments. Indeed, most REITs are publicly traded like stocks, which makes them highly liquid assets while their underlying is generally illiquid.

- Risk parameters for real estate investments can also be computed through demand in another market. In fact, market demand for a property is often a derived demand. For example, the market value of a shopping mall is derived from the value of retail space, which in turn is a function of the performance of the retail industry. It can be inferred, then, that the risk parameters of a shopping mall should be correlated to the risk parameters of listed retail stores. Obviously, some adjustments are required to account for differences in operating and financial leverage.

- The cost of equity can be also obtained through alternative approaches, like the survey approach. This method is built on the idea of surveying real estate investors on what rates of return they are seeking for investing in different types of property. In real estate market, the rate of return on which investors are surveyed is the *"capitalisation rate"* or *"cap rate"*, which describes the return on a real estate investment as a function of the net operating income (NOI) generated by the property.

$$Cap\ rate = \frac{Net\ operating\ income}{Market\ value\ of\ property}$$

The main edge of this method is that it is forward looking instead of backward looking such as traditional models of risk and return. In fact, these surveys do not depend on past prices, but on actual returns investors are seeking in real estate market at a specific time and in a specific area. Moreover, this approach allows the estimation of discount rates to be diversified for specific categories of properties (houses, hotels, commercial, etc.) and by region. Obviously, the real estate advisor cannot carry out such an expensive and time-consuming operation for every valuation, therefore they may conduct periodic survey to create a sort of database for real estate returns in a specific area or, more easily, rely on external sources[49].

[49] For instance, the real estate firm Cushman & Wakefield periodically produces insights on commercial real estate industry.

The cost of equity, calculated by one of the above methods, is often subject to further adjustments to reflect specific features of the collateral at hand. First, properties are typically more illiquid than financial assets. Even though the liquidity risk is very difficult to quantify, the appraiser may embed an additional illiquidity discount into the discount rate depending on the time horizon of the investor (i.e., a long-term investor is not subject to liquidity risk, while for a short-term investor an illiquid asset is highly risky). Furthermore, since real estate is not movable, it is exposed much more than other asset classes to local regulatory changes such as rent control, property taxes, and zoning requirements. In this respect, the appraiser should assess if this sensitivity to changes in local laws and tax is critical in a specific area or not and, accordingly, if this additional source of risk should be priced. Finally, the appraiser may seek to reflect some deal-specific risk features in the pricing via the discount rate. Therefore, for example, the discount rate will be lower if the investment is carried out in a central urban area, the building is a new designed office and the tenants have a high-quality credit rating.

- **WACC**

Bridging the cost of equity to the WACC[50] (or cost of capital) is a much simpler exercise. The second component of the cost of capital, that is the pre-tax cost of debt, is usually easily computed as a weighted average of the stated interest rate on the outstanding debt used to finance the investment. The after-tax cost of debt can be inferred by applying the marginal tax rate of the company or individual purchasing the asset to the pre-tax cost of debt. Finally, the debt-to-equity ratio is the proportion of debt and equity used to fund the investment.

However, when it comes to NPE securitisations, using the WACC to discount cash flow projections in collateral valuation is often unnecessary because the lender repossesses the asset without paying for it, thus no debt is added to the transaction. As a result, the appraiser normally discounts the cash flow addressed to equity investors, thus using the cost of equity.

[50] **WACC** stands for **Weighted Average Cost of Capital**.

Other impacts on the cash flows projections, such as, depreciation, changes in non-cash working capital, or debt terms, are equal to any other kind of asset valuation and, therefore, out of the scope of the dissertation.

Once the DCF has been set up, the advisor runs the number and compute the Present Value (PV) of the asset, that is the fair OMV of the collateral that adjust the bank appraisal. Now, each collateral in the sample of due diligence has a fair OMV which is determined by one of these three sources, sorted by relevance:

- Last auction value;
- Judicial appraisal (also referred as auction opening bid);
- Advisor's valuation which update the bank appraisal (90-95% of the cases).

For the following phase of collateral valuation, it is assumed that the collateral has neither an auction opening bid nor a last auction value, thus the leading OMV is the one estimated by the advisor through the real estate model.

After the assessment of the fair OMV, the advisor is required is to estimate which would be actual the cash flow collected by the lender, or by the vehicle in the context of a securitisation, pursuing a foreclosure as recovery strategy[51]. As previously mentioned, in some states the foreclosure process and the following sale of the collateral are non-judicial procedures and, therefore, the OMV is a good approximation of the GCF that the vehicle will collect. However, in most jurisdictions, foreclosure is a court proceeding, which means that the collateral cannot be sold directly on the market but must be sold by the court through judicial auctions. A judicial foreclosure is initiated by the lender which files a lawsuit against the borrower. A judge analyses the case and issue a foreclosure judgment, thus confirming that the borrower has defaulted on their obligations and granting the right to foreclose the collateral. Generally, the court upholds the lender's claims unless the borrower has a defence that justifies the delinquent payments. Once the foreclosure judgment is issued, the judge, while remaining in charge of the entire proceeding, appoints a *referee*[52] who, as auctioneer, will be responsible of the sale operations. The court also appoints a

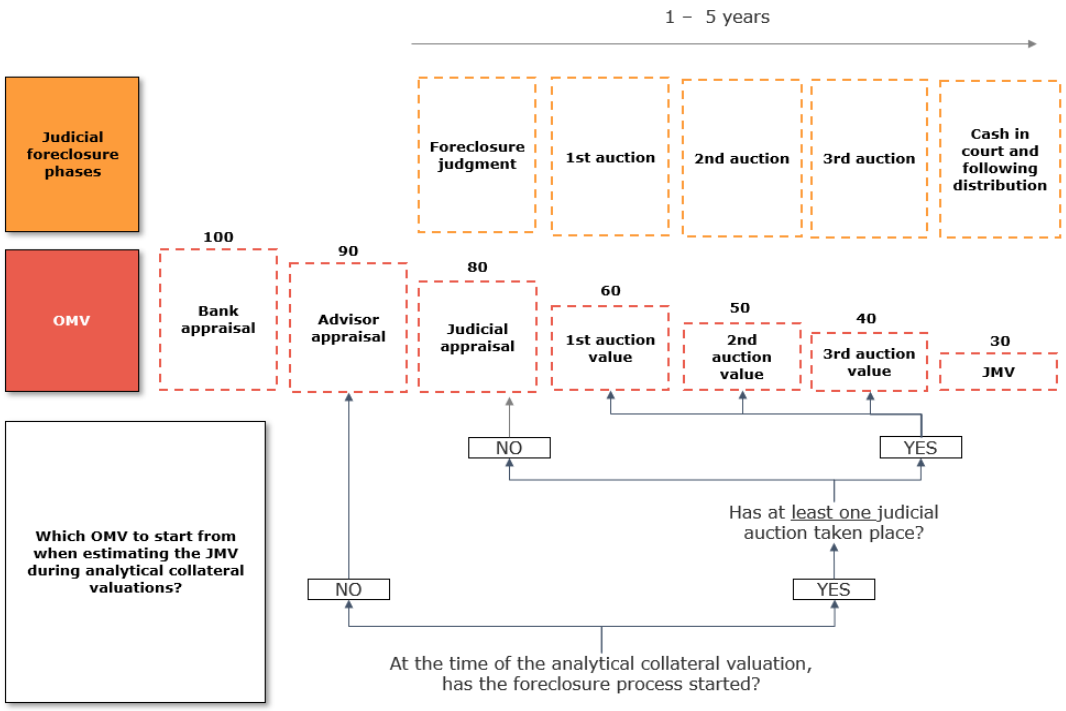
[51] The process to compute the GCF is similar if the borrower is involved in an insolvency proceeding.

[52] Depending on the regulations, the referee can be a judicial custodian or officer, a bailiff, an enforcement authority, a licensed auction specialist, a notary, a sworn commodities brokers or an independent professional.

professional to appraise the asset and issue a judicial appraisal. Commonly, the collateral is sold after one to four judicial auctions.

Consequently, in judicial foreclosures, a fair OMV is just the starting point to determine the so-called *"judicial market value" (JMV)*, namely the value at which the collateral would be sold in a judicial auction and, therefore, the actual GCF that would inflow into the vehicle. The JMV can be widely different from the OMV, since the timing and amount of cash flow deriving from the auction sale are adversely affected by the judicial procedure. The process which leads the appraiser to bridge this gap between the OMV, computed through the real estate DCF, and the JMV is schematised in Figure 20.

Figure 20 – Bridging the OMV to the JMV



source: Author's elaboration

Essentially, the financial advisors, supported by the legal team, will compute the JMV applying a hair-cut to the OMV and deferring the cash flow deriving from the auction sale. These two adjustments will be estimated considering the elements below:

- statistics, for each local court, on average time and number of judicial auctions needed before selling the asset (in most jurisdictions it takes from one to five years);
- specific adjustment per asset class;
- geographical location of the asset;
- property occupied or not by the debtor;
- existence of particular constraints on the real estate;
- particular environmental issues hindering the auctions;
- whether the borrower has a defence or not;
- presence of abuses committed on the property.

Consistently, in the few cases where the starting OMV is determined by the judicial appraisal or is the last available auction value, the advisor applies less drastic hair-cuts and deferrals since the OMV is "closer" to the JMV.

When the borrower is involved in an insolvency proceeding or the latter is reasonably assumed as the most likely work-out strategy for the position, the process to analytically estimate the JMV is the same. The only difference is that the advisors typically applies stricter cash flows' hair-cuts and deferrals, as the insolvency proceeding takes more years than a judicial foreclosure to complete. If, at the moment in which the analytical valuation is carried out, the borrower is already involved in an insolvency proceeding, the potential GCF deriving from the position is set forth in the documentation of the procedure. Advisors, nevertheless, apply a prudential hair-cut even on the GCF estimated by the insolvency practitioner.

Considering all these elements together, the financial advisor, supported by the legal team, adjusts the OMV to derive the JMV and, thus, the GCF to be included in the NPE portfolio pricing model. Nevertheless, the highest possible GCF is always capped to the minimum between the value of the mortgage lien and the GBV outstanding. Basically, if the debt outstanding in terms of GBV is € 100k, the value of the mortgage lien is only € 150k and the JMV is € 110k, it means that the lender's claim can be up to € 100k and, therefore, this is the highest amount the lender can collect from the recovery activity. This is why the JMV sometimes does not match exactly the actual GCF that the Servicer can collect.

The collateral valuation process described so far can be carried out by both sides of the transaction during the analytical valuation. However, to speed up the process and save money on the financial advisory services, is often the case that the sell-side decides to rely only on its internal collateral valuation (i.e., the bank appraisal) and, at most, review its general assumptions. On the contrary, for the Servicer and investors, the valuation of collaterals is the core element of analytical due diligence, as it allows them to lower the price as much as possible by challenging the Originator's internally estimated JMV during the roll-up sessions. The result of the buy-side deepening the value of the collaterals, and the Originator not doing so, is that the latter has no ground to question counterparties' assumptions in debating sessions and, therefore, passively accepts buy-side's collateral pricing. In this light, collateral valuation would be a key tool for Originator to challenge back Servicer and investors assumptions on JMVs when discussing the results of the analytical due diligence. For this purpose, Originators should start engaging more often real estate advisors during the analytical valuation to obtain higher GCFs estimations and, thus, higher portfolio pricing.

4.3 Statistical Valuation

In contrast with the analytical valuation, the statistical one is performed over the distressed credits outside the sample of due diligence. This approach is employed to price the vast number of exposures (e.g., all individual borrowers) with a low contribution to the portfolio in terms of GBV. NPEs with a small GBV, all together, typically account for about 50% of the portfolio's total GBV. Trying to price thousands of these exposures analytically would be worthless and extremely time-consuming, for obvious reasons.

In statistical due diligence financial advisors play a central role since are the main owner of the process. Obviously, this valuation approach is much less time-consuming than the analytical one, as it is a desktop financial modelling exercise carried out by a team of two or at most three financial analysts on each side. The basic idea behind the statistical model is to consider and turn in numbers the countless variables and complex information that financial transaction present. To pursue this aim, financial analysts have to define a comprehensive set of sound assumptions as consistent as possible with reality and the

findings of the analytical due diligence. Needless to say, since the statistical model relies on generalised assumptions which are applied indiscriminately to all exposures, it is by definition less accurate than the analytical valuation. However, this approach is crucial for the pricing process of bad credits since generally half of the portfolio is not sampled and thus is evaluated statistically. The significance of the statistical model in the process is proportional to the size of the NPE portfolio and inversely proportional to the average GBV of each exposure. This means that for a small NPE portfolio (e.g., less than € 500m GBV) with many large exposures (e.g., 70% of the distressed debt have a GBV > € 2.5m) the statistical valuation will play a less critical role than in the case of a € 2bn GBV portfolio of individual borrowers.

In order to provide a fair and reliable statistical pricing, financial analysts generally run three different models based on the cluster of NPEs being priced:

- Secured NPLs model;
- Unsecured NPLs model;
- UTPs decision tree model.

All the above models rely, again, on the DCF, since the underlying assets being evaluated are cash-flow generating asset. For statistical pricing, the DCF model is the most reliable valuation method and the most widely used in advisory practice.

4.3.1 Statistical Valuation - Secured NPLs

Secured NPLs are always evaluated assuming the default of the debtor and a subsequent judicial recovery strategy undertaken by the asset manager. Therefore, the underlying concept behind any valuation on secured NPLs is the hypothesis of collateral liquidation, meaning that the forecasted GCF is strictly related to the current OMV of the asset. Recalling briefly what has been described in the previous paragraph about collateral valuation, the OMV of an asset in the loan data tape can be expressed by a bank appraisal, a judicial appraisal, or by the last auction value, sorted from the less to the most relevant. In analytical valuation the goal of the advisor is to update bank's appraisal through an

independent collateral valuation. On the contrary, when there is neither an auction opening bid nor a last auction value, the statistical method takes the OMV estimated internally by the Originator as a starting point of the valuation and to this OMV applies a set of assumptions to deduce the potential JMV and, then, expected GCF that will inflow in the securitisation vehicle.

The following is a reasonable set of assumptions which would lead to a fair and sound statistical valuation for secured NPLs. The underlying hypothesis is that the exposures would be recovered via a judicial foreclosure, which is the most common case in NPE securitisation practice.

- **Court timing**

This is not the typical financial analyst's assumption, but rather an input data deriving from the annual statistics for each court in a specific country. The court timing table, as illustrated by Figure 21, is broken down by court, city, and region and provides information about the timing of each stage of the judicial foreclosure in a specific court, starting from the foreclosure judgment until the closure of the procedure. This table is critical for the model since it gives a reliable information about the exit timing and, according to the "time value of money" principle, cash flows' timing is key for pricing.

Figure 21 – Example of a court timing table based statistical data on judicial foreclosure

Court	Region	Total years	Phase 1 (Foreclosure judgment)	Phase 2 (Judicial appraisal)	Phase 3 (Judicial auctions)	Phase 4 (Distribution)	Phase 5 (Closing)
NAPOLI NORD	Campania	1.19	1.00	0.07	0.08	0.01	0.02
TRIESTE	Friuli-Venezia Giulia	1.69	0.28	0.32	0.62	0.41	0.05
BARI	Puglia	3.33	0.80	0.91	0.99	0.34	0.29
BOLZANO	Trentino-Alto Adige	1.87	0.50	0.39	0.64	0.27	0.08
ASTI	Piemonte	2.02	1.07	0.33	0.34	0.23	0.04
...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...

source: "Studio dei tempi dei tribunali italiani in materia di procedure esecutive individuali" by Associazione T.S.E.I. (June 2017)

- **Hair-cut on bank appraisal's OMV**

This hypothesis concerns the first hair-cut applied to the OMV. It is aimed at inferring the opening auction price determined by the judicial appraiser, reducing the OMV determined by the bank by a certain percentage (Figure 22). The financial analyst can rely on the Originator's or Servicer's internal statistics to figure out these assumptions.

Figure 22 – Starting OMV hair-cut assumptions by asset class

Property Type	Hair-cut
Residential	**7.5%**
Land	**25.0%**
Other	**25.0%**
Commercial	**10.0%**
Industrial	**17.5%**
Offices	**12.5%**
Hotel	**10.0%**
Mixed Residential / Offices	**10%**
Mixed Commercial / Offices	**11.3%**
Mixed Commercial / Residential	**8.8%**

source: Author's example not reliant on true statistical data

- **Number of judicial auctions**

The financial analyst assumes also the average number of judicial auctions which should take place to liquidate the collateral. These assumptions are clustered by property type and synthesised in a table like the one in Figure 23. Even in this case, the analyst may decide to rely internal data.

Figure 23 – Assumptions on the number of judicial auctions per asset class

Property Type	# of judicial auctions
Residential	2.0
Land	4.0
Other	4.0
Commercial	3.0
Industrial	3.2
Offices	2.5
Hotel	3.0
Mixed Residential / Offices	2.3
Mixed Commercial / Offices	2.8
Mixed Commercial / Residential	2.5

source: Author's example not reliant on true statistical data

- **OMV hair-cut after each auction**

If a judicial auction fails to sell the asset, the opening price of the following auction will certainly be lower. Therefore, the financial analyst implements this reduction in the model by standardising the hair-cut that occurs after each failed auction. In a distressed securitisation practice this hair-cut is typically between 20 and 30%.

Once the assumptions have been delineated, the financial analyst has to determine the amount of the GCFs and when they will occur. The process to reach the JMV starting from the OMV is the same described by Figure 20 in the previous paragraph (except for the advisor appraisal which of course does not occur in statistical approaches). The OMV gradually decreases following the stages of the judicial foreclosure, until it reaches the JMV. Obviously, in statistical valuation this process is automatised and generalised for all secured NPLs.

In order to outline how the statistical model for secured NPLs works, it is assumed that the starting OMV of the collateral, the one estimated by the bank, is € 2m. The collateral is a commercial property located in Bari (Italy), the mortgage lien is € 2.5m and the GBV unpaid is € 1m. The model takes into account each phase of the judicial foreclosure and computes how the OMV decreases accordingly and when the lender will collect the sale proceeds.

1) Issuance of the judicial appraisal

The first step is to reduce the OMV appraised by the Originator to estimate the auction opening bid determined by the judicial appraiser. The relevant hair-cut showed in above Figure 22 is then applied to the OMV, meaning that in our example the OMV will shrink from € 2m to € 1.8m (10% hair-cut) since it is a commercial property. In addition, in this first step, the model also considers the time needed to complete the issuance of the judicial appraisal from the date of evaluation. By the court timing table, the court of Bari needs on average 1.71 years to issue a judicial appraisal (sum of phase 1 and 2 in Figure 21). However, the Servicer will not file for the judicial foreclosure straight after the valuation date, but needs at least to wait for the securitisation to complete. Therefore, an additional default delay of at least six months is a best-practice. For the example at hand, this brings the total time to obtain the judicial foreclosure to 2.31 years.

2) Judicial auctions

As aforementioned, the prudential assumption in this second step is to consider that the asset is always sold during the last auction. The opening auction bid is now reduced by a predetermined hair-cut for each auction that is supposed to take place. In our example, as illustrated by Figure 23, the average number of auctions to sell commercial real estates is three, meaning that if we assume an average 25% hair-cut after each auction, the OMV of our property goes from € 1.8m to € 759.4k, thus dropping 62% from the starting OMV estimated by the bank (i.e., € 2m). Thus, the forecasted JMV of the commercial property located in Bari is € 759.4k. A judicial liquidation in Bari, according to the court timing table, takes on average 0.99 years, meaning that up to this stage the process has taken 3.30 years.

3) Distribution of the sale proceeds

The model also considers the time the court takes to distribute the proceeds to the lender. For the sake of the example at hand, the court of Bari needs only 0.34 years, less than the Italian average.

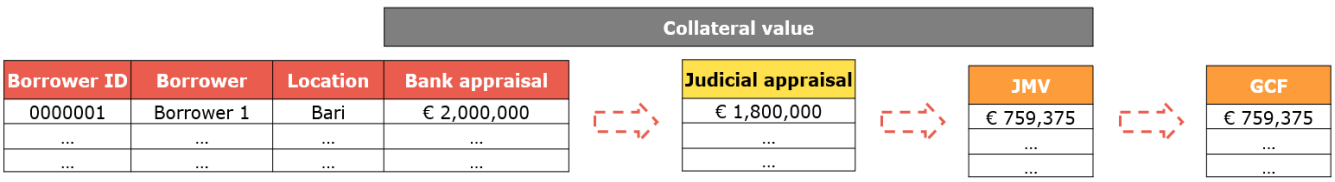
4) Exit

Finally, the financial analyst sets up the model to sum all of the above, thereby calculating the total time needed to exit the procedure and the GCF resulting from the sale. The latter, however, is not always equal to the JMV. Indeed, the recovery on a specific position is always capped to the minimum between the outstanding credit in terms of GBV and the value of the mortgage lien registered to secure the loan. This specification is crucial, as it is often the case that the value of the lien or of the unpaid GBV is much lower than the JMV. Accordingly, the financial analyst will incorporate this feature into the model by applying an upper bound to the GCF. In our example, the JMV perfectly matches the GCF since either the mortgage lien or the fund granted are higher than the JMV. Assuming that the valuation of the commercial property located in Bari is carried out on the date of writing of this dissertation, that is June 2022, the vehicle will collect the € 759.4k after 3.64 years, thus approximately in mid-January 2026.

Consistently, for the few exposures which have a starting OMV determined by a judicial appraisal or by the latest judicial auction, the model would automatically start running respectively from step two and three, skipping the previous phases.

The whole process, synthesised in below Figure 24, is automatically run for every secured NPL in the out-of-sample portfolio.

Figure 24 – Scheme of a statistical valuation for secured NPLs



source: Author's simulation not reliant on an actual securitisation

For all those countries where non-judicial foreclosure is a viable strategy, the valuation methodology is very similar, but with less strict and broad assumptions, since the process is generally leaner and shorter.

4.3.2 Statistical Valuation - Unsecured NPLs

The statistical model to price unsecured NPLs is the simplest of the three, as relies on a single input data. The model is entirely build applying the benchmark recovery curves of the Servicer on unsecured NPLs to the exposures being priced. These benchmark curves are essentially the historical recovery performances of the Servicer on unsecured NPLs and, as illustrated in Figure 25, are represented as a year-by-year percentage of the GBV. For the recovery rates to be reliable, the Servicer needs to gather and analyse data on unsecured NPLs' recovery for a long period of time (i.e., 7 to 10 years). Most of the benchmark recovery curves are broken down by GBV bucket and are extended up to 10 years. Servicer's recovery rates are the most reliable since the Servicer itself will be directly responsible for the recovery performance. Therefore, it is fair that the business plan and the pricing of the portfolio fully reflect the expected performance of the entity that will manage the assets.

For an even more accurate statistical valuation of unsecured NPLs, the Servicer can provide higher level of detail on the recovery curves, breaking them down by different characteristics (e.g., type of borrower or location of the loan) and not only by GBV bucket. The final outcome resulting from the implementation of recovery curves is an annual estimate of GCFs for each exposure as a percentage of its original GBV.

Figure 25 – Example of Servicer's benchmark recovery curves

GBV bucket	1	2	3	4	5	...	...
< 50k	1.45%	1.38%	1.32%	1.44%	2.23%	...	...
50k - 100k	0.79%	1.13%	1.42%	1.55%	1.64%	...	...
100k - 250k	1.10%	1.31%	1.56%	1.46%	2.32%	...	...
250k - 500k	1.48%	1.42%	3.36%	3.04%	4.31%	...	...
500k - 1.000k	0.55%	1.03%	3.41%	4.97%	4.87%	...	...
1.000k - 2.500k	0.84%	1.41%	1.23%	1.40%	4.45%	...	...
2.500k - 5.000k	0.10%	0.78%	2.19%	3.22%	4.25%	...	...
>= 5.000k	1.24%	0.69%	2.75%	2.37%	0.75%	...	...

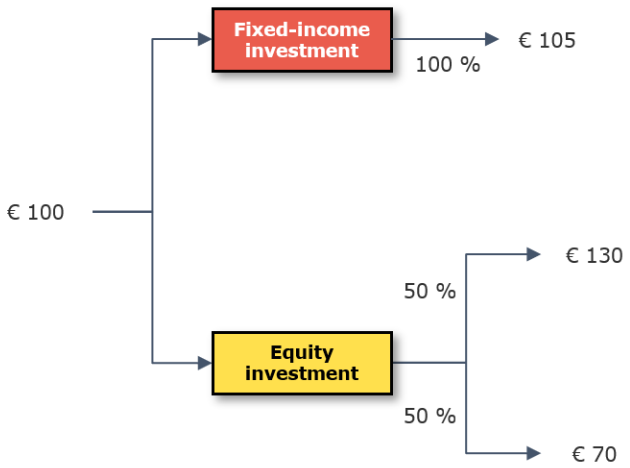
source: Author's simulation not reliant on an actual securitisation

When performing their own due diligence, investors have three choices to price unsecured NPLs. They can rely on the recovery curves of the Servicer, apply their own curves or run probabilistic models, like the Monte Carlo simulation.

4.3.3 Statistical Valuation - UTPs

The statistical valuation of UTPs requires a much more complex modelling exercise than the previous two methods. Indeed, when managing UTPs, the asset manager has a wider choice in terms on which NPE management strategy to undertake and even the same strategy may lead to different outcomes in term of collections. For these reasons, financial analysts typically rely on the so-called *"decision tree"* model to evaluate UTPs. The decision tree approach is often employed in probabilistic valuations to consider not only discrete risk but also sequential risk. Briefly, the basic principle underlying decision tree models is that for an asset to have a certain value, it has to pass through a series of tests. Decision trees allow financial analysts to devise the right response of the asset to tests at each stage. The simplest example of how decision trees work is to consider an investor who has two choices for investing € 100. The first is to buy a stock and the second one is to invest in a risk-free fixed-income security (i.e., a bond). While the latter provides the investor with a sure 5% return at maturity, the equity investment may lead with a 50% probability either to an increase or a decrease by +/- 30%. The decision tree for this investment opportunity is shown in Figure 26.

Figure 26 – Simple Decision Tree



source: Author's elaboration

Notwithstanding, unlike the common applications of decision trees, for UTPs valuation, this approach has not a probabilistic nature, since all the relevant information for computing the final outcome (i.e., the GCFs) is already present in the loan data tape.

The decision tree to price UTPs is sizeable and involves three stages, with each stage accounting for one or more tests.

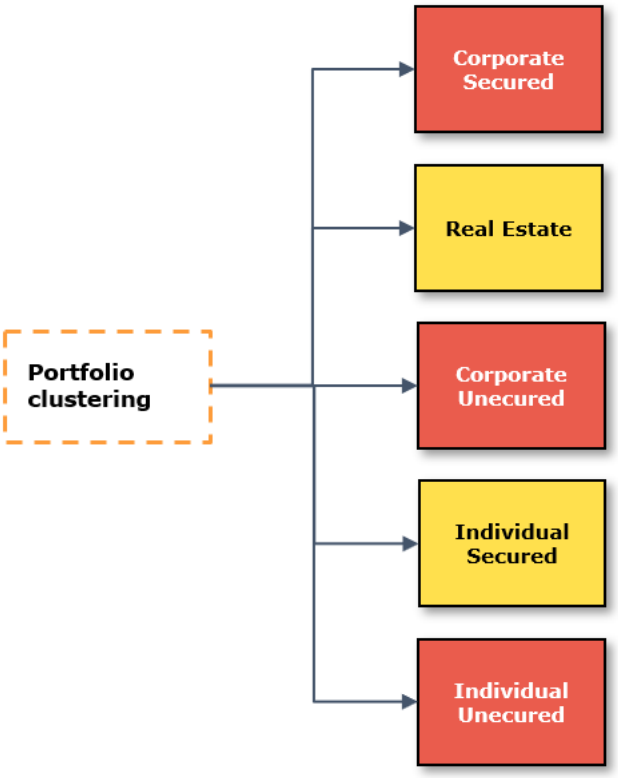
1) **First stage: Portfolio clustering.**

The first stage is a basic one, its aim is just to group the exposures by type of borrowers. Most portfolios of distressed credits are made up of three kind of borrowers:

- *Individual* borrowers are referred to natural people;
- *Real Estate* borrowers are firms operating in the real estate or building industry;
- *Corporate*: all companies that are not real estate firms.

These borrowers are usually grouped in five clusters as shown by Figure 27.

Figure 27 – First stage: Portfolio clustering



source: Author's elaboration

2) Second stage: Recovery strategy identification.

The second step of the decision tree is aimed at determining, for each UTP, which would be the most feasible and profitable recovery strategy. As described in the previous paragraph, the recovery strategy identification is not an easy task for asset managers and legal advisors, as it requires an in-depth analysis of VDR documentation for each position**.** To transfer this complexity from the analytical to the statistical valuation the decision tree must have as many nodes as there are exposure characteristics to be tested. The conditions set out by the analyst in this stage must be consistent with the approach adopted during the UTPs analytical valuation.

The second stage, as illustrated by Figure 28, typically tests at least two or three metrics. Each node may also test more than one metric at the same time through *"or/and"* conditions.

The first characteristic to be tested in the second stage is usually the most relevant metric of solvency for a specific type of debtor:

- Corporate borrowers are tested in first place through the *debt-to-equity* ratio.

$$\frac{D}{E} = \frac{Total\ Debt}{Equity}$$

- Real estate firms are tested through the *loan-to-value* ratio, that is the outstanding debt in terms of GBV over the appraised value of the collateral.

$$LTV\ = \frac{GBV}{OMV}$$

- The first node for individual borrowers, instead, is represented by the *2-year pay-rate*, namely the debtor's repayment rate over the last 2 years.

$$2\text{-}year\ pay\text{-}rate\ = \frac{2\text{-}year\ GBV\ paid\ off}{Total\ GBV}$$

The second node for companies, whether real estate or commercial ones, is typically the 2-year pay-rate. Another relevant metric to consider at this stage could be the *Share-of-Wallet (SoW).* Indeed, the SoW plays a key role in UTPs management since the asset manager can lead the recovery strategy only if the lender holds a majority stake of debt in the creditor's pool. This metric, for real estate and corporate borrowers, can be used as an alternative or simultaneously with the 2-year pay-rate.

$$SoW\ = \frac{Outstanding\ GBV}{Total\ Debt}$$

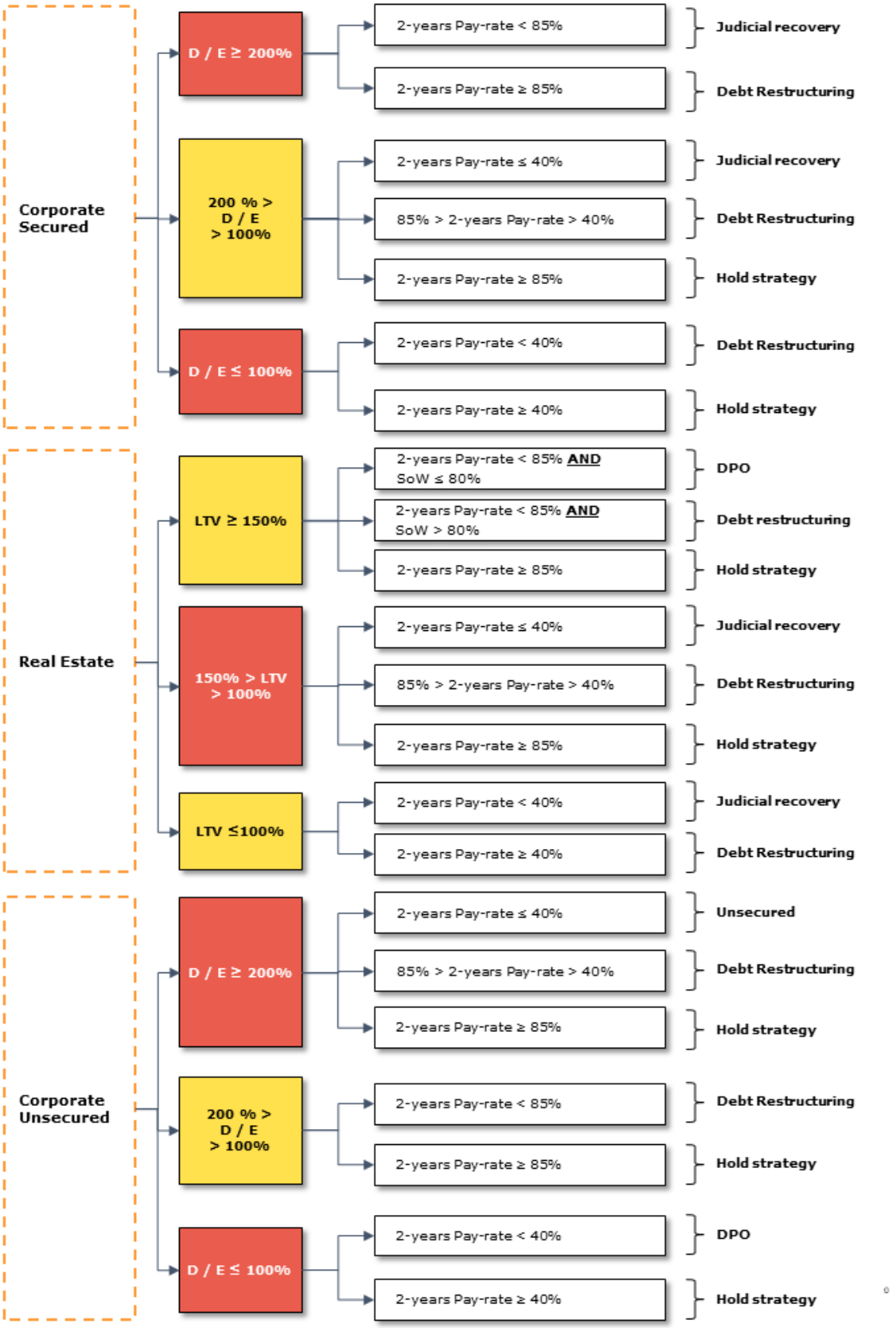
Conversely, for individual borrowers the repayment rate has been the first test of this stage and, therefore, the second step is generally the *debt-to-income (DTI)* ratio. This is a crucial metric in commercial banking since allows the banker to compare how much the customer

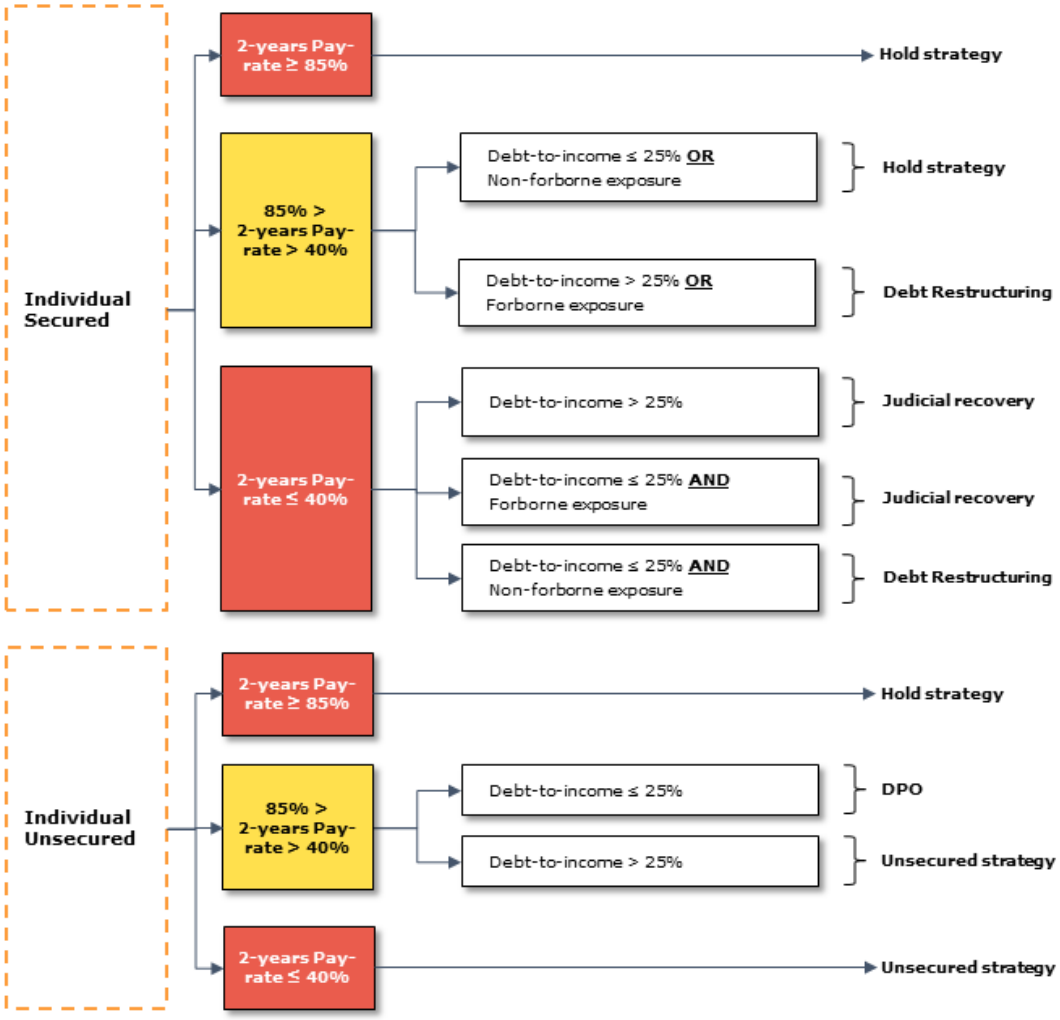
owes with how much they earn each month. The DTI test is often coupled with the presence or absence of forbearance measures.

$$DTI = \frac{Monthly\ debt\ payment}{Monthly\ salary}$$

Finally, the second stage culminates with each exposure inflowing in a specific NPE management strategy.

Figure 28 – Second stage: Recovery strategy identification



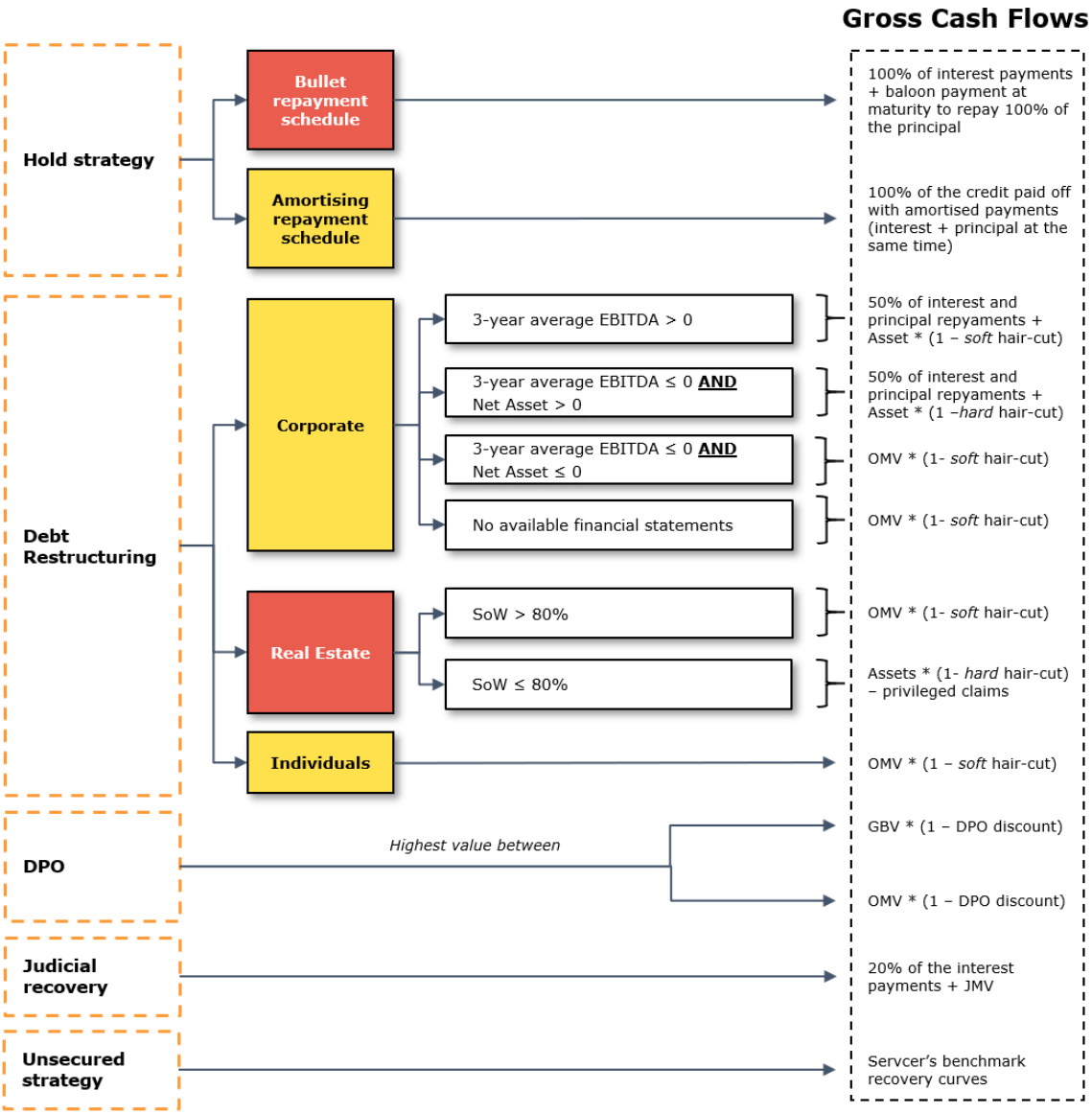


source: Author's elaboration

3) Third stage: Computation of gross cash flows.

The last part of the decision tree is, obviously, the estimation of the cash flows (Figure 29). Each recovery strategy will lead to a different outcome in terms of collection. Moreover, some strategies, such as debt restructuring, will be further tested at this stage as well, since the final result is highly variable and depends on different conditions.

Figure 29 – Third stage: Computation of gross cash flows



source: Author's elaboration

Financial analysts are required to consolidate in a unique model all the above three stages of the decision tree, in order to eventually compute the annual GCFs generated by each exposure. This is a labour-intensive activity that often requires senior analysts with high-level financial modelling skills.

4.4 Cost structure

Following the analytical and the statistical valuations, all the potential GCFs deriving from the NPE portfolio have been estimated. Before proceeding to the last step of the DCF model, namely the cash flow discounting, it is necessary to net out the GCFs. As a matter of fact, the cash flows to be discounted are the *Net Cash Flows (NCF)*, which are derived by subtracting servicing and legal expenses to the gross cash flows.

$$Net\ Cash\ Flows = Gross\ Cash\ Flows - Total\ Expenses$$

Like any costs structure, even the one of a distressed securitisation can be grouped into variable and fixed costs[53].

- **Fixed costs**

These are all those expenses that will be paid from the GCFs and are unrelated from the Servicer's recovery performance. The most common are:

- *One-off costs*, which are all the expenses incurred by the Servicer for portfolio due diligence and securitisation set-up. This expense occurs generally when the Servicer does not invest in the portfolio, neither directly nor indirectly;
- *Master servicing fee*, that is an annual fixed cost for the master servicing activity;
- *On-boarding fee*, a relevant item which accounts for the size of the portfolio. This is a fixed fee due to the migration and implementation of the exposures on Servicer's systems. The on-boarding fee typically ranges between € 100 and € 200 per borrower ID.
- *Fronting Bank costs* for the set-up and the management expenses of the Fronting Bank mechanism;
- *Legal expenses*, which are those fees incurred for the legal component of the recovery activity;

[53] Please note that the following is a generalisation of the cost structure of an NPE securitisation. The costs borne by the transaction can be much more nuanced, as they depend on specific terms of the servicing agreements. Therefore, cost structures vary widely depending on the needs of the counterparties.

- *Special servicing fixed costs*, for recovery activities. All servicing costs are typically variable, but counterparties may rarely arrange a small fixed component for this item.

- **Variable costs**

Variable costs are the cost items whose amount increase or decrease as a consequence of the Servicer's performance. Variable fees are typically paid on a quarterly basis and the most frequent ones are:

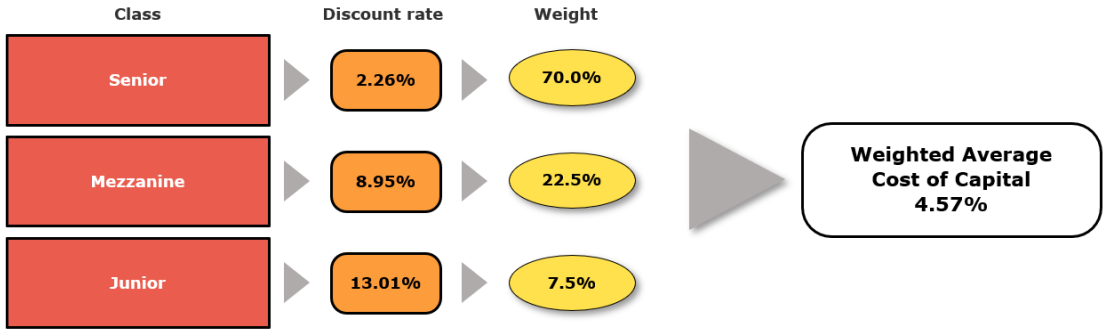
- *Collection fees*, which by definition is a percentage of the cash flows collected by the Servicer. This fee varies widely depending on the features of the exposure recovered. Different fees are applied if the position is secured, unsecured or leasing, if it is an NPL or an UTP, or on the basis of its size in terms of GBV. However, this is an example, servicing fees structures are much more complex than this.
- *Management fees*, that is a fee related to the amount of bad credits under management at a certain date. The management fee is usually a percentage of the GBV at the beginning of each quarter. This variable fee takes into account the resources that the Servicer has to employ in order manage the portfolio. Again, even management fees
- *Other expenses*, which is a residual item for all minor costs. For valuation purposes this is typically deemed as a tiny percentage of the GCFs, however it may include fixed cost items.

Since some items of the cost structure work at an "exposure level", the financial model is still broken down by exposure at this stage of the valuation. The NCFs deriving from each NPE will be consolidated before discounting the cash flows.

4.5 Discount rate

The discount rate to be applied to the DCF's expected net cash flows reflects the level of riskiness of each tranche issued by the SPV. Based on the capital structure adopted by the securitisation, the cost of capital can be estimated as a weighted average of the discount rate of each tranche, as displayed by Figure 30.

Figure 30 – Weighted Average Cost of Capital in a NPE securitisation



source: Author's elaboration

As a consequence, to compute the WACC of the securitisation, the financial analyst needs to devise the discount rate for each class of notes.

4.5.1 Senior tranche discount rate

In order to determine the rate of return of the debt component, the financial advisor can rely on two different comparable approaches, namely the *comparable securities* and *comparable transactions* methods. The senior tranche discount rates devised from these two different methods are not mutually exclusive can therefore be used jointly by averaging them.

- **Comparable securities method**

This comparable approach considers the average yield to maturity (YTM) of a panel of comparable corporate bonds, with similar characteristics to the senior notes to be issued

following the securitisation. The features to look at in order to determine whether a bond can be included into the panel or not are the following.

- *Currency:* The comparable securities must be denominated in the same currency of the notes issued by the SPV.
- *Rank:* It is important to include only senior bonds, not subordinated ones.
- *Country of issuer:* The country of issuance of the comparable securities must be the same as the country in which the securitisation ABSs will be issued.
- *Issue date:* Comparable securities must have been issued no more than 2 years ago.
- *Maturity:* The maturity of the bonds should be consistent with the maturity securitisation notes.
- *Industry:* The issuing entities are typically market leaders in the banking and financial sector.

In view of the above criteria, the financial analyst defines a panel of 20 to 30 securities that looks like the one illustrated in Figure 31.

Figure 31 – Senior tranche discount rate: Comparable securities panel

#	ISIN	Issuing entity	Maturity	Currency	Yield to maturity
1	XS2270393379	Banca MPS	01/2026	Euro	4.6%
2	IT0005482549	Banco Desio	03/2027	Euro	1.5%
3	XS2428063874	ISP	03/2027	Euro	1.5%
4	XS1937018841	ISP	01/2027	Euro	0.8%
5	XS2034154190	Banco BPM	07/2026	Euro	2.9%
...	...	...	...	...	...
...	...	...	...	...	...
...	...	...	...	...	...
				25% Percentile	**1.50%**
				Average	**2.26%**
				75% Percentile	**2.90%**

source: Bloomberg data (April, 2021)

- **Comparable transactions method**

This approach relies on the same principle of the above. In this case, however, the financial analyst builds up the panel by considering the senior yield of similar securitisations. The

yield, for this purpose, is the coupon rate provided by comparable transactions on the senior tranche. Furthermore, the analyst usually breaks down the panel in two sub-categories:

- *Government-backed NPL securitisations:* The state guarantee on these transactions has a cost related to the CDS premium payments needed to back the senior tranche (e.g., Italian GACS has a 5-year average cost of 0.70%). Therefore, the yield on government-backed deals is the contractual coupon minus the cost of the state guarantee.

- *Market NPE securitisations:* Accordingly, when there is no state guarantee over the senior notes, the yield is the contractual coupon.

The results of this method are exemplified in Figure 32. Each panel usually comprises 10 to 15 securitisations.

Figure 32 – Senior tranche discount rate: Comparable transactions panel

Government-backed NPLs securitisations

Securitisation	Senior coupon (- state guarantee cost)
Securitisation 1	1.35%
Securitisation 2	1.00%
Securitisation 3	0.95%
Securitisation 4	2.10%
...	...
...	...
Min	**0.95%**
Average	**1.35%**
Max	**2.10%**

Market NPEs securitisations

Securitisation	Senior coupon
Securitisation 1	3.05%
Securitisation 2	2.50%
Securitisation 3	3.15%
Securitisation 4	2.00%
...	...
...	...
Min	**2.00%**
Average	**2.68%**
Max	**3.15%**

source: Contractual coupon of senior notes on a sample of transactions executed between 2012 and 2020

4.5.2 Mezzanine tranche discount rate

As well as for senior bonds, even the mezzanine tranche discount rate can be computed through a comparable method. Unfortunately, the comparable securities approach is not applicable here, as it is very difficult to find listed mezzanine securities with a risk profile

similar to mezzanine ABSs issued in an NPE securitisation. Therefore, financial analysts rely exclusively on the comparable transactions method to determine the discount rate of the mezzanine class (Figure 33). The government-backed securitisations panel will be excluded in this case since mezzanine yields are negatively affected by the cost of the state guarantee and, therefore, are not representative. For mezzanine ABSs, the comparable yields are the actual returns that mezzanine noteholders have earned so far in each comparable market securitisation, rather than the contractual coupon. As a consequence, the mezzanine tranche discount rate will fully the IRR investors are looking for in the NPE market. The contractual coupon is not suitable for calculating discount rate of subordinated notes since, differently from senior bonds which are fixed-income securities, there is much more variability in mezzanine returns.

Figure 33 – Mezzanine tranche discount rate: Comparable transactions panel

Securitisation	Mezzanine IRR
Securitisation 1	9.83%
Securitisation 2	5.75%
Securitisation 3	8.20%
Securitisation 4	12.00%
...	...
...	...
Min	**5.75%**
Average	**8.95%**
Max	**12.00%**

source: Actual mezzanine noteholders' IRR on a sample of transactions executed between 2012 and 2020

4.5.3 Junior tranche discount rate

Differently from the mezzanine and senior tranches, comparable methods are usually avoided for calculating the discount rate of the junior ABSs. Since the junior tranche is the lowest in the cash flow waterfall, especially in NPE securitisations, comparable notes

experience high volatility in terms of yields and, therefore, the comparable method would not be reliable. The financial analyst's eventual goal is to reflect, through the discount rate of the junior tranche, the specific risk parameters of the securitisation. The comparable transactions approach, nonetheless, may be used as a control method to check that the equity return is consistent with similar transactions and falls within the min/max range.

The discount rate for junior notes is typically determined as any other cost of equity, of course with some adjustments to reflect the NPE securitisation's features. Therefore, financial analysts generally rely on the Capital Asset Pricing Model (CAPM), which states the following.

$$r_e = r_f + \beta * (r_m - r_f)$$

As showed by the formula, the analyst needs to estimate three different items to apply the CAPM:

1) Risk-free rate;
2) Beta of the securitisation;
3) Market Risk Premium.

In some circumstances, financial analysts may add an extra parameter to the CAPM, called Specific Risk Premium (SRP), to reflect the risk profile of a particularly risky transaction.

1) Risk-free Rate

The risk-free rate is the long-term rate of a bond issued by a default-free entity. If the securities are issued in a developed market, the financial analyst can assume that the default-free entity is the local government. In particular, the analyst has to consider the currency denomination of the cash flows generated by the transaction. For instance, if the DCF model is discounting UK pounds denominated cash flows, the risk-free rate is the 10-years UK government bond rate, which is 2.20%[54]. This rate already captures the country specific risk of default.

[54] https://www.bloomberg.com/markets/rates-bonds/government-bonds/uk (6th June 2021)

Conversely, if the securitisation issues the notes in a non-developed market, the risk-free rate can be computed by taking as a reference the risk-free rate of a benchmark default-free bond (e.g., the 10-years German bund) and adding the specific country risk premium of the non-developed market to the market risk premium.

A third method to compute the risk-free rate leverages on the long-term yields of a benchmark government and the relation between countries' CDS curves. This method, illustrated in Figure 34, is very common in financial advisory practice when the government of the securitisation's country is not fully reliable as a default-free entity (e.g., the Italian government). With this approach, the analyst first chooses the risk-free rate of a benchmark country (typically the US or Germany) and adjusts it by the inflation rate of the same country, in order to calculate its real risk-free rate. The latter is then added to the inflation rate of the country where the securitisation takes place. The result is the benchmark risk-free rate adjusted for the inflation rate of the securitisation's country. Finally, the CDS spread between the 10-years CDS curves of the two countries is added on. This method relies on the same principle of the one above described for non-developed market, but incorporates the country risk of default directly into risk-free rate and not into the market risk premium. This approach is commonly employed by financial analysts when the securitisation's notes are issued in a developed market, but the government is not trustworthy as a default-free entity. Accordingly, the analysts may reasonably decide to consider a more reliable default-free entity as a benchmark and adjusting this benchmark risk-free rate by the specific risk parameters of the securitisation's country.

Figure 34 – Calculation of the Italian risk-free rate using the US as a benchmark country

Risk-free rate	
US 10-years treasury	**1.61%**
Long-term US inflation rate	- 2.00%
US real risk-free rate	**- 0.39%**
Long-term ITA inflation rate	+ 1.80%
US real risk-free adjusted by ITA inflation	**1.41%**
CDS spread	+ 1.11%
Risk-free Adjusted	**2.52%**

source: Bloomberg data (April 2021)

2) Beta of the securitisation

According to the CAPM theory the beta of a stock describes the correlation between the actual returns of the stock and the total return of the reference market. It is usually computed by running a linear regression of past returns on a stock against the returns of a market portfolio.

The most important determinants of the beta are the following three.

- *Type of Business:* When estimating risk parameters, financial analysts should be forward-looking and consider also the long-term effects of risk factors. For instance, they always have to consider the type of business of the entity or securities being evaluated and their correlation with the economic cycle. When it comes to NPE securitisations, it is simple to asses that the distressed market is sensitive to business cycles and, thus, to market conditions. Normally, other things remaining equal, cyclical firms have higher betas than non-cyclical firms.

- *Degree of Operating Leverage:* Empirical researches on companies' beta have showed that higher variance in operating income usually leads to higher betas[55]. The

[55] "Estimating Risk Parameters" - Aswath Damodaran (1999)

cost structure of an NPE securitisation may vary widely from quarter to quarter based on the Servicer's performance and the occurrence of trigger events. Therefore, financial analysts must keep in mind this feature when computing the beta of comparable firms in the context of a distressed securitisation.

- *Degree of financial leverage:* In any company, the amount of repayments on debt financing increases the variance in net income, with higher debt-to-equity ratio increasing net income during good times and decreasing them during economic downturns. Therefore, companies with higher financial leverage are more generally more sensitive to market conditions. This is particularly true for NPE securitisation since the thickness of the senior class directly impacts the amount of cash flows that junior noteholders will gain. As a consequence, the larger the notional value of the senior notes, the higher the beta of the securitisation.

The process which led financial analysts to compute the beta of a securitisation is the following, divided by steps.

- **Choice of the method:** Since the securities are not yet listed, the financial analyst is unable to compute the securitisation's beta by launching a regression on a market index. Thus, the only viable solution is the so-called *"bottom up"* approach, which, starting from the betas of investments funds which invest in comparable securities, allows us to compute the beta of the securitisation.

- **Choice of the comparable firms***:* A financial analyst will include into the panel of comparables only those funds in which a relevant component of their business consists of investing in securities with a risk profile similar to that of the junior notes issued by the securitisation. Therefore, the panel of comparables will be mainly made up of investment funds with a significant stake of their AuM invested into the distressed market.

- **Choice of the time period:** The historical beta of a firm is computed by launching a regression between the stock returns and the market returns. As concerning the time period on which to launch such a regression, financial analysts commonly rely

on 5-years betas. The rationale behind this choice is that, as the distressed market is a well-established market, the 5-years' time horizon represents a perfect combination of a reasonable number of observations and the fact that the distressed market did not change drastically during the regression period.

- **Choice of the market index:** In order to compute the market returns against which to carry out the regression, the financial analyst needs the past performance of a market index. For the choice of the market index, the most common practice in financial analysis is to pick the S&P 500 returns or the index of the exchange on which the stock is listed.

  However, the financial theory suggests a different solution. The basic principle behind the beta is that it measures the risk added on a diversified portfolio (owned by a marginal investor), rather than the total risk. Accordingly, the choice of the proper diversified market portfolio (i.e., the market index) against which to run the regression should be determined by who is the marginal investor in the comparable firm. Assuming that the marginal investors are the largest shareholders of a company, financial analysts should look at the market to which these shareholders are mainly exposed and then run the regression on the index of that market.

- **Choice of the return interval:** To run the regression, financial analysts are often tempted to use daily returns, in order to rely on more observations. However, a short return interval could generate the *"non-trading"* problem. As a matter of fact, assets do not trade on a continuous basis and when the asset is not traded, but the market portfolio is, the beta could be negatively distorted because the correlation with the market index would be reduced. The solution is to rely on monthly or even quarterly data or adjust daily and weekly returns to neutralise the effect of the non-trading problem.

- **Post-regression adjustments:** After running the regression between the comparable stock and the relevant market index, the beta often needs further adjustments to avoid some regression-specific issues. One of the most common, as previously mentioned, is the non-trading problem which derives from using short return intervals, such as

daily or even weekly returns. However, sometimes analysts are forced to rely on short return intervals and therefore they must adjust artificially the comparable betas in order to make them more correlated with the market beta. To address this issue, financial analysts push the regression beta of each comparable, and consequently that of the securitisation, towards the market beta (that is 1) by applying the below formula.

$$\beta_{adjusted} = 2/3 * \beta_{regression} + 1/3 * \beta_{market}$$

- **Deleveraging the comparables' betas:** Since the degree of financial leverage is one of the key determinants of the beta, all the regression betas in the panel reflect the capital structure and the marginal tax rate of the comparable firm. Therefore, financial analysts need to deleverage the adjusted beta of each comparable, in order to obtain a "pure" measure of the correlation between the stock and the market. To pursue this aim, the debt-to-equity ratio and the marginal tax rate of each comparable firm must be considered.

- *Debt-to-equity ratio:* The estimated regression betas are based on historical data, hence financial analysts usually apply a backward-looking reasoning also for the deleveraging process. For instance, if the regression has been lunched over a five-year time horizon, the most reasonable D/E ratio is the average D/E ratio of the last five years for each comparable.

- *Marginal Tax Rate:* This item, in financial analysis practice, is mostly determined by looking at the marginal tax rate of the country in which the comparable firm is incorporated. The underlying assumption is that all foreign incomes are eventually repatriated to the country of incorporation, where the company will have to pay the marginal tax rate. This method implicitly assumes that the incorporation country has the highest marginal tax rate of all other countries in which the comparable firm runs its business. Alternatively, to avoid this issue, the financial analyst teams may decide to push further its analysis and consider a weighted average of the marginal tax rates

that the firm pays on local and foreign incomes. The weighting would be based on the revenues earned by the firm from each country in which operate. However, in order to apply this method, the company would have to provide some sort of *"revenues breakdown"* in its financial statements.

After determining the above two elements, the deleveraging process can take place. The unlevered beta for each comparable can be calculated through the following *"hamada"* formula.

$$\beta_{unlevered} = \frac{\beta_{levered}}{1 + (1 - t) * \frac{D}{E}}$$

The unlevered beta of a securitisation is the average between the unlevered betas of the comparable firms in the panel.

- **Re-leveraging the average unlevered beta:** The *"hamada"* formula can be reversed to compute the levered beta of the securitisation. The rationale behind this re-leveraging process is to modify the "pure" average unlevered beta in order to reflect the specific features of the securitisation, in particular its capital structure and marginal tax rate. In an NPE securitisation, the degree of financial leverage is determined by the thickness of the senior class, which defines the debt component and that of the junior class, which represents the equity component. The mezzanine, which lies between debt and equity, is often equally split into debt and equity. If there are a lower and upper mezzanine, they are considered as part of the junior and senior tranches, respectively. Recalling the example illustrated above in Figure 30, where the senior class weighs 70%, the mezzanine 22.5% and the junior 7.5%. This means that the D/E ratio of the securitisation is 4.33x. As concerning the marginal tax rate, the standard procedure is to consider the tax rate of the banking sector in which the securitisation takes place.

The results of the bottom-up approach for calculating the securitisation beta are summarised in a single panel, similar to the one illustrated in Figure 35 below.

Figure 35 – Estimating the securitisation beta through the bottom-up approach

Ticker	Company	Regression Beta 5Y	Regression Beta Adjusted	D/E	Tax Rate	Beta 5Y Unlevered
APO US	APOLLO GLOBAL MANAGEMENT INC	1.47	1.31	0.30x	21.00%	1.06
KKR US	KKR & CO INC	1.50	1.33	0.66x	21.00%	0.87
CG US	CARLYLE GROUP INC/THE	1.32	1.21	0.46x	21.00%	0.89
INTRUM SS	INTRUM AB	1.48	1.32	2.13x	20.60%	0.49
IF IM	BANCA IFIS SPA	1.32	1.21	2.87x	28.65%	0.40
PGHN SW	PARTNERS GROUP HOLDING AG	1.26	1.18	0.38x	14.93%	0.89
BX US	BLACKSTONE INC	1.32	1.22	0.40x	21.00%	0.92
KW US	KENNEDY-WILSON HOLDINGS INC	1.06	1.04	3.02x	21.00%	0.31
HOFI SS	HOIST FINANCE AB	1.35	1.24	1.22x	20.60%	0.63
BLK US	BLACKROCK INC	1.24	1.16	0.24x	21.00%	0.98
DOV IM Equity	DOVALUE SPA	1.13	1.09	3.26x	27.90%	0.32
CERV IM	CERVED GROUP SPA	0.69	0.79	1.26x	27.90%	0.42
Average Beta Unlevered						**0.60**

Beta securitisation	
Beta Unlevered	0.60
Target D/E	4.33x
Tax Rate	27.5%
Beta re-levered	**2.48**

source: Bloomberg data (April 2021)

3) Market Risk Premium

Finally, the last element required to find out the discount rate of the junior tranche is the market risk premium, which is defined as the difference between the expected return on a market portfolio and the risk-free rate. If the country specific risk of default has been already caught by the risk-free rate, financial analysts can rely on the MRP of a mature equity market, that is, at the date of wiring, 4.24%[56]. In contrast, if the risk-free rate does not incorporate the country risk of default and leverages exclusively on the benchmark rate of a default-free government, the financial analyst has to add the country risk premium (CRP) to the MRP of a mature equity market.

Combining the risk-free rate, the securitisation beta and the market risk premium we can compute the discount rate of the junior notes, by means of the CAPM (Figure 36).

[56] http://www.stern.nyu.edu/~adamodar/pc/datasets/ctryprem.xlsx (June 2022)

Figure 36 – Junior tranche discount rate

Junior tranche discount rate	
Risk-free rate	2.52%
Beta	2.48
Market Risk Premium	4.24%
Cost of Equity	**13.01%**

source: Author's elaboration

4.6 Fairness Opinion

Following the discount rate calculation, the team of financial analysts has all the relevant elements to price the NPE portfolio, that are:

- Loan data tape and Originator's business plan with historical collections;
- Servicer's business plan of the NPE portfolio being securitised, deriving from the analytical and statistical valuation;
- Capital structure of the securitisation which provides tranches' weight;
- Cost structure to net out the GCFs;
- Weighted Average Cost of capital.

Financial analysts on the basis of these elements can build a comprehensive Discounted Cash Flow (DCF) model for the whole portfolio. The first step is to consolidate all the exposures and their relative NFCs in a unique model. The time horizon of the model, accordingly to the business plan, is usually between 10 to 15 years. Finally, it is only needed to discount the annual NCFs of portfolio by the proper cost of capital as indicated by the below formula, obtaining then the Present Value (PV) of the portfolio, hence its final price.

$$PV = \sum_{t=0.5}^{n} \frac{Net\ Cash\ Flow}{(1 + WACC)^t}$$

When computing the price of an NPE portfolio, in most of the cases financial analysts applies a mid-year convention to discount the cash flows. This means that the "t" in the formula for the first years is not 1 but 0.5 and for the second year is not 2 but 1.5. The rationale behind this convention is to account for the fact that annual NCFs are usually received throughout the year rather than at year-end. Concretely, the mid-year convention assumes a steady and more realistic time distribution of cash flows. Needless to say, using this convention, the PV will be slightly higher than year-end discounting since the cash flows are received sooner.

The pricing process culminates with the drafting and issuance of a *"fairness opinion"* written by the financial advisors from both sides. Even though internal teams from both sides of the securitisation are always highly involved in deal structuring, the board of directors has the last say on the approval of the transaction. Therefore, non-executive directors must be provided with an exhaustive understanding of the deal structure and portfolio pricing methodologies. Accordingly, the ultimate goal of a fairness opinion is to clearly outline the securitisation scheme, the players involved and their role, the features of the NPE portfolio, the Servicer's consolidated business plan and finally the portfolio valuation. The core element of the fairness opinion is the fair price of the NPE portfolio computed by financial advisors with the DCF model. Financial advisors typically include a worst-case and best-case scenario in this document, to show how the price decreases or increase as certain critical assumptions (e.g., hair-cuts on the NCFs, discount rate etc.) change, and what is the min/max range of values in which the portfolio falls.

4.7 Deal Analysis

The final step of the securitisation concerns the analysis of the deal. This activity actually begins in parallel with the due diligence and accompanies the whole process, but it is concluded just before the closing. Indeed, each counterparty periodically monitors the most relevant metrics of the transaction through dedicated internal roll-up sessions.

The deal is typically analysed under two different lenses, the one of the buyers and the one of the sellers. These two entities have two completely different purposes in carrying out the

NPE securitisation and, therefore, will look at different impacts when assessing the performance of the deal.

- **Sell-side analysis**

The deal analysis performed by the sell-side is more rigorous and formal than that of the buy-side. When the Originator, supported by the financial advisor, assesses the soundness of the securitisation, it looks primarily at whether the financial and strategic goals of the transaction have been met or not. As previously described in the present dissertation, the goals for a distressed securitisation are often to replace illiquid asset by achieving exposures derecognition and to free up the capital set aside the cover NPEs' losses. Therefore, considering the strong impact of regulations when dealing with banks' balance sheet, the sell-side has to carefully and constantly review the right metrics in order to assess that the deal is bringing more benefits than harm. The results of the deal analysis are periodically presented to the credit committee and eventually included in the fairness opinion addressed to the board of directors.

The most important metrics and ratios to compute and evaluate when executing an NPE securitisation from the sell-side are summarised in Figure 37 and described as follows.

- *Impact on the P&L*[57]*:* The gross impact on the P&L deriving from a distressed securitisation derives from the difference between the net book value (NBV) of the impaired loans and the price paid by the vehicle. The NBV is defined as the GBV net of specific loan loss reserves (LLR). Obviously, this impact means always a loss for the bank since the price for an NPE portfolio is never higher than its book value, even if the latter is impaired. As showed by Figure 37, the gross impact on the P&L will be affected by three items.

    1) Any loss, arising from the difference between the actual price and the fair value of the notes underwritten by the Originator. This discount on the notes' fair value generally occurs only on the subordinated classes. As a matter of facts, for the

[57] **P&L** stand for **profit and loss statement**, it is often referred to as the income statement. It is an official financial statement that summarises the revenues, costs, and expenses incurred by a legal entity during a specified period, typically a fiscal year or a quarter.

Originator, it triggers a loss mainly because of the 5% of the notional value of the subordinated notes retained in accordance with the risk retention rule established by the EU Securitisation Regulation;

2) The foregone cash flows deriving from the portfolio collections which occur between the cut-off date and the closing date;

3) The relief given by the IFRS 9 reserve, which includes all the impairments that the Originator has carried out over the NPEs during the years.

Finally, the analyst typically considers also the tax benefit deriving from this loss, so that the after-tax impact on the P&L will be less than the pre-tax one.

- *RWA impact:* The impact on the risk-weighted assets of the Originator is computed by comparing the RWA of the NPE portfolio being securitised and the RWA of the notes that the bank purchases back. The latter is a very common practice in NPE securitisation since allows the bank to replace impaired loans with senior ABSs. However, since the reduction of illiquid assets is one of the Originator's main goals in undertaking a distressed securitisation, this is usually a positive impact, meaning that the RWAs exiting the bank's balance sheet are usually higher than the RWAs of the notes the bank underwrites. Therefore, the higher the participation of the Originator in the issuance of notes, the less significant the RWA impact will be.

- *CET 1:* After computing the RWA impact, the sell-side usually looks at the amount of Common Equity Tier 1 that is freed up by the transaction. The CET 1 capital that can be released as a result of the reduction in RWA is given by the RWA impact multiplied by the former CET 1 ratio. Then, financial analysts are able to consider the overall impact of the deal on the regulatory capital, by adding the CET 1 capital released to the negative net income impact of the securitisation. The overall effect is always negative since the amount of regulatory capital released by the transaction is less relevant than the P&L impact. The sell-side usually computes also the new CET 1 ratio and compares it with the former one.

- *Calendar provisioning impact:* With the EU Regulation 2019/630, the calendar provisioning has been introduced, amending the existing Capital Requirement Regulation (CRR- 575/2013). Essentially, calendar provisioning requires bank to apply larger provisions on impaired loans according to pre-established deadlines as of 26 April 2019. The aim of the regulation is to ensure that European bank's loss provisions are not only sufficient but also timely. Based on the *"prudential backstop"* principle set forth by the regulation, each bank is required to meet a minimum level of coverage for each exposure, the so-called *"minimum loss coverage" (MLC)*. The MLC provided for NPEs varies depending on the *"vintage"* of the exposure (i.e., the period of impairment), whether the loan is secured or not, and the type of collateral backing the loan. As a result of the regulation, European banks will have to set aside specific reserves to cover future NPEs losses following a pre-defined provisioning calendar. Therefore, to the end of distressed securitisation, the sell-side wants to find out how much of these provisions would be freed up from its balance sheet.

- *NPE ratio:* Another key metric to look at when analysing the deal from the sell-side is the reduction in the NPE ratio, that is the amount of distressed credits over the total loans granted by the bank. When the Originator is an Italian credit institution, the NPE ratio is further divided into UTP and NPL ratio. This is probably the most important impact since clearly states how much GBV the Originator is able to derecognise through the securitisation. Pursuing paragraph 3.2.6 (a) of the IFRS 9 on financial assets' derecognition, "if the entity transfers substantially all the risks and rewards of ownership of the financial asset, the entity shall derecognise the financial asset and recognise separately as assets or liabilities any rights and obligations created or retained in the transfer". Accordingly, for the purposes of an NPE securitisations, derecognition can be achieved only if most of the mezzanine and junior notes are sold to third parties. During the deal analysis, financial analysts typically provide the Originator with different sensitivities analyses on the portfolio perimeter and capital structure that would maximise NPEs' derecognition.

- *NPE coverage ratio:* The NPE coverage ratio is pivotal to assess how much of the NPE portfolio's GBV is covered by the relative reserve. Therefore, it is determined as the percentage of risk provisions set aside to cover NPEs over the total amount of bad credits on the balance sheet. As the NPE ratio, for Italian Originators, even the NPE coverage ratio is typically broken down into UTP and NPL coverage ratios. Again, NPEs' derecognition is critical to estimate these coverage ratios.

Figure 37 – Sell-side deal analysis

Forecasted impacts and ratios *(€ m)*	
Gross P&L impact	**(200)**
Post cut-off forgone cash flows	(20)
Discount on the FV of the notes	(10)
IFRS 9 reserve	160
Pre-tax P&L impact	**(70)**
Income tax (27.5%)	19.3
Post-tax P&L impact	**(50.8)**
RWA released	(180)
RWA of the issued notes underwritten by the Originator	100
RWA impact	**(80)**
CET1 released	**10.7**
Overall impact on the CET 1	**(40.1)**
New CET1 ratio (%)	13.5%
Δ CET1 ratio	- 0.5%
Calendar provisioning impact (2022)	**112.8**
Calendar provisioning impact (2022)	**201.3**

	Pre-deal	Post-deal	Δ
NPE ratio	**5.6%**	**5.0%**	**- 0.6%**
UTP ratio	3.5%	3.3%	- 0.2%
NPL ratio	2.1%	1.7%	- 0.4%
NPE coverage ratio	**48.2%**	**50.2%**	**+ 2%**
UTP coverage ratio	42.3%	43.4%	+ 1.1%
NPL coverage ratio	60.8%	63.5%	+ 2.7%

source: Author's simulation not reliant on an actual securitisation

- **Buy-side analysis**

The buy-side, on the other hand, will analyse the transaction primarily from the perspective of return on investment. To this end, buy-side financial analysts perform sensitivity and scenario analyses on relevant investment metrics, by stressing most critical exogenous and endogenous variables in the model. The variables listed hereunder are the most commonly stressed in a securitisation of distressed.

- The capital structure of the securitisation is stressed by modifying, of course, the thickness of the classes, but also setting stricter thresholds for trigger events, which typically results in deferred cash flows and lower proceeds for equity noteholders;
- Financial analysts typically monitor the model's response to a discount rate increase of up to + 5%;
- The investor's overall stake in the transactions, divided by class;
- The potential cash flows derived from the investment are tested by applying a hair-cut on the portfolio collections, deferring them, or reducing the contractual coupons of the notes;
- Finally, the costs structure is usually stressed by either raising the variable component or assuming, by default, that some conditional terms of the servicing agreement will be triggered resulting in higher costs.

By testing the above variables, the goal of buy-side analysts is to look at how the below investment metrics respond.

- *Internal Rate of Return (IRR):* The IRR is the most important and reliable performance benchmark for funds, as it measures the expected compound annual rate of return on an investment. It can be mathematically calculated as the discount rate which makes zero the NPV of the investor's cash flows. In other words, the IRR is the discount rate which makes the price equal to the present value of securitisation's cash flows available to investor. To compute the investor's IRR, financial analysts consider the actual cash flows that the investor is supposed to receive after the waterfall of payments. Therefore, the available cash flows of the

below formula are different from the NCFs addressed to any noteholder. This aspect is particularly relevant in NPE securitisations, as the Originator often retains a great large part of the senior tranche and the investor, as a result, is mainly entitled to receive subordinated payments. Thus, the investor's IRR in an NPE securitisation obviously depends on the amount and timing of cash flows and the ABSs price, but also varies widely depending on the capital and cost structure and the resulting cash flow waterfall.

$$0 = NPV = \sum_{t=0.5}^{n} \frac{Available\ Cash\ Flows}{(1+IRR)^t} - Price$$

In assessing the soundness of the transaction, financial analysts first look at how the investor's IRR changes in absolute value in response to stress tests of the variables. Then, they analyse its relative value in relation to WACC and hurdle rate. The comparison between the IRR and the WACC is crucial for the transaction, because if the former is larger than the latter. the securitisation is creating value for investors. In the opposite case, the deal is destroying value for noteholders. This analysis can be done either in nominal terms, hence the nominal IRR is compared to the nominal cost of capital, or in real terms, by adjusting the two rates by inflation and then comparing the real IRR with the real WACC. Finally, the IRR is compared with the investor hurdle rate or required rate of return (RRR). The latter can be deemed as the minimum acceptable return that the investor would accept to bear the risk of the transaction. The hurdle rate is set out by the internal policies or the bylaws of the investment fund and thus represents a floor for the IRR below which the investor does not undertake the securitisation.

- *Recovery curve:* Throughout the securitisation process, the buy-side constantly monitors how the total cash flows for bondholders respond to sensitivity and scenario analyses together with their distribution over the life cycle of the securitisation. The latter is graphically represented by the recovery curve, which is a function of the amount and timing of NCFs. In NPE securitisations, investors, when analysing the deal and preparing the investor business plan, typically seek for

smooth recovery curves, as it is the most realistic recovery scenario. Depending on what the analysts want to show, the recovery curve may represent the distribution of annual, quarterly or monthly NCFs, or it may be displayed as a curve of cumulative collection, such as those illustrated in Figure 38.

- *Weighted Average Life (WAL):* This is a key metric to assess credit risk in any ABS securitisation since describes on average how much time each euro or dollar of potential net collections remains outstanding. This metric is calculated by applying time weightings to the each annual NCF of the business plan. Therefore, the NCF collected the first year as a weight equal to 1, that of the second year equal to 2 and so on. The formula to compute the WAL is the following.

$$WAL = \frac{Time\ weighted\ NCFs}{Total\ NCFs}$$

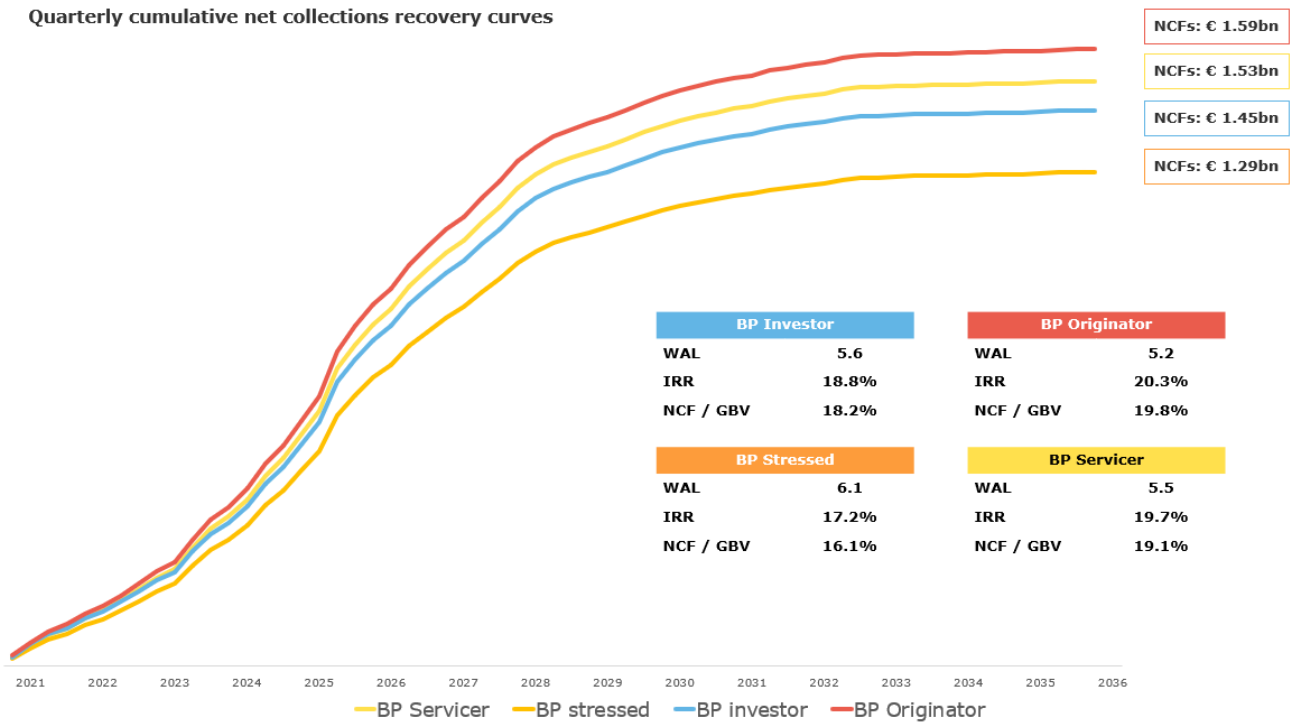
  This metric roughly provides an estimate of how much time the investor has to wait before realising half of the total portfolio's NCFs. The WAL is strictly linked with the concept of recovery curve. As a rule of thumb, a reliable and realistic WAL is approximately a third of the portfolio life cycle. This is typically a good compromise between an unrealistic shorter WAL and a longer one, which leads to a deferral and a reduction in the present value of the securitisation cash flows.

- *NCF-to-GBV:* Another key indicator to look at from the investor's perspective is the ratio of total portfolio NCFs to GBV and the relative delta between the base and stressed scenario. This performance ratio is generally broken down by considering NCFs from secured and unsecured positions and then compared to the actual NCF-to-GBV of other securitisations executed on similar NPE portfolios.

This analysis is performed even by the Originator, to assess the impact of the retained notes from an investment perspective.

The results of the buy-side analysis are compared with those resulting from the Originator's and Servicer's business plan and represented in a single graph, such as the one illustrated in Figure 38.

Figure 38 – Buy-side deal analysis



source: Author's simulation not reliant on actual securitisation

Conclusion

In conclusion, Keynes was right when saying *"If you owe your bank a hundred pounds, you have a problem. But if you owe a million, it has".* However, this is part of the game. The core business of commercial banks involves taking on credit risk, hence they will be always exposed to the "problem" of their borrowers defaulting.

In order to mitigate banks' propensity to engage in high-risk transactions and reduce their credit risk profile, international banking authorities have introduced measures to regulate NPE management and forced banks to adopt stricter risk management frameworks. Keynes' "problem", however, cannot be eliminated, as economic shocks, often unforeseen like the recent pandemic, will always tend to increase the stock of NPEs on banks' balance sheets.

In view of the above, as laid out throughout this thesis, the most effective tool to reduce the impact of NPEs on banks' balance sheets is the securitisation of such loans. This financial technique maximises the positive capital impact of the transaction and mitigates losses on the income statement. This solution is the most commonly pursued by Originators to offload their NPEs, as it allows them to replace illiquid RWA with new loans or senior notes (if retained following the securitisation) and free up the provisions for these impaired loans. Moreover, the negative P&L impact of a securitisation is much lower than that of holding distressed exposures on the balance sheet.

The present dissertation provided an in-depth analysis of NPE securitisations as a deleveraging tool, combining a theoretical framework for the management and disposal of NPEs with guidance on how to implement this type of transaction in practice. The theoretical section laid the foundations for the execution of an NPE securitisation, defining how non-performing exposures originate, analysing the regulatory impact on the management and disposal of distressed credits, and outlining the dynamics and trends of the NPE market. Instead, the empirical component of the analysis revolves around the figure of the financial advisor. When a bank decides to undertake an NPE securitisation, it often relies on a financial advisor, which is responsible for providing a comprehensive advisory service, ranging from due diligence preparation to transaction closing. Therefore, the aim of this

empirical section was to explain how practically financial advisors drive a securitisation of bad credits, focusing on deal structuring and portfolio pricing.

In summary, the ultimate purpose of this thesis was to provide practical guidance on how banks can effectively address Keynes' “problem” when it arises, through the financial technique of securitisation. I hope I have succeeded in this aim.

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Executive Summary

John Maynard Keynes, the father of modern macroeconomics, once said: *"If you owe your bank a hundred pounds, you have a problem. But if you owe a million, it has"*. This quote enucleates the backbone principle underlying the dissertation.

Any credit institution, when granting funds to natural or legal persons in order to finance their cash needs, takes on what is known as "credit risk". Credit risk is a type of financial risk arising from the possibility that a debtor may fail to pay back contractual obligations. Accordingly, interest payments from the borrower can be considered a "reward" to the lender for bearing credit risk. Conversely, when a borrower defaults on their financial obligations, a credit institution typically incurs a loss, generated by the combined effect of the interruption of cash flows (i.e., principal and interest payments) and the increased costs of recovering the exposure. Through internal credit risk management frameworks, based on probabilistic models, lenders are able to lower this possibility and obtain fairer compensation for the degree of credit risk of the transaction (i.e., higher credit risk leads to higher interest payments). However, even the most accurate and sophisticated risk management model cannot predict exactly who will and when. Therefore, credit risk can be mitigated but never eliminated and the lender will always be exposed to the risk of default by its borrower.

The rationale behind Keynes' quote, therefore, is now clear. If a borrower owes the bank a large sum of money, the bank will be interested in the borrower being able to continue to run their business in order to easily settle the obligation. As a consequence, if the borrower has difficulty meeting loan obligations, this is a "problem" for the bank that might be willing to restructure the debt, trying to recover as much money as possible. In this light, the "problem" is much more of the bank losing money than of the borrower getting a "discount" on the financing repayment. In the banking industry, this problem has a name, which is "non-performing exposure" or "NPE", namely a credit for which the inflows of interest and principal payments have been interrupted or delayed.

This thesis aims to describe how banks can tackle this “problem” by delving on a specific solution, namely the securitisation of these non-performing exposures.

In the aftermath of the 2008 Global Financial Crisis, credit institutions were in dire need of eliminating bad credits from their balance sheets and until 2019 they successfully achieved this goal, aided by banking regulators. However, the stock of NPEs increased again worldwide due to the COVID-19 pandemic, the effects of which caused a large number of borrowers to default on their repayments.

To manage this new challenge, banks can achieve their deleveraging goals through three different avenues:

- *Securitisation;*
- *Straight sales of loans;*
- *Credit funds.*

Of these three options, securitisation is the most widely employed and effective so far. A straight sale of the NPE portfolio, besides historically resulting in lower pricing and thus higher losses, does not allow banks to retain an interest in the disposed assets. Selling the portfolio directly to third parties may be a suitable and cost-effective solution for small commercial banks that are not structured enough to handle the complexity of a securitisation. In contrast, credit funds are becoming increasingly important as a deleverage tool for banks. To briefly provide some context, when a securitised NPE portfolio is sold to a credit fund, the bank receives a payment in kind instead of a price, which is a shareholding of the credit fund. This allows banks to remove the distressed credits from their balance sheet while retaining an interest in the portfolio via the stake in the fund. However, this deleveraging opportunity is not yet well developed, as setting up the credit fund and 'feeding' it through various securitisations is a complex process. Moreover, the bank retains only an indirect interest in the securitised portfolio since, among the balance sheet’s assets of the fund, the sold NPEs are bundled together with the NPEs of other banks that have undertaken the same process. Finally, the transfer to a credit

fund implicitly involves a securitisation, which therefore remains the most relevant tool for freeing up distressed debt from credit institutions' balance sheets.

During my last internship experience, I had the chance to join the Corporate Finance FSI team of Deloitte Financial Advisory in Milan and to work on a € 700m NPE securitisation. This thesis encapsulates the knowledge I gained on distressed securitisations during this work experience, with the ultimate objective of providing a generic overview of these types of transactions and the perspective of financial advisors in structuring and pricing them, with a focus on the leading NPE market, which is the Italian one.

The topics addressed by the thesis are organised into chapters as follows:

1. Non-Performing Exposures (NPEs);
2. NPE securitisation in Europe and Italy;
3. Deal structuring;
4. Portfolio pricing.

The first two chapters of the dissertation aim to lay the groundwork for the topic by describing what non-performing exposures are and what securitisation is. In particular, the first chapter outlines what types of loans NPEs generally originate from and how a loan is secured. The second provides a general framework on NPE securitisation, its origin, how it is regulated and recent trends in the market for bad credits.

The second part is more empirical and builds on the notions outlined in the first two chapters, with the purpose of explaining what is the role of financial advisors in NPE securitisations, from setting up the deal workflows to portfolio valuation.

1. Non-Performing Exposures (NPEs)

Non-performing Exposures (NPEs), as defined by the European Banking Authority (EBA), are those credit exposures that satisfy either or both of the criteria hereunder:

1. Material exposures which are more than 90 days past-due;
2. The bank deems it is highly probable that the contractually owed capital and/or interest will not be repaid in full without realisation of collateral[1].

Moreover, the Bank of Italy has decided to provide more granularity on NPE classification, by dividing them into the three sub-categories hereinafter.

- **Non-performing Loans (NPL)** or **Bad Loans** are exposures to debtors that are insolvent or in substantially similar circumstances. The borrower has defaulted on their repayment obligations and the exposure has reached the "*non-performing*" status.
- **Unlikely-to-pay (UTP)** are those exposures in respect of which banks believe the debtors are unlikely to meet their contractual obligations in full, unless action such as the enforcement of guarantees is taken. Differently from NPLs, the borrower has not yet defaulted on interest and capital payments and, therefore, the exposure is in between the "*performing*" and "*non-performing*" status.
- **Overdrawn and/or past-due exposures** are those credit facilities that are overdrawn and/or past-due by more than 90 days and for above a predefined amount.

The third category "Overdrawn and/or past-due exposures" has only statistical implications because of its low volume compared with the other two batches. In NPE securitisation practice these exposures are typically included in NPL or UTP clusters.

Credit exposures underlying NPEs are mostly made up of the so-called "cash credits", where the bank lends to the borrower an amount of cash. The borrower will pay back the amount financed, the principal, plus the interests. Understanding which exposures are usually part of a securitised NPE portfolio is key, as it has major implications on the transaction scheme to be adopted and how to manage the NPEs after closing.

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[1] Specific indications for default criteria are set up by the European Banking Authority (EBA) in the report "*Guidelines on the application of the definition of default under Article 178 of Regulation (EU) No 575/2013*"

Essentially, the following are the traditional types of loans and, on a purpose-based classification, they can be divided into three macro categories.

- **Commercial Loans:** These loans are mainly aimed at financing companies' capital expenditures (CapEx) and short-term working capital needs;
- **Residential Loans:** The main credit exposure falling in this category is the residential mortgage loan, namely a term loan secured by a first lien mortgage on the real estate asset being acquired;
- **Consumer Loans:** Intuitively, consumer loans are those credit facilities granted for consuming purposes. Therefore, individuals and families are the most common borrowers for these types of loans.

Moreover, it is crucial for financial advisors to have a comprehensive understanding of how collateralisation works, since secured exposures, even if impaired, are the ones that generate most of the securitisation's cash flows. Collateralisation is an agreement securing the payment of a debt. The agreement binds a specific asset, the collateral, that can be sold to recover the obligation undertaken by defaulting. Therefore, the collateral mitigates the credit and default risk for the lender in the event that the borrower can no longer meet their debt obligations. The two predominantly legal forms for undertaking debt collateralisation are the lien and the pledge.

2. NPE securitisation in Europe and Italy

Debt securitisation is a financing technique whereby banks and other credit institutions convert a batch of loans into marketable securities and sell them to a specially created third party (Special Purpose Vehicle or SPV). SPV uses the underlying loans as collateral to issue securities typically in the form of asset-backed securities (ABS) or mortgage-backed securities

(MBS)[2] and sell them in financial markets. Accordingly, an NPE securitisation is a specific kind of securitisation where the underlying assets of the ABSs are non-performing exposures.

NPE securitisation is mainly used by credit institutions as a liquidity and capital management tool. Assets that are otherwise considered relatively illiquid (e.g., non-performing exposures) can be removed from an Originator's balance sheet (the so-called "*asset derecognition"*) and included in a securitisation, thus providing liquidity. Debt securitisation is also a powerful capital management tool since enables banks to create and sell new loans, by freeing up the capital that was set aside to cover the risk related to the loans being securitised.

This peculiar financial technique has its roots in Europe between the late seventeenth and early eighteenth centuries when the British Empire restructured its sovereign debt by offloading it to its wealthiest mercantilist corporations, which in turn sold shares backed by those assets. It was about 200 years later that the debt securitisation market really took off in the US. The first mortgage-backed securities arose from the secondary mortgage market in 1970, when the Government National Mortgage Association (GNMA), also called Ginnie Mae, guaranteed the first MBS issuance. By 2000, the trade in mortgage-backed securities has become a multi-trillion-dollar market and the structure of the debt securities had become more and more complex. In the first year of the twenty-first century, the US subprime lending[3] rate rose dramatically to face high demand in debt securities, with the result that a large portion of the loans being pooled into securitisations was of poor credit quality. Consequently, securities backed by US subprime mortgages held by international investors lost most of their value, triggering the 2007-2008 global financial crisis. Understandably, securitisation was blamed for triggering the crisis when many of those underlying mortgages defaulted.

NPE securitisation markets followed almost the same path. Origination activity in the securitisation market shut down almost completely after the Global Financial Crisis. However,

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[2] Briefly, **mortgage-backed securities (MBS)** consist of mortgage loans and **asset-backed securities (ABS)** comprise all other existing asset transactions. Mortgage-backed securities make a distinct class since the loans have the backing of real property.

[3] **Subprime loans** are those credit facilities offered at a higher interest rate than prime to individuals with poor credit ratings or other factors that suggest they are at increased risk of defaulting on their debt repayments.

ten years later, largely facilitated by tailor-made regulatory measures and government-backed schemes, the NPE securitisation market saw a resurgence in Europe. An NPL government-backed securitisation is a transaction with a state guarantee on the senior debt notes[4] issued by the SPV. The rationale behind this peculiar scheme is to provide banks with a material tool to accelerate the unwinding of NPLs from their balance sheets.

As securitisation market volume recovered in the years following the subprime crisis, European banking regulators focused on simple, transparent and sound structures, laying the groundwork for what was to become the European Securitisation Framework.

Since the NPE market is highly regulated for obvious reasons, it is critical for financial advisors to be aware of the current regulatory framework and how it shapes securitisations of distressed debt.

The main pillars on which the EU NPE securitisation market is grounded are the following.

- **Basel Accords:** These accords represent a package of international standards to measure and monitor banks' capital adequacy. The Basel Accords affect the management and disposal of NPEs as they define the percentage of regulatory capital that banks must maintain in relation to their assets;
- **EU Securitisation Regulation:** The Regulation (EU) 2017/2402 (also known as "Securitisation Regulation") brought different benefits to the European capital market since it re-built investors' confidence in the securitisation entities, by providing them with a standardised risk valuation framework and bringing in transparency and regular availability of information;
- **EBA Guidelines on NPEs management:** The purpose of these guidelines, issued by the European Banking Authority, is to carry EU credit institutions through the development and implementation of an NPE management strategy aimed at reducing bad credits on their balance sheets;

[4] Typically, notes issued in the context of an NPE securitisation are ranked as **senior, mezzanine** or **junior notes**. This classification defines the priority held by the noteholder over the securitisation cashflows. Junior notes are subordinated to mezzanine and senior notes and the latter have the highest priority.

- **EU NPLs Secondary Directive:** This Directive will be adopted by state members starting from 2024 and is expected to facilitate banks in either freeing up their non-performing exposures or outsourcing them to third-party entities.

The aforementioned regulatory measures fostered the revival of the European distressed market. The largest and most active European NPE securitisation market is the Italian one, with a deal volume of € 21.2bn of GBV[5] during the 2016-2020 period, accounting for the 75%[6] of the overall transaction volume in the Eurozone. It is followed by Greece, Ireland, Spain, and Portugal, respectively.

3. Deal Structuring

This chapter introduces the empirical component of the thesis, by explaining in detail how NPE securitisations are realised in practice.

Deal structuring is a complex task, generally entrusted to senior managers or partners in the financial advisor's team, as it requires the skill, knowledge and authority to coordinate the work of all actors in the transaction.

The most relevant legal entities involved in an NPE securitisation are the following:

- **Originator:** The Originator (also referred to as the "*seller*") is the entity originating the non-performing exposures underlying the securitisation.
- **Special Purpose Vehicle (SPV):** The SPV can either be a trust, a corporation or a form of partnership legally separated by the Originator, which is incorporated for the sole purpose of purchasing the NPEs receivables and acting as a conduit for the payment streams.
- **Servicer:** Acting as an agent to the SPV, the Servicer is typically appointed by the vehicle, and their relationship is ruled by the servicing agreement. The key

[5] **GBV** stands for **Gross Book Value**, which is the book value of a loan without impairments.

[6] "NPL securitisations and related governmental guarantee schemes in Europe", Deloitte LLP (2020)

responsibilities include collecting principal and interest payments from obligors, enforcing overdue payments, and managing the portfolio after transaction closing.

- **Investors:** Investors (also referred to as bondholders, or noteholders) purchase from the underwriter the securities issued by the SPV and are, therefore, are entitled to receive the collections generated by the NPE portfolio.
- **Financial Advisors:** Financial advisors provide overall project management, gather data and prepare the loan data tape[7] preparation, set-up the virtual data room (VDR), build the financial model and assess the soundness of the portfolio business plan.

In their simplest form, NPE securitisations include only revoked exposures (i.e., the vast majority are NPLs). The SPV purchases the NPE portfolio via a "*true sale*". A sale onto SPV's balance sheet needs to be undertaken so that it is recognised as a true legal transfer of the portfolio. The purchase is financed by the issuance of notes, which are typically tranched by seniority as senior, mezzanine and junior, although it's possible to have less or more tranches like the lower mezzanine. A minimum of 5% of mezzanine and 5% of junior notes must be retained by the Originator to comply with risk retention requirements set forth in the EU Securitisation Regulation.

Government-backed NPLs securitisation schemes slightly differ from general schemes. The only structural element which differs between the two options is that in government-backed transactions the government provides a guarantee to the senior tranche, in the form of a CDS contract between the State and the SPV. Therefore, the government agrees to back the senior notes if the SPV defaults on payments to the noteholders, while the vehicle pays a periodic fee to benefit from this guarantee.

When UTPs are involved in a transaction, a different securitisation scheme needs to be arranged, by including the so-called *"Fronting Bank"* mechanism. In the context of a distressed securitisation carried out under the Italian banking regulatory framework, the lending agreements can be transferred to the SPV only if are expired, voluntarily terminated or revoked.

[7] In a nutshell, the **loan data tape** is a vast excel file containing the most relevant data on each exposure of the selected NPE portfolio.

As of the securitisation's cut-off date, only NPLs have such characteristics, as they are all exposures in default and thus already revoked by the lender.

In contrast, lending agreements concerning non-expired medium/long-term and short-term UTPs[8] are still in place even after the securitisation closing and therefore need two different solutions. The lending agreements related to medium/long-term UTPs will be transferred to the Master Servicer instead of being transferred to the SPV. Conversely, any component of short-term UTPs exposures (i.e., the receivable and the lending agreement) will be entirely retained by the bank. However, the SPV will indirectly fund the revolving credit facilities. The short-term UTPs portfolio will be jointly managed by the bank and the SPV through the Fronting Bank mechanism. This scheme allows the SPV to take on all the risks and benefits related to the exposure even though the bank will retain the ownership.

From a financial standpoint, in any NPE securitisation, regardless of the transaction scheme adopted, the key workstreams to run an efficient and lean deal process are those described hereunder.

- **Data gathering and due diligence preparation:** The Originator, after defining the portfolio to be securitised, gathers all the relevant data on the exposures with the support of financial advisors. The latter has the task of storing and organising all the data in the VDR and summarising the most relevant information in a single excel file, called the *"loan data tape"*. Since the loan data tape may contain tens of thousands of exposures[9], the counterparties determine a sample of due diligence in order to reduce the number of positions to analyse "line by line". The aim is to speed up the process, by carrying out an in-depth analytical valuation only on a smaller number of positions.
- **Due diligence execution:** Once the sell-side opens the VDR, the Servicer's due diligence begins. The investor's due diligence follows after the investors' engagement phase. The due diligence activity is typically carried out with an analytical approach

[8] Please note that **short-term and medium/long-term are not referred to debt maturity**. Liquidity provided through a short-term facility meets short-term financing needs, and vice versa for long-term loans.

[9] A high number of loans in the portfolio being securitised is often justified by the presence of individual borrowers with small exposures in terms of GBV.

over the sample of due diligence and a statistical approach over the out-of-sample exposures.

- **NPEs' transferability analysis:** During the due diligence, the sell-side assesses the transferability or assignability of the NPE portfolio.
- **Capital structure and pricing:** Determining the capital structure of an NPE securitisation is a key workstream which deeply affects the results of the transaction since it defines the technical form of the SPV liabilities, provides different combinations of risk and return to noteholders and influences portfolio pricing. The tranching of the securitisation's notes has major implications on how net cash flows are distributed to noteholders, as it determines the seniority of the bonds.
- **Deal documents, marketing, and roadshow:** Transaction documentation can be typically divided into legal and marketing documents. Intuitively, the first are aimed at establishing legal obligations in the context of the transaction (i.e., receivables transfer agreement, servicing agreement, etc.), while the latter at promoting the investment opportunity to potential bidders. The sell-side leverages on marketing documentation, such as the *"teaser"* or the *"confidential information memorandum"*, in order to engage investors.

The above workstreams are not sorted by time of execution, since some of them may be executed in parallel. Typically, a distressed securitisation is carried out in 3 to 9 months.

4. Portfolio Pricing

The final section of the dissertation tackles the different methodologies to evaluate a portfolio of NPEs in the context of a securitisation, with a focus on the role of financial advisors in the process. An NPE portfolio is typically evaluated by setting up a Discounted Cash Flow (DCF) model.

The forecast of potential collections deriving from an NPE depends mainly on the strategy pursued by asset managers to recover the exposure. The viable NPE recovery strategies are

summarised as follows, sorted from the best to the worst case from the standpoint of the entity holding the claim on payments.

- **Hold strategy:** This strategy assumes that the asset manager will not pursue any kind of action to recover cash flows from the positions, as they reasonably assume that the borrower will soon return to the "performing", or "sub-performing", status and pay back all, or most of, the obligation.
- **Debt restructuring:** A debt restructuring is an out-of-court agreement between the lender and the borrower through which the debt is refinanced at different and more flexible terms.
- **Voluntary liquidation:** A voluntary liquidation of the company's assets typically occurs when the financial turmoil of the borrower cannot lead to an in-court procedure and, as a result, the creditors' class "urges" the debtor to voluntarily liquidate their assets out-of-court. This is often part of a debt restructuring plan.
- **Discounted payoff (DPO):** By granting a DPO, the lender accepts the repayment of the obligation for less than the principal balance.
- **Foreclosure:** The foreclosure is the last option available to asset managers before initiating insolvency proceedings. This process leads to the foreclosure sale, which is an auction where the lender sells the collateral to pay off the unpaid obligation.
- **Insolvency proceedings:** Insolvency proceedings are court proceedings aimed at liquidating a debtor's assets to pay off outstanding debts.

The potential recovery strategy to undertake and the gross cash flows (GCF) deriving from the portfolio are estimated through two different types of valuation approaches.

- **Analytical valuation:** The exposures in the sample of due diligence are evaluated one by one by asset managers, transaction lawyers and financial advisors. The purpose of the analytical approach is to get a better understanding of the portfolio to be securitised and, more importantly, to come up with an accurate forecast of the GCF that the exposures in the sample portfolio will generate.

When pricing NPLs, the underlying assumption is that the borrower is insolvent and, therefore, the only available options for asset managers are judicial recovery strategies (i.e., initiating an insolvency proceeding or undertaking judicial foreclosure). In contrast, UTPs analytical valuation is much more complicated because the borrower has the chance to be "performing" again and, therefore, all the NPE recovery strategies may apply.

Financial advisors' main responsibility in analytical valuation is to assess the GCF deriving from the sale of collaterals. Collateral valuation is pivotal for NPE portfolio pricing since secured exposures account for most of the nominal GBV of the transaction.

- **Statistical valuation:** The collections deriving from the out-of-sample portfolio, instead, are forecasted through statistical models. In order to provide fair and reliable statistical pricing, financial analysts generally run three different models based on the cluster of NPEs being priced.

  - *Secured NPLs model:* Secured NPLs are always evaluated assuming the default of the debtor and a consequent judicial recovery strategy undertaken by the asset manager. The aim of the statistical model for secured NPLs is to adjust the *open market value (OMV)* estimated by the bank's appraisal to compute the *judicial market value*, namely the value resulting from the last judicial auction.
  - *Unsecured NPLs model:* This model is entirely built by applying the benchmark recovery curves of the Servicer on unsecured NPLs to the exposures being priced. These benchmark curves are essentially the historical recovery performances of the Servicer on unsecured NPLs and are represented as a year-by-year percentage of the outstanding GBV unpaid.
  - *UTPs decision tree model:* When managing UTPs, the asset manager has a wider choice on the work-out strategy to pursue and even the same strategy may lead to different outcomes in terms of collections. For these reasons, financial analysts typically rely on the so-called *"decision tree"* model to evaluate UTPs. The decision tree approach is often employed in probabilistic valuations to consider not only

discrete risk but also sequential risk. Briefly, the basic principle underlying decision tree models is that for an asset to have a certain value, it has to pass through a series of tests (also called *"nodes"* of the tree). Decision trees allow financial analysts to devise the right response of the asset to tests at each stage. Notwithstanding this, unlike the common applications of decision trees, for UTPs valuation, this approach has not a probabilistic nature, since all the relevant information for computing the final outcome (i.e., the GCFs) is already present in the loan data tape. For instance, the decision tree to evaluate a secured corporate loan leads to different outcomes on the basis of the borrower's debt-to-equity, percentage of debt paid off during the last two years, 3-year average EBITDA, and Net Assets.

Following the analytical and statistical valuations, all the potential GCFs deriving from the NPE portfolio have been estimated. These gross cash flows are consolidated in a single DCF model and then netted out by subtracting the costs of the securitisation. Finally, the net cash flows are discounted to compute the price of the portfolio. The discount rate to be applied to the DCF's expected net cash flows reflects the level of riskiness of each tranche issued by the SPV. Based on the capital structure adopted by the securitisation, the cost of capital can be estimated as a weighted average of the discount rate of each tranche.

The pricing process culminates with the drafting and issuance of a *"fairness opinion"* written by the financial advisors from both sides and presented to the board of directors, which has the last say on the approval of the transaction. The purpose of a fairness opinion is to provide non-executive directors with a comprehensive understanding of the deal. Therefore, this document is aimed at clearly outlining the securitisation scheme, the players involved and their role, the features of the NPE portfolio, the Servicer's consolidated business plan and finally the portfolio valuation.

The final step of the securitisation process concerns the analysis of the deal. This activity actually begins in parallel with the due diligence and accompanies the whole process, but it is concluded just before the closing. The deal is typically analysed under two different lenses, that of the buyers and that of the sellers. These two entities have two completely different purposes in carrying out the NPE securitisation and, therefore, will look at different impacts when

assessing the performance of the deal. The sell-side looks primarily at whether the financial and strategic goals of the transaction have been met or not. Therefore, they will assess whether enough illiquid assets have been replaced through exposures derecognition and whether the capital set aside the cover NPEs' losses has been released. The buy-side, on the other hand, will analyse the transaction primarily from the perspective of return on investment. To this end, buy-side financial analysts perform sensitivity and scenario analyses on relevant investment metrics such as the internal rate of return (IRR), the weighted average life (WAL), or the recovery curve.

In conclusion, Keynes was right when saying *"If you owe your bank a hundred pounds, you have a problem. But if you owe a million, it has".* However, this is part of the game. The core business of commercial banks involves taking on credit risk, hence they will be always exposed to the "problem" of their borrowers defaulting. The introduction of NPE regulatory measures and strict risk management frameworks may mitigate Keynes' "problem", but never eliminate it, as economic shocks, often unforeseen like the recent pandemic, will always tend to increase the stock of NPEs on banks' balance sheets.

In view of the above, as laid out throughout this thesis, the most effective tool to reduce the impact of NPEs on banks' balance sheets is the securitisation of such loans. This financial technique maximises the positive capital impact of the transaction and mitigates losses on the income statement. This solution is the most commonly pursued by Originators to offload their NPEs, as it allows them to replace illiquid RWA with new loans or senior notes (if retained following the securitisation) and free up the provisions for these impaired loans.

In summary, the ultimate purpose of this thesis was to provide practical guidance on how banks can effectively address Keynes' "problem" when it arises, through the financial technique of securitisation. I hope I have succeeded in this aim.