Ca' Foscari University of Venice

Master's Degree programme

in Finance

Final Thesis

THE COURT EFFECT ON THE PERFORMANCE OF NPLs

Extension of the duration evaluation model for an exact pricing

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Academic Year
2021 / 2022

Abstract

There is this common knowledge among the same population on how much the Italian justice system is deficient in terms of quantity and quality. The slowness of the proceedings, the endless expectations, and continuous appeals only slow down and creates doubt in Italian companies and discourage any foreign investment. Inevitably all these issues are widely reflected in the world of Non-Performing Exposures, in fact, as it is possible to imagine considering for example the case of positions guaranteed by mortgages (therefore secured positions) whose value is given by the escussion of the properties given as collateral, obtain those said assets (and their monetary value as a consequence) within a reasonable timeframe or the opposite result in a substantial difference from a ROI perspective. This thesis aims to analyse the current context of the NPLs, by studying historical trends and possible future scenarios, and then dive into the Italian justice system (comparing it to the various EU member countries). Of this last one, it will be analysed various variable of performances like the disposition time, the clearance rate, and other meaningful ones. After a descriptive statistical analysis of these variables, besides seeing the significance of the relationship with the duration of the procedures, an attempt will be made to create a scoring system that reflects the actual capacity of the courts (and its staff) to manage and dispose of the outstanding load. This new score system gives importance to these performance-based statistics about the staff but at the same time includes the duration (which was the only element considered in the past valuation models of impaired positions) and other variables linked with the structure of the tribunal, this will allow the formation of correct expectations on the actual price of the above positions that reflect the "real true value" of the courts, providing an overview that can offer food for thought for court presidents and possible arbitrage opportunity for specialized investors.

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Introduction

The financial crisis of 2007 showed the world how a fragile credit system linked to weak regulation cannot be sustainable in the long run. This event changed the entire economic system because banks (and the investment sector in general) suddenly found themselves weak, limiting their ability to grant credit to households, companies, and institutions. The result was that people/companies, previously considered to be good debtors, able to meet their financial obligations and dependent on revolving debt, could no longer be considered solvent due to the deterioration of their financial position. As is well known, governments have intervened by bailing out banks to try to stop this phenomenon, or at least to limit the damage, using public resources and consequently increasing their debt. This phenomenon has not happened uniformly, in fact, countries with ample 'room for manoeuvre' given their low debt levels, such as Germany, the Netherlands and the Scandinavian countries have been able to intervene massively and determinedly in this problem. Other countries, such as Spain, Greece, Ireland, and Italy, lacking available resources and already having high debt stocks due to high interest rates, were unable to curb this situation. Banks in these countries found themselves inundated with impaired positions to which they were and most of them were unprepared to deal with this problem. The latter (known as NPEs i.e. Non Performing Exposures) are a huge problem for banks because they drain liquidity, erode profits and destroy budgeted values. Analysing the Italian scenario, as can be seen in the Figure 1 below, from 2008 to 2015 one can see a massive surge in the numbers of NPLs and UTPs (Unlikely to Pay, securities in which the borrower will most likely fail to pay the full amount) precisely due to the problems mentioned just above. Starting in 2015, the strategic priorities of financial intermediaries changed as the level of NPEs (Non-Performing Exposures) was unsustainable. They, also assisted by the change in banking regulations aimed at preventing the recurrence of the problem, focused on de-risking and de-leveraging assets, with the goal of increasing their soundness. One of the most significant mistakes has been to focus mainly on the disbursement of performing loans in order to achieve higher profitability; ignoring all the prevention steps (pre- and post-disbursement) that can prevent the deterioration of a loan through monitoring actions or by setting up an appropriate information system that can improve internal

management and foster relations with external operators. Since then, the Italian system has done a solid job, reducing the entire stock of nonperforming exposures, trying to reduce it to the suggested level of 5% set by the ECB. Returning to current days, one must always keep in mind that the Covid-19 pandemic and the war in Ukraine will put pressure on the performing loan sector, with the risk of a massive shift from performing to non-performing loans. Therefore, close attention must again be paid to this sector to avoid a repetition of the problems already faced in the recent past.

Figure 1: Non-Performing Exposures amount (€bn) in Italy

Source: Banca IFIS

Especially at the beginning of this period of NPE sales, banks lacked the knowledge and expertise to properly evaluate their NPE stock. The existence of an information gap between the issuer of the distressed debt and the potential buyer in terms of data quality and transparency created both obstacles and opportunities at the same time for closing deals. In addition, the aforementioned pressure to sell them for balance sheet benefits further drove prices down. Against this backdrop, specialized investors have emerged, willing to take risks on the rate of recovery and especially, a key theme in this thesis, on knowing how to wait for the time of court rulings. This last component is critical as it massively determines the actual return on an investment. Protracting a real estate enforcement judgment by a year can significantly reduce the return obtained on impaired credit; creating liquidity and yield issues that many banks are unwilling to take on. For this reason, Chapter 1 will analyse the effect of duration on NPL performance and how different courts relate to it by citing other works of interest. In the second chapter, on the other hand, the dynamics of the Italian courts will be discussed, how the Italian justice system is performing (also comparing it to other European systems). It is

crucial to understand how the latter is performing if indeed duration is the only key variable or if there are other aspects to be considered when evaluating in order to offer the most complete analysis. For these reasons the third, and final, chapter will propose the empirical work done. It is structured in such a way as to offer as complete an overview as possible of the organizational structures of the various Italian courts especially with reference to personnel. The performance of the latter will also be analysed by relating it to duration. What will result is the creation of a score system that can allow (with appropriate additions in the evaluation phase) for a comprehensive overview of the impact of courts in the performance of NPLs. Significant problems have been encountered in the approach to this thesis, first and foremost the scarcity of academic references on this specific topic and especially with regard to obtaining data on the various courts with a not always present central data collection system and with temporal issues of response from the public administration.

CHAPTER I: The NPL sector

1.1. Introduction to Distressed Investing

In order to define what is meant by distressed investing, it is necessary to define what is meant by distressed. It is often thought that distressed is equivalent to default, but this is not always true; on the contrary, the latter is a subcategory of the former. Moody's definition of default is based on the following types of credit events: a failure or delay in payment of interest and/or principal, including late payments made within a grace period. This broader definition, compared to the simple definition of bankruptcy, is more representative of the number of opportunities presented to distressed investors. However, even this definition underestimates the real number as there are always situations in which financial distress represents a high risk, which affects the prices of securities, but which eventually resolves without triggering any of the definitions of default. One understands that it is difficult to establish appropriate boundaries. It is more important to understand all possible causes that lead to a company default, not all of which are related to the performance of the company itself. The reasons may be different, perhaps due to the sector itself facing a difficult time in terms of revenues due to a new technology that changes the environment and competitors themselves or a change in regulation or even a political event that has altered macro-environmental conditions (e.g., an increase in interest rates).

In addition to industry reasons, insolvencies/crisis situations are the result of the company's own performance (worse than peers with financial ratios that are not sustainable in the long run) or bad management decisions by the board. Managers may have pursued an extreme growth strategy (with leverage) which, due to a sudden change in macroeconomic conditions, is now no longer sustainable and instead leads to huge cash outflows. Distressed dynamics thus relate to situations where access to capital markets is generally limited. Firms that need to raise such funds to pay off or refinance maturing bonds may go into default due to an unreceptive market environment, even though, by some objective standard, one might agree that the firm would normally be able to raise capital. The intuition behind this correlation is the simple economic principle of supply and demand. When money flows into funds, portfolio managers need to invest it and thus have a high demand for new bonds.

This demand, in turn, is met by investment banks that 'manufacture bonds' by finding issuers who are 'in need' of capital. Demand for investment generates supply. When flows to funds decrease, so does demand. This also implies that a higher yield differential can largely be attributed to the premium required by investors to buy a bond with a particular credit risk. Market prices incorporate these risks; the credit quality of the issuer is rated AAA to D. Rating levels above BBB are considered investment grade, while those below are known as junk or speculative grade. The common term for a company with an investment grade rating that becomes speculative grade is fallen angel. When a fallen angel is downgraded to speculative grade, many asset managers, obliged by their mandate to invest only in high quality securities, have to divest themselves of these positions because they cannot hold speculative bonds in their portfolios. From the moment these managers start selling the downgraded company's bonds, perfect opportunities arise for the distressed investor. Lower rated bonds have a higher probability of default; therefore, the higher the amount outstanding, the higher the amount of defaulted debt to be expected. Of course, distressed investing is risky and challenging, but potentially very profitable, and although it is considered counter-cyclical, there will always be cases of financial distress or default. Even in the 1993-1998 period, a remarkable period of economic growth and stock market prosperity, an average of 29.3 US companies with outstanding public bond debt went into default each year, with an average of $5.4 billion in defaulted securities as reported by Moyer (2005). The default rate, as defined by Moody's, is the amount of defaults (measured by issuer or dollar-weighted) during the period relative to the amount of debt outstanding with an appropriate rating. This type of asset is not for everyone; only institutional investors are allowed to trade specific securities such as NPEs, although retail investors can 'access' them by investing in near-bankrupt public companies.

The main reason why investors participate in this market is that the distressed sector is less efficient than other markets. Efficient Market Theory (EMT) essentially states that trading prices reflect all available information and therefore no investor can consistently outperform the market. Thus, EMT essentially postulates that the market value of a security (it is easier to think of this in the context of a stock) represents the collective valuation judgement of all market participants who are assumed to know and correctly analyse all available information about the company. The semi-strong form of the

assumption holds that the market accurately reflects all publicly available information, price changes are almost instantaneous; there can therefore be no prolonged inefficiency. There are three assumptions on which EMT is based: equal access to information, rational behaviour, and low transaction costs. A simple examination of the basic assumptions of EMT shows that its applicability to the distressed debt market is doubtful. Most distressed debt is privately traded in over-the-counter transactions where prices are not disseminated to the public (and this has led to the fall of the first assumption). Moreover, in the high-yield securities market, many issuers do not have public capital and, by virtue of a relatively small number of security holders, are often exempt from disclosure requirements. In such cases, any information disclosed by the issuer may only be available to security holders. Moreover, when companies file for bankruptcy, even those with large capitalisation, they often stop disclosing information to public authorities. Finally, banks and bondholders involved in negotiations with the issuer, in order to facilitate the process, will, after signing appropriate confidentiality agreements, receive material non-public information, such as more detailed operational data and management projections, which obviously violates the assumption that all investors have the same amount and quality of knowledge at the same time. When it comes to distressed securities, access to information alone often requires a significant commitment of time, effort, and expense.

The second assumption of EMT is that investors act rationally; this assumption has been challenged by behavioural finance, which has shown that many times people (even those constantly dealing with markets) are most often 'irrational' or simply do not act like homo oeconomicus. The most common irrational patterns that are constantly present in the markets are FOMO (or fear of missing out), the hot hand fallacy (believing that something that has recently performed better will continue to do so) and herd behaviour (the habit of people to imitate the financial behaviour of the majority). Considering the non-performing sector, this is particularly true. A prerequisite for rational choice is free will, which in this context means making buying and selling decisions solely on the merits of the investment without external forcing. Senior bank managers usually identify certain performance parameters as important for the perception of the bank's health by regulators. For example, a common goal is for the ratio of non-performing assets to total interest-bearing assets to be below a certain

target level. In addition, senior bank managers may want to minimise the risk of supervisors questioning the adequacy of loss reserve levels. Banks will often want to manage the quantity of their low-rated loan portfolio, but such sales are not necessarily motivated by a 'rational' view of loan value. Banks are therefore forced many times to 'unload' these securities in masse, causing excessive deviations from the real price. This can be a significant source of opportunities for distressed investors, significantly undermining the applicability of EMT. The third pillar of the Efficient Market Theory is low (zero) transaction costs. If profit-maximising investor behaviour is the engine that drives prices to the exact point of efficiency, then costs cannot be so high as to preclude an investor from engaging in transactions that would make prices optimal. There are at least two sources of transaction costs for an investor. One is the settlement fee, which is the direct cost of the transaction, including the commission to the broker. The other cost is the so-called unwind fee, which represents the bid-ask spread in the market. The latter is the main source of commission and inefficiency and is dictated by the liquidity risk of a security (due to the few potential buyers and the combination of risks inherent in the security). Although the transaction fee is reasonable, barely sufficient to handle execution costs, unwind costs can be significant. In any case, except in the most liquid situations, distressed securities generally have significantly higher transaction costs than most other traded securities.

Finally, it may be useful to note that the market seems to send mixed signals when debt is sold at a significant discount, but shares continue to trade at positive values. If the company eventually goes bankrupt and has to reorganize or liquidate, it is likely (assuming the market value of senior and/or subordinated debt is trading at a discount) that its shares will receive nothing. Although studies have been conducted on this apparent market anomaly, there is no consensus explanation. According to the EMT, stockholders could justify the belief that the stock should trade at a positive value by claiming that it continues to have option value. The stock could have an economic value based on sources not directly related to corporate performance. A common example is potential recoveries from lawsuits brought by shareholders against negligent or deceptive management, where the expected source of payment is an insurance policy issued to protect the company's directors and officers, but very often this is not true. Leaving EMT aside, another more likely possibility is that the market is wrong. Perhaps

investors do not sufficiently understand the restructuring process (the value brought by it especially for the benefit of shareholders) and fail to correctly price the value of the bonds. Another motivation may be more psychological, some investors find it difficult to admit a mistake, a wrong investment decision, and for this reason they do not sell, out of a sense of denial. It is clear from these last sentences that this market offers many possibilities due to the countless inefficiencies from the point of view of yield, which specialized investors constantly try to exploit.

1.2. Non-Performing Exposure (NPEs) and Non-Performing Loans (NPLs)

A NPE can be described as a distressed debt, a financial situation in which the lender is not confident of fully recovering the amount it has lent in the past, or an already deteriorated situation that needs to be carefully managed. Non-performing exposures require effort and management to maximize recovery. From a bank's point of view, not only are they unproductive, but they also erode financial, technical, and managerial resources that would be more fruitful if they were devoted to activities that can provide better returns and, more importantly, to taking out new loans (or other forms of financial support) to businesses. In fact, for example, the moment a loan is classified as an NPL, the bank is required to set aside as a reserve 120% of the value of the loan, an aspect that obviously drains liquidity and capital from the bank and hurts the bank's returns. The short-term goal for dealing with this type of activity is to improve banks' balance sheets by tightening regulatory parameters in compliance with the new requirements, but in the medium to long term, a major sell-off/disposal of loans that should have provided a solid margin for the bank inevitably affects is required. The NPE class can be divided into three additional subclasses, which are:

- Past Due: Loans whose principal, interest or fees have not been paid on the due date (in the case of mandatory payments) up to 90 days late. Counting of days begins as soon as any amount (principal, interest, or fees) has not been paid on the due date;

- NPLs (Non-Performing Loans): loans that are more than 90 days past due where they are unlikely to be repaid in full without the realization of collateral or through forbearance measures i.e., concessions to a borrower who is in financial

difficulty. They consist of changing the terms and conditions of the contract or refinancing all/part of the exposure, depending on the debtor's financial distress;

- UTP (Unlikely to pay): loans whose identification is based less on quantitative criteria but more on qualitative factors set by the bank. These loans are closer to non-performing status than to performing status.

According to the definitions of Non-Performing provided by the EBA, an exposure ceased being Non-Performing when:

1- It has met the exit criteria out of impaired and defaulted categories.

2- An improvement in the situation of the debtor makes the full repayment likely according to the original or modified (forborne) conditions.

3- The debtor does not have any amount past-due by more than 90 days.

Past financial crises have shown that NPLs can reach levels high enough to become a real problem for banks' business operations, financial stability, and the real economy (NPLs in Italy reached a staggering 201 billion euros with an NPE ratio of 17.1 percent in June 2015, as can be seen in Figure 2). Significant efforts have been made at the European level to address this high stock of NPLs, including bank recapitalizations and a comprehensive action plan coordinated by the EBA so as to provide guidance on managing the stock of impaired securities while supporting secondary markets in the resolution of NPLs by improving data availability, and that would secure the system in the future by improving the analysis of the quality of future loans.

Figure 2: Gross impaired bank loans (€bn and %) for multiple years

Source: Banca IFIS

1.2.1. The Italian Scenario

When a borrower is in financial distress, there are many aspects that a bank must consider; first, the probability of not recovering the full amount owed (even in the worst-case scenario with a zero percent recovery rate), the total exposure with the line of credit in the event of an event of default (also known as EAD or Exposure At Default), the time frame for recovering the money (this will be covered specifically in this chapter and subsequent chapters), the ease with which collateral can be redeemed, and other specific variables. Thanks to massive work by regulators and private firms in recent years, a common set of rules has been arrived at that has helped both banks and investors reduce the information asymmetry gap between them. Improvements in the new rules have made it possible to compare asset quality consistently across European institutions, fostering discussion of risk among banks and becoming a starting point for the recent stress tests developed by the ECB and for better coordination of supervisory actions. Reporting the following data from the Banca IFIS Market Watch (2022) report, the EU NPE ratio fell to 1.9% in the first quarter of 2022, the lowest level since 2015. Italian banks experienced an increase in private sector (household and corporate) risk factors, classifying 14.6% of related loans in Stage 2. The amount of performing loans classified in Stage 2 reflects a worsening of the risk profile of customers compared to the previous assessment. The assessment is based on a forward-looking view based on a forecast scenario when preparing the financial statements.

At the end of the first quarter of 2022, the NPE volume of EU significant banks (EBA definition) stood at 384 billion euros (16% the share of Italian banks), the lowest value since the peak in 2015 when the stock was nearly 1.1 trillion euros and Italy contributed 34%. From this last sentence it is possible to infer the importance of the control carried out on these activities. The ability of banks to lend to the real economy is significantly affected by the quality of their loan portfolios, and as we have said, banks with high levels of NPE on their balance sheets must divert their resources away from profitable services to manage loans that provide no return. It is crucial to keep an eye on the drivers of Non-Performing Exposures; considering that one of the main ones is the profitability of the credit system. While the increase in the latter is a positive sign as it communicates that the stock of current impaired loans is reduced, it also provides incentives to take ever higher risks to sustain these levels. The banking system showed increasing

profitability performance (ROE) in the average of the seven major banking groups in the first half of 2022, up from 7.9 percent in the first half of 2021, even without unbundling the "Russia effect" (particularly significant for the two largest groups which are UniCredit and Banca Intesa Sanpaolo). Another important driver for Non-Performing Exposures, fundamental for the implementation of a strong de-risking process, is the NPE Ratio, which in the Italian scenario is 4% (considering at the same time the EBA target set at 5%) at the end of the first quarter of 2022.

These results have been achieved thanks to the development of early risk warning systems, based on frontier technologies (particularly with the use of AI and big data analysis). Thus, banks have achieved great success in controlling NPEs, which until 2014, on the contrary, caused many problems. Other determinants of NPEs are the default rates of households and corporations. Considering Italian households and non-financial companies, the default rate as of Q1 2012 is lower than the EU average. Among Italy's peer countries, only Spain recorded a significant deterioration. Italian business and household debt relative to GDP and disposable income is 11% and 33% lower than the EU average, respectively. In contrast to the low household and business indebtedness, Italy, however, has a higher proportion of bank loans classified as stage 2 (13.1%) than the EU average (9.1%) in the first quarter of 2022, highlighting a higher prospective risk. Looking at the corporate default rate in Italy, we can see that they are historically low and have been maintained after the end of the moratorium: in Q1 2022 -21.6% vs 2021 and -29.8% vs 2019. Finally, but of course there are other drivers (financial and otherwise), the level of liquidity present in the economy was analysed. In Italy, we saw an increase in liquidity: over 400 billion euros in bank deposits, up 37% vs. December 2019.

1.2.2. Measures taken to counter Non-Performing Exposures

As can be seen, due diligence is the main vehicle for avoiding future non-performing loans for banks and bad returns for specialized investors; an assessment of the borrower's financial situation with the help of specific trigger events such as increased probability of default (PD) and the borrower's LGD (Loss Given Default). Probability of Default is the likelihood of the borrower going into default in the next twelve months and is considered the main variable to be studied in risk measurement. LGD analysis, on

the other hand, represents how much the company will lose (as a creditor) in case of default and that is equal to 1 minus the Recovery Rate (RR). Other variables to constantly and carefully review are the value of collateral and compliance with covenants. A reduction in the value of collateral inevitably reduces the recovery rate in the event of default, so banks and specialized investors try to avoid/reduce this risk by taking as collateral securities and/or assets that usually tend to have a stable value over time and may appreciate in case such as houses and commodities such as gold. Of course, the two categories just mentioned can collapse or be subject to significant influences from cycles as the 2008 financial crisis suggests.

Covenants are often used in the corporate world and obligate the company to act (or not to act) in a certain way; for example, dividends above a certain threshold are not allowed or additional debt cannot be incurred. These conditions should reflect appropriate behavior on the part of the firm, and if they are not met there are obviously problems to be addressed. These considerations result in a change in the value of expected future cash flows, which causes a consequent write-down of nonperforming exposures (but the same reasoning can also be applied to in bonis loans), which is recorded in the balance sheet. The difference between the GBV, which is the gross book value that is equal to the expected and discounted future cash flow, and the NBV, which is the net book value that is equal to the expected and discounted current cash flow, is the write-down applied to the exposure. Linked to this last part is another definition of how to define distressed investments, in fact these securities are considered distressed if the discount rate is greater than 500 bps. This definition helps the specialist investor identify potential securities (such as bonds) of problem companies that are in financial or operational distress. There are many ways to manage NPEs, the most widely used since the onset of the crisis being the sale of NPEs.

Other methods are credit restructuring and internal management, which is what specialized investors usually do after acquiring this type of credit, but in this context, it is the originator who does it. By selling nonperforming exposures, banks reduce the value of risk-weighted assets (also known as RWA). They are a key unit of measure nowadays because they determine the minimum capital/equity a bank must have under Basel rules. Therefore, this process allows the lender to free up risky assets, unlocking capital to invest in more profitable assets thus increasing the return on equity (ROE) in

the future. As mentioned earlier, the main problem with regard to the sale of NPE (even more true for NPLs) is the risk of mispricing of this financial instrument. In recent years, banks have begun to develop their own NPE division in charge of managing, monitoring and identifying potential opportunities in the distressed environment and particularly within the bank's balance sheet. But this process is not so easy to implement; first, for traditional banks, NPE management requires new human resources, specialized in this area, and the organization of the system to enable them to operate properly. They therefore require substantial investment also given the scarcity of such human resources and internal reorganizations for which it is not obvious to be ready. In order for these resources to operate successfully, it is necessary to have an infrastructure with an adequate level of knowledge of each customer and other relevant aspects, including the availability of well-maintained databases with all the correct information stored properly, as well as relationships with buyers and sellers of these securities that allow access to the market. In addition, these kinds of sales are obtained at a deep discount to GBV (and even in these cases, this implies a write-down in the balance sheet and a loss for the company), but at the same time they improve balance sheets by reducing costs and generate a positive effect on the bank's reputation.

Macroeconomic components play an important role in determining the management of NPEs, which banks and specialized investors need to focus on especially in periods of turbulence such as the current one. The first part of 2022 showed no change in the dynamics of Non-Performing Loans (0.96% default rate in Q1, which follows the average of 1% in 2021), and GDP in the first half of the year consolidated a growth of +3.5%. Continued criticality in energy, commodity, and food prices (+9.1% inflation level as of August 2022) combined with rising rates lead to estimates of lower than assumed future growth. These effects are not idiosyncratic shocks, but incorporate and augment the systemic one, and they appear to be persistent over time. Inflation will remain high in 2023 (6% expected), then fall in 2024 (4%) but has not yet returned to pre-pandemic levels. The duration of the war in Ukraine is unpredictable and this may cause potential rationing of raw resources in the near future (which will raise costs at first and then stop factory production with consequent layoffs). The major central banks have already reacted to high inflation by raising interest rates, but the exact amount of monetary policy tightening needed to reduce inflation is not yet known. To complete the circle,

China's slowdown persists, both because of continued shutdowns and the financial effects triggered by the real estate crisis, which have further stalled the world's main supply chain.

1.3. The NPL Industry

As was mentioned earlier, Italian banks have achieved a major de-risking result with an estimated 357 billion euros of NPL portfolios sold from 2015 to 2022, as shown in Figure 3. From 2022 onward, the NPE stock is estimated to increase due to an increase in impaired flows and a reduction in recovery rates, especially on larger portfolios and secured loans that require longer recovery times. The Italian NPL industry has experienced continuous revenue growth from 2013 to 2021 (+90% over the entire period), which will continue with +9% in 2022 and +4% in 2023.

Figure 3: NPL transactions trend in the Italian market (€bn)
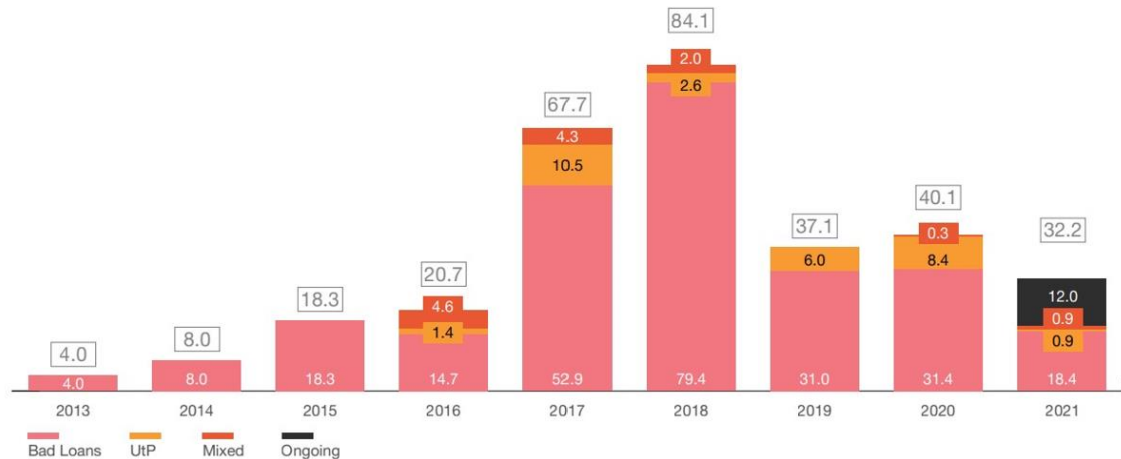
Source: PWC, The Italian NPL Market Transformation at Work, 2021

Reporting from Banca IFIS (Feb. 2022), €82 billion of new NPEs flows are estimated for the three-year period 2022-2024. Compared to last year's forecasts, an increase of €10 billion of new flows and a 6/9 month lag (peak in 2023) is assumed. The market will also maintain high volumes of NPEs in 2023-2024 (€47 billion in 2023 and €33 billion in 2024) and institutions should be ready for them. There is currently no evidence of the effect of inflation and rising interest rates on 2022 transactions, which could impact the value of new NPL portfolios coming to the market in the near future. Also, the aforementioned bank proposes, to address these possible problems, to extend GACS over time to support both the primary and secondary markets. They (in which the state has taken the

role of guarantee to support sales of this type of securities) have concretely supported the de-risking of Italian banks and the development of the NPL market with 107 billion euros in sales (about 32% of total NPE transactions since 2016). But interestingly, all portfolios backed by such guarantees if launched by the end of 2018 underperformed the business plan. In the context of the most recent transactions (2019 to date), however, 11 out of 17 portfolios have exceeded targets.

In order to assess the effectiveness of the asset sales (liquidations) concluded since 2014, the percentage of claims recovered in the various years since their opening was recorded. While, in order to examine the outcome of restructuring (another previously mentioned method of handling NPLs), the evolution of the latter in the four years since its inception was tracked. The average recovery rate for the period 2011-14 was slightly above 40%, based on undiscounted amounts and with a marked dispersion of values between the different banking groups. The corresponding loss rate is in line with the average impact of adjustments made by banks on the gross value of Non-Performing Loans (for the Italian banking system, the average coverage rate of non-performing loans was 58.7% in December 2014).

Recoveries are almost entirely achieved within five years from the start of the liquidation, regardless of the duration and type of legal proceedings (bankruptcy, composition with creditors or positions mainly affected by real estate and movable executions). Restructuring takes a relatively long time before it leads to the recovery or so-called liquidation of the company. Four years after their start, 62% of restructurings (in terms of the amount of credit involved) are still ongoing. The transformation into liquidation concerns 23% of the loans; the return to a situation of financial rebalancing and/or the acquisition or incorporation of the company by another (classified as distressed M&A) concerns the remaining 15%. On average, restructurings are secured by collateral for about 50% of the loan, eight percentage points more than liquidations. The willingness of debtors to reach agreements that preserve business continuity therefore appears to be higher in the presence of collateral and of significant value. Some groups have set up specialised (typically separate) organisational units to handle liquidations and restructurings.

1.4. Review of the Academic Literature

Underlying the growth strategies is almost always the decision to intervene on the quality of credit processes and the efficiency of credit risk management policies, so there has been a lot of analysis on probability of default (PD), Loss Given Default (LGD) and macroeconomic factors affecting NPE/NPL performance, but very little on the role of the justice system. Before we begin with the purely academic writings, it is worth analysing the specific reports of the specialists in the field, namely PWC (2021), KPMG (2018, March 2021, November 2021), Banca IFIS (February 2022, September 2022), Cerved Group (2019, 2022), La Scala (2019) and the T.S.E.I. Committee (2020). The last three entities will be discussed in more detail in the next section of this chapter. These papers mainly present performance/statistics with respect to various indicators such as the stock of impaired loans, the amount of impaired loans, the territoriality of non-performing positions, etc. Above all, the focus is on the recent past with respect to recent transactions to show how the primary and secondary market has evolved, also to provide indications for the liquidity of this sector (the main objective of the Banca IFIS reports), while possible future trends for NPEs, what should be done from a regulatory perspective and trends in the real estate sector and transactions were the main objectives of the reports published by KPMG and PWC. The actual academic literature will now be discussed, grouping the analysis according to theoretical economic foundation. This will be divided into microeconomic research, macroeconomic research, the combination of the two, and what does not fall into the three previous areas.

1.4.1 Microeconomic Research

Microeconomic research refers to all those works developed whose theoretical foundation lies in the analysis of specific micro variables. They concern, for example, the performance of a bank, a financial intermediary, etc. The academic literature on this topic is very broad, but the focus, as mentioned, is mainly on the recovery rate and concerns mainly the non-performing loans of American listed companies. It is useful to start from the research of Altman (the economist who invented the famous Z-Score that helps predict the failure of a company in the following twenty-four months). One of his papers (Altman et al (2005)) studied the existence of a negative relationship between the default rate on high-yield bonds and recovery rates (especially in recessions). In the

same paper, the researchers also tested the importance of seniority and collateral in the recovery rate; their research shows that models that include these variables can explain more than those containing only macroeconomic variables.

Recovery rate prediction models based on microeconomic parameters are increasingly important due to the Basel regulatory framework, in particular because of the impact on credit risk management and loan rate calculation. For this reason, Schuermann (2004), Grunert and Weber (2009) and Frye (2000) have shown that the recovery rate is strongly influenced by the presence or absence of collateral, loan seniority and size; a higher share of collateral leads to a higher recovery rate, while the borrower's risk premium and firm size are negatively correlated with the recovery rate. Borrowers who have an intensive relationship with the bank have a higher recovery rate. Frye also focuses on the economic conditions that influence the value of collateral (recessions further damage collateral). Keisman et al. (2004) illustrates the importance of the capital structure of the security position: the higher the number of junior securities, the higher the recovery rate for the senior counterparty, in addition to the impact of the sector on the RR. From this work it is possible to understand the importance of the impact of microeconomic (and firm- and sector-specific) factors on NPE performance. Carey and Gordy (2016), on the other hand, analyse how the bank debt ratio (out of total corporate debt) affects the recovery rate. The lower the rate, the lower the recovery rate. Especially through the use of microeconomic and customer-specific variables (such as gender, age, marital status, etc.) Ye and Bellotti (2019) model the recovery rate and obtain encouraging results.

1.4.2. Macroeconomic Research

In contrast to the previous point, macroeconomic research refers to all those works developed whose theoretical basis lies in the analysis of specific macro variables. These are, for example, parameters such as GDP growth, the unemployment rate, the interest rate applied by central banks, etc. Betz et al. (2017) showed how little micro indicators influence the recovery rate, as they leave ample room for explanation to undetectable factors (low R^2). Analysing instead the macroeconomic and systemic fragility effects of default resolution times, they found that median resolution times are more than doubled in a recession compared to an expansion. This leads to highly skewed loss

distributions and significant systematic risk in the banking book. Another important work, especially for the Italian scenario, was carried out by Foglia (2022), whose empirical results show that gross domestic product and public debt have a negative impact on NPLs.

On the other hand, he found that unemployment rate and domestic credit positively affect NPLs. Finally, he found evidence of the 'gamble for resurrection' approach, i.e. that Italian banks tend to support 'zombie firms'. Jarrow and Yu (2001), on the other hand, focused on the relationship between the stock index and the recovery rate, highlighting how the latter is negatively related to stock performance. This result is also confirmed by the research of Jakubík and Reininger (2013) who also add other important determinants that may help to explain the variation in the NPL ratio in CESEE countries; the growth of past credit and changes in the exchange rate combined with the share of foreign currency loans in total loans. This study confirms and quantifies the risk of excessive credit and foreign currency loan growth. Fainstein and Novikov (2011) focus on the real estate market stating that the growth rate of the latter is negatively correlated with the performance of NPLs; the research indicates that the most significant reason for the growth of non-performing loans was caused by the increasing influence of the rapid growth of the loan portfolio, which proves the hypothesis that banks underestimated changes in macroeconomic variables during the periods analysed.

1.4.3. Macro and Microeconomic Research

There is a strand of studies that have combined the macro-environment and the micro-environment to analyse how economic conditions may harm or favour the industry/company in recovering problematic debts. Leading this 'movement' is the study undertaken by Altman et al. (2019), an expansion of the work of Messai and Jouini (2013), who compare macroeconomic variables such as the rate of change of GDP, unemployment rate, real interest rate and microeconomic variables, measuring their overall impact, such as loan loss reserve and ROA. By combining these different variables, the researchers were able to obtain models with high R^2 performance. De Bock and Demyanets (2012), in addition to the variables already listed, focus on the effect of the exchange rate, showing how this leads to capital outflows that worsen

recovery rates. Longstaff and Schwartz (1995), on the other hand, focused on the relationship between interest rates and recovery rates (especially in view of credit spreads), showing how the latter is negatively related.

Erjavec et al (2012) recognise that, using macro and micro variables specific to the banking sector, there is a strong negative influence between restrictive monetary policies and recovery rates. Bakshi et al (2001) show that, on average, a 4% deterioration in the risk index is associated with a 1% decline in recovery rates; furthermore, their model can be used to infer the market expectation of recovery rates implied by bond prices. Jarrow et all (1997) focus on the initially assigned credit rating, whether it was met or not, showing that on average it was assigned correctly. Bischof et al. (2022) found that there are substantial differences between countries in the duration and efficiency of NPL resolution after the crisis. According to their study, the outcome of NPL resolution is associated with the duration and costs of insolvency and enforcement during the economic recovery phase. The results suggest that the structure of a country's legal regime can ensure rapid resolution of NPLs during the recovery phase, while the accumulation of NPLs during a crisis is mainly attributable to economic conditions.

1.4.4. Other Research

This subsection contains all analysed works that do not fall into the three previous classifications. In the aforementioned, the main variables range from the timing of the intervention to the effect of prepared defaults. Jankowitsch et al. (2014) analyse the volume of transactions in the vicinity of default events, finding that the recovery rate is negatively related to the illiquidity of the security itself (damaged mainly by transaction costs). Gupton and Stein (2002,2005) structured a model whose result corresponds to two estimates of LGD (Loss Given Default), immediately after the default and one year later, by means of a variable reproducing this 'holding period', obtaining very good results. Guo et al. (2009) report that timing is important in the recognition of NPLs. The earlier they are recognised, the greater the chances of recovery. The importance of time, more in terms of the timing of credit recovery, is also highlighted by the study of Orlando and Pelosi (2020) who show how it heavily influences the performance of NPLs, with higher recovery times leading to lower returns. This work is particularly interesting because it dealt with the Italian context, in fact the long times required by Italian

bureaucratic procedures seem to drastically lower the chances of recovery from defaulting counterparties. Despite the similarities with this thesis, the work developed by Orlando and Pelosi did not delve into the causes of this lack of speed on the part of the bureaucratic system and did not analyse the performance of the legal system. Khieu et al. (2012) focus on the effect of 'prepared' versus traditional bankruptcies, pointing out that the former in the United States lead to higher recovery rates, due in part to the less costly procedures.

To conclude the analysis of the academic literature, with the exception of a couple of economic articles, which, however, do not thoroughly analyse the topic discussed in this thesis, a relative lack of interest in the court effect and its impact on NPL performance is evident. It is therefore necessary to investigate this context further, especially through the analysis of professional reports, integrating all the points of view just analysed.

1.5. The impact of duration on NPL performance

Of particular importance are the 'professional' reports published mainly by the Comitato T.S.E.I. (2020) and Cerved Group (2022), which is why the focus will be on the latter and their implications. In particular, these studies show how the Italian system is severely damaged by the slowness and backlog in the country's courts. These structural difficulties are also reflected in the management of Non-Performing Loans, leading to a reduction in recovery rates and the value of NPLs. Cerved's data on the duration of bankruptcy proceedings show that in 2021 creditors had to wait an average of 7 years and 3 months for a bankruptcy to close, a figure slightly down from 2020 (7.4 years), which brings the time to 2019 levels; real estate executions, on the other hand, last on average 5.3 years, with a range from 2 to almost 12 years of waiting time. Analysing the data at an aggregate level, it is possible to note significant differences between geographical areas (Northern, Central and Southern Italy). In fact, there is a very wide gap ranging from average times, as far as bankruptcy proceedings are concerned, of about 3 years in the most efficient courts to over 18 years in the slowest ones. This obviously also has effects in the incidence of pending procedures on the total of those opened.

According to Cerved's estimates, assuming the point of view of a specialised investor, a 100 euro portfolio of claims in bankrupt companies is worth on average €14.3 but could

increase to €30.1 in the most efficient courts and depreciate to €3.2 in the slowest ones. While the average value of a €100 portfolio of receivables associated with real estate executions is €29.8 with potential increases of up to €53.5 in Trieste, the fastest court, and potential devaluation of up to €13.1 in Fermo, the slowest one. Overall, the estimated value of non-performing loans is around €7 billion if evaluated with the perspective of an investor specialised in NPLs. The value would be €10 billion if 4%, which is the rate typically used by banks, were to be used as the discount rate, against an average rate of 15% required by specialised distressed investors. This 7 billion corresponds to a 21.4% of the gross value which correspond almost to €33 billion at the end of 2021.

1.5.1. Preliminary research

According to Cerved's calculations, as mentioned before, this value could grow up to €12.7 billion if all courts would adapt and behave like the court of Ferrara, the most efficient considering both bankruptcy and civil executions proceedings. Analysing and detailing Cerved's study, the durations of all failures closed in 2021 have a very long distribution queue, as it is possible to see in the Figure 4. Failures with a duration of more than 15 years are 1,551 (10.7% of the total number of closed procedures), a figure that results in a decrease compared to the distribution of 2020 (1,448; 11.4% of the total) and 2019 (1,867; 12.5% of the total). Despite the decrease, this figure is of truly remarkable dimensions, and is a component that cannot and must not be overlooked in the analysis, as will be seen in the following chapters.

Figure 4: Distribution of bankruptcies closed in 2021 by duration.
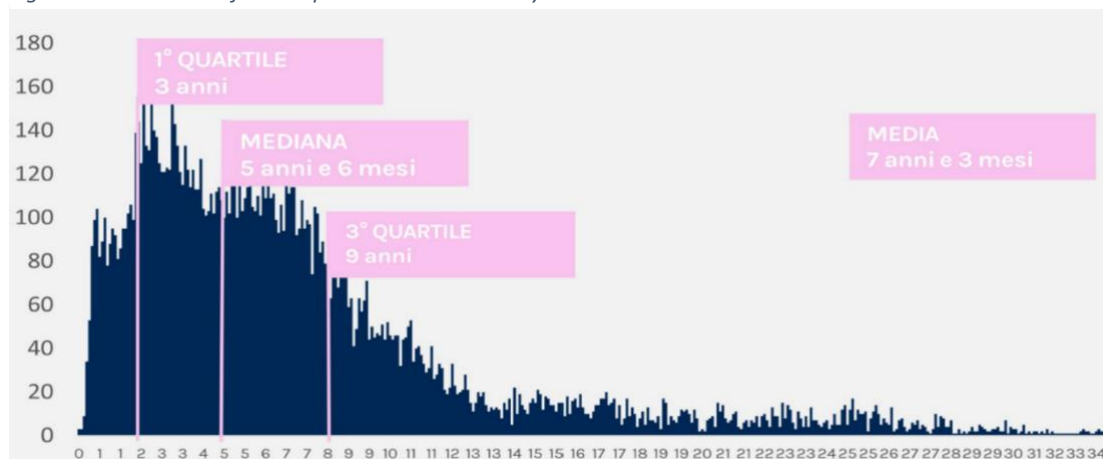
Source: Cerved Group

The size of the stock and the time dimension of pending proceedings (i.e. how long they have been open) are factors that contribute to determining the duration of closed proceedings. Of the 236,000 bankruptcies declared from 2001 to 2021, about 77,000 are still open, or 32.6% of the total. The share of proceedings still pending out of the total number of proceedings opened per year takes values above 50% until 2017 (as can be seen in Figure 5), and then decreases with increasing seniority of proceedings until 2011. For bankruptcies opened in the years prior to that date, the data do not show a significant decrease in the share of insolvencies, resulting in a fixed share of cases that are difficult to resolve. Lowering these shares of difficult-to-solve cases despite the time and resource commitment required must be a goal of all courts if the justice system is to be turned around.

Figure 5: Status of bankruptcy proceedings in absolute values and percentage share of pending cases by date of opening of proceedings
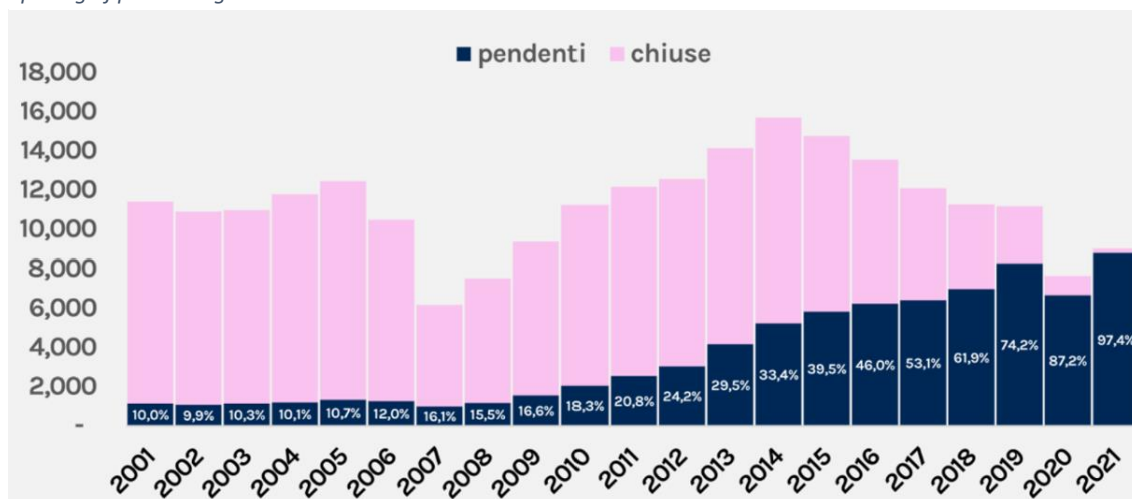
Source: Cerved Group

Linked to the above, data on the development of pending bankruptcies show a significant improvement in the courts' management of backlogs (and courts that have done so should be rewarded). The trend that emerges from the above data is an increase in the duration of closures of proceedings that have been open for less time, which is a sign of increased attention by the courts to the need to clear backlogs. As can be seen from Figure 6, there has been an increasing focus on backlogs over the past six years. Indeed, the share of bankruptcies closed within two years of opening has decreased from a peak of 21.6% in 2015 to 13.3% in 2021).
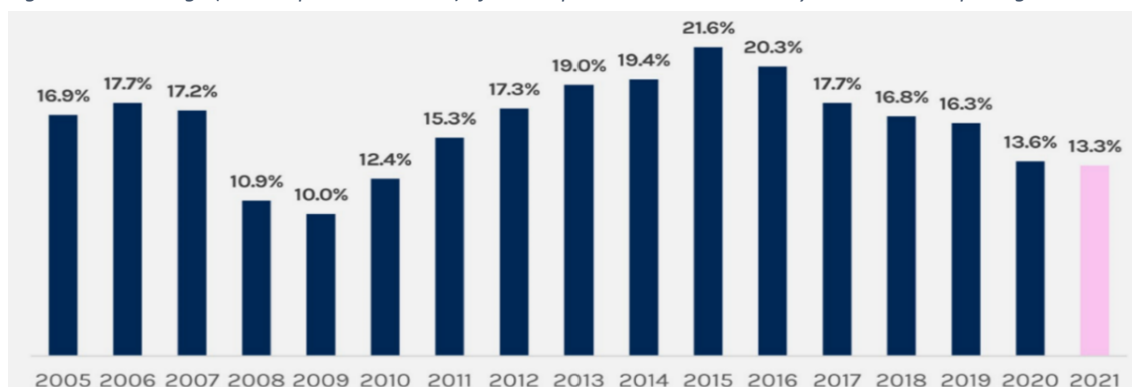
Data on the average duration of bankruptcy proceedings show considerable territorial variability, with northern regions performing better than central and southern Italy. Northern Italy has significantly lower settlement times, with the North-East recording an average of 6.2 years and the North-West 5.7 years. In 2021, the most virtuous regions were Valle d'Aosta (5.3 years), Lombardy (5.6) and Friuli Venezia-Giulia (5.8), while the regions with the longest extinction times were Puglia (10.9 years), Sicily (10.9) and Calabria (10.4). There is also a greater polarisation in the distribution of closed bankruptcies in Southern Italy, with longer average durations accompanied by higher rates of cases disposed of within two years of opening. A problem with this argument is that the researcher should consider how volume, size and number impact on the territory and duration alone cannot achieve this. Also, logically, focusing on recently opened proceedings should result in shorter durations for a specific court, but as just mentioned this is not true. it is necessary to investigate the issue further and in this way the validity of duration alone as a reference variable to define the Net Present Value of NPLs is called into question.

Contrary to the findings for bankruptcies, data from the research conducted by the Comitato T.S.E.I. showed an increase in the time needed to close real estate executions in 2020. In 2020, while the number of closed cases decreased, the overall average duration of the entire enforcement procedure increased by approximately 7 months, from 4.6 years in 2019 to 5.3 years in 2020. The increase in time in this year is mainly attributable to and justified by the COVID-19 pandemic that caused the closure of all courts and other measures taken by the government to protect people (such as the suspension of moratoria). Of the additional 7 months, three are estimated to be the

result of the legal shutdown alone (coinciding with the start of the pandemic). Here again, the time required to close the entire enforcement procedure differs significantly in the different areas of the Peninsula. Among the most virtuous courts in 2020 are Trieste, with an average duration of 2 years, Ferrara (2.2 years) and Gorizia (2.2 years). In the same year, the courts taking the longest time to close a real estate enforcement case are Fermo (11.7 years), Locri (11 years) and Palmi (8.9 years). The slowest courts to close a bankruptcy are in most cases also the slowest to close an execution, vice versa for the best ones as shown in Figure 7.

Figure 7: Relationship between average duration of bankruptcies and average duration of real estate executions for each court
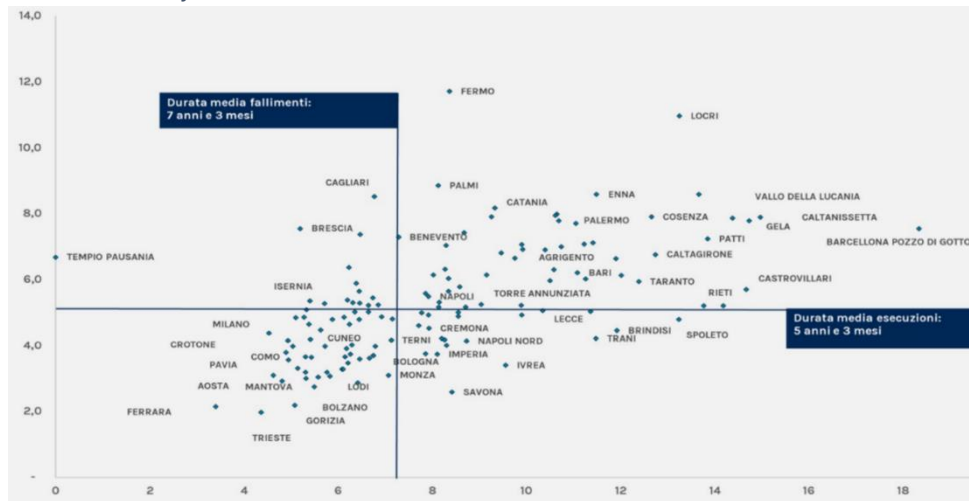
Source: Comitato T.S.E.I.

1.5.2. NPL valuation model and impact of duration

Data on the duration of bankruptcies and civil enforcement procedures highlight two needs: to align the performance of the different courts and converge towards the best practices of the most virtuous one. The impact of this last item is particularly noticeable in the valuation model adopted and partially disclosed in the report by Cerved Group. In the document, in fact, the valuation is based on Formula 1:

$$NPV_{NPL} = \sum_{t=0}^{\infty} \frac{q * RR * (1 - q)^t}{(1 + i)^t} \quad (1)$$

The net present value of a non-performing portfolio depends on the present value of the cash flow from the same non-performing portfolio. The latter will produce a very different cash flow stream depending on the different efficiency of the courts managing the procedures. For this reason, the drivers of the previous formula are:

- q the share of non-performing paid in relation to the stock, which depends on the timing of the extinction of the non-performing (if they are paid off on average in five years, q is equal to 20%);
- RR or the recovery rate net of operating costs for banks/specialised investors;
- t is the year in which the cash flow stream is recovered;
- i the internal rate of return or IRR (which for specialised investors is assumed at 15% and for banks at 4%).

According to this formula, the value of a portfolio of non-performing loans increases as the recovery rate and q (the share of non-performing loans discharged each year) increase; conversely, it decreases as the internal rate of return increases, because the present value of the flows that will be collected in the future decreases and as the time needed to recover the loan increases. Considering an average recovery rate of 35.5% of the claims of bankrupt companies and an internal rate of return of 15% (as mentioned above), considering the average time of the Italian courts (7 years and 3 months), the value of this portfolio is €14.3. If these receivables were instead stranded in the faster courts, its value would grow by 38.5% to €19.8 (considering the 3 years and 4 months in Ferrara); conversely, if the receivables were handled by the less efficient courts, the discounted value of the portfolio could fall to €8 (assuming an average duration of 18 years and 3 months in the court of Barcellona Pozzo di Gotto, as shown in Figure 8).

Figure 8: Value of a €100 portfolio of non-performing loans in bankrupt companies (with fixed RRs and i=15%)
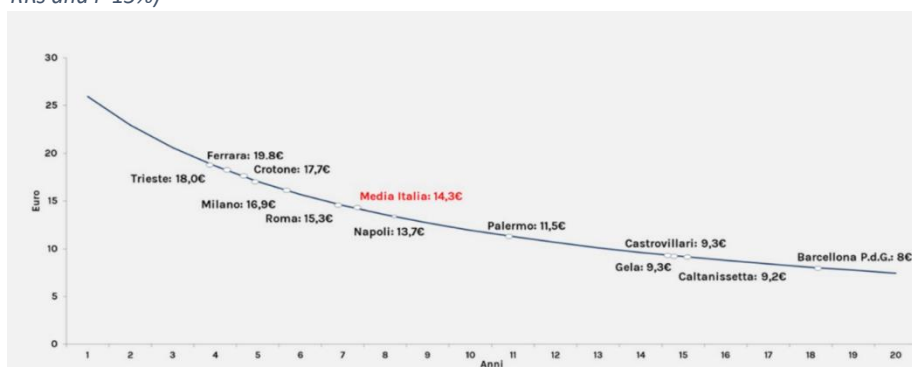
Source: Cerved Group

It is plausible that recovery rates are not uniform, but inversely correlated with the duration of bankruptcy proceedings. The share of recovered debts in these cases in bankrupt companies is generally higher if the crisis is more recent. If one adopts

recovery rates that consider the average duration of proceedings (the relationship between recovery rates and average duration of proceedings was estimated on internal Cerved Credit Management data and not made available), the variability of results increases further (as shown in Figure 9). In this case, in the best-performing courts the net present value of €100 of bad debt would be around €30; in the slowest courts it would be as low as €3.2. This relationship between the recovery rate and the duration of proceedings, although not explicitly stated by Cerved, is at the heart of this thesis. The present work, in fact, aims to improve the implementation of this relationship because, as mentioned above, duration pure and simple cannot be used as a measure of efficiency for courts. It is necessary to offer as complete and varied a view as possible, making the assessment of these securities as truthful as possible.

Figure 9: Value of a €100 portfolio of non-performing loans in bankrupt companies (with RRs correlated with the duration and i=15%)
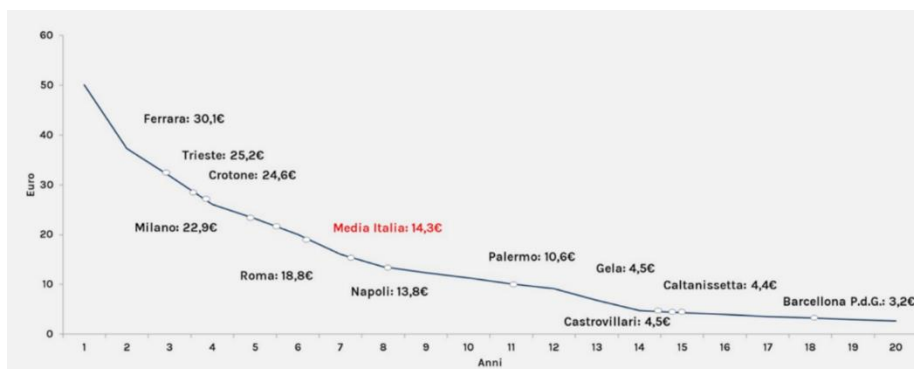
Source: Cerved Group

The same estimation exercise can be repeated for real estate executions, keeping the internal rate of return at 15% and assuming a specific recovery rate (also obtained through Cerved Credit Management's internal estimates, assuming specific assumptions regarding the average recovery rates of the various liquidation procedures and the distribution per procedure of the banks' Non-Performing Loans amounts). Based on the average duration of 5.3 years estimated by T.S.E.I. for 2020, a €100 portfolio of non-performing loans in real estate foreclosure positions would be valued at €29.4. In the case of constant recovery rates, the range of realisation values varies greatly from region to region, going from €40.6 in Trieste, the most efficient court with an average duration of 2 years, to €19.1 in Fermo, the last court with an average duration of 11 years and 7 months. Assuming, on the other hand, recovery rates correlated (as shown in Figure 10)

with the duration of the procedure, the gap grows further, with a final realisation value, out of a €100 starting portfolio value, of €53.5 for Trieste and a value of about €13 for Fermo.

Figure 10: Value of a €100 portfolio of non-performing loans in real estate executions (with RRs correlated with the duration and i=15%)
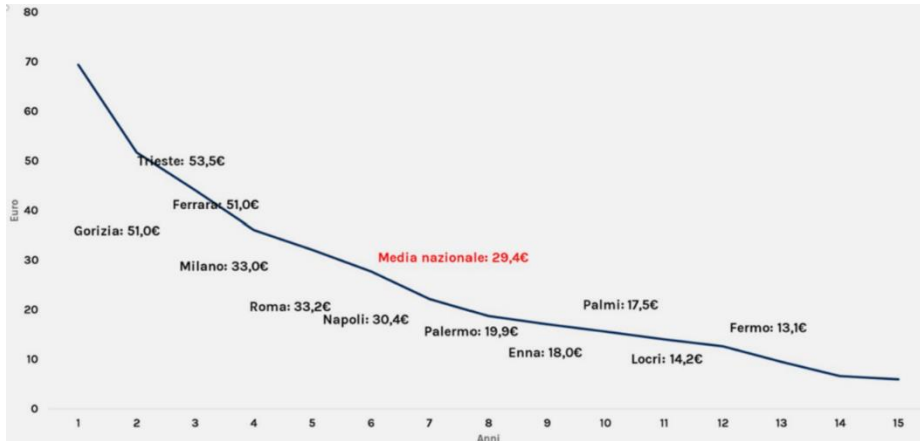
Source: Cerved Group

Under current conditions, considering the average duration of all liquidation procedures, bankruptcies, composition with creditors, real estate executions and out-of-court settlements (equal to 6 years), the approximately 33 billion of gross non-performing loans on the banks' balance sheets would be worth EUR 7.1 billion to an investor specialised in NPLs. In the event of a convergence of durations towards the most efficient court (Ferrara: 2 years and 7 months), the net present value of the stock of non-performing loans on the market would increase by 36.6% (+2.6 billion from the current level) to EUR 9.7 billion. Assuming a correlation between duration and recovery rates, the convergence towards the most efficient judicial timeframe would bring the present value of non-performing loans to €12.7 billion.

While the recovery rates of individual courts are strongly correlated with the processing times of proceedings, they are also the result of other non-uniform variables related to the specific way in which the recovery process is managed. Using information from Cerved Credit Management, the empirical recovery rates found in the different courts were correlated with the estimated curve based on durations. In general, the data show a fairly clear inverse relationship, as is clearly visible in Figure 11, between the closure times and the observed recovery rates. From the empirical data, the courts with the highest recovery rates, well above estimates, are Monza (58.6%), Bologna (57.3%) and

Milan (46.7%). On the other hand, the actual recovery rates recorded in courts such as Matera (31.5%), Crotone (18.4%) and Locri (13.4%) are significantly lower than estimated.

Figure 11: Comparison of expected and current values of a portfolio of impaired loans by court. Fixed RR assumptions and i=15%
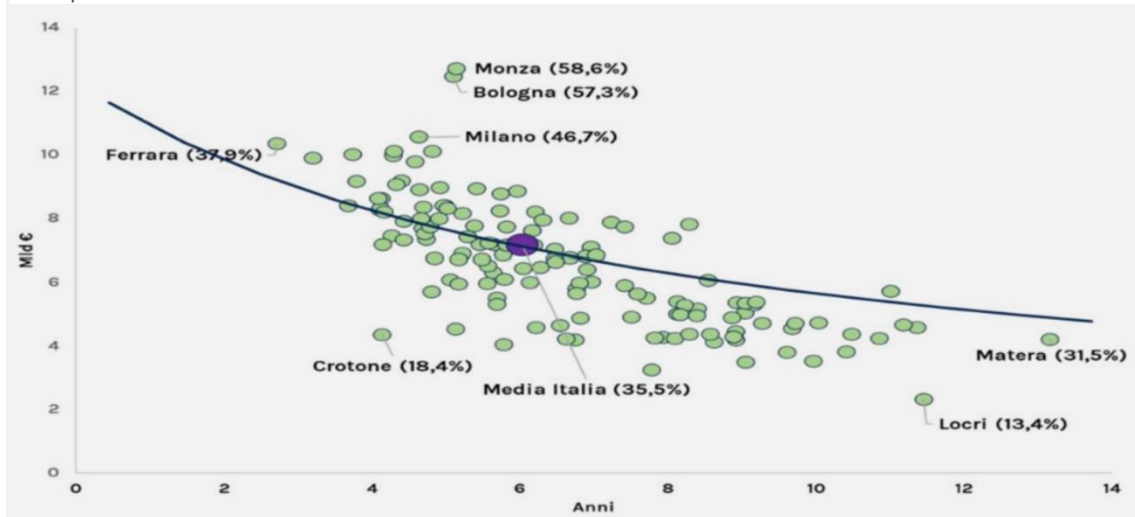
Source: Cerved Group

As Figure 11 shows, the evaluation and performance of the various courts deviates considerably from the proposed expectations. Hence, there is a need to improve these evaluations, which are the result of inaccuracies, with reference to duration. As will be seen later, particularly in Chapter III, durability reflects what a court has done with reference to its past choices and performance. In addition, as found in the section on the academic literature, the specific subject of court performance is not dealt with intensively (either in terms of in-depth study of the subject, producing a mere statistical analysis of the subject's performance). This paradoxically leaves ample room for manoeuvre for possible deepening and modifications; a feature that this thesis fully intends to undertake. For this reason, this thesis will attempt to broaden the horizon of this research developed by Cerved, expanding, and modifying the possible valuations of non-performing loans in order to offer as complete and realistic an assessment as possible. Unfortunately, it will not be possible to recalculate the NPV of NPLs with the new integration because the specific relationship between recovery rate and duration in their model has not been made public by the company.

CHAPTER II: Court Effect and Characteristics of Tribunals

2.1 Introduction

The slow pace of civil justice is one of the main problems facing Italy, with negative repercussions on competitiveness, investment, and the cost of debt. Opportunity costs arise when investors decide in which country/region to invest. They choose in which of two identical NPEs (it is almost impossible to have two identical securities of this type, but theoretically it is possible) in two different countries or in two different Italian regions to invest; basing their choices on obtaining a higher return. This creates de facto arbitrage contexts that specialised investors with the appropriate means can seize. If from the point of view of a portfolio/fund manager, this represents opportunities to be seized; for the legal system, it represents a problem of considerable specific weight. Despite the changes introduced, the data on the duration of enforcement proceedings, illustrated in Chapter I, highlight two needs: to standardise the performance of different courts and to converge towards the best practices of the most virtuous courts. As already extensively described, the duration of bankruptcy proceedings and real estate executions has important effects on the value of non-performing loans in the balance sheets, as it affects the time and rate of recovery of these loans. According to the World Bank (September 2021), Italy ranks 122nd out of 190 in the international ranking of the Enforcing Contracts indicator, which measures the time and cost of dispute resolution and the quality of judicial proceedings.

The difficulties relate in particular to the excessive duration of enforcement procedures and the slow disposal of pending cases. The pandemic has laid bare all the criticalities of the current administrative justice management model from the technological, organisational and cultural points of view. The freezing of new insolvency proceedings, due to emergency legislation and the extraordinary measures introduced by the government to contain the crisis (such as moratoria and other financial support policies) have further slowed down the time it takes to conclude trials. At the same time, however, the health emergency has stimulated the introduction of elements of digitisation and simplification of the bureaucratic-procedural process (favoured above all by the holding of hearings remotely and the restarting of proceedings by telematic

means), which in some cases have shown to mitigate the structural limits linked to a still predominantly manual management of processes and to a general opacity of information. According to the study of the Comitato T.S.E.I. (2020), 30,815 auctions with a total estimated value of €3.669 billion were postponed in the lockout period alone, resulting in a technical stoppage of approximately 270 days, to which the usually measured management time must be added. Above all, an accumulation of backlogs has been created whose disposal times are difficult to predict. One must also consider the impact of the 'Cura Italia' decree, which has ordered the suspension of enforcement proceedings in respect of the debtor's main residence and that of his family members. In 2020, both registrations and definitions fell sharply (-21% and -23% respectively). The decrease was more pronounced for civil enforcements (Figure 12), although the drop in registrations was more pronounced than that of definitions, with the latter outnumbering the former, with the result that between 2020 and 2019, pending court proceedings decreased, albeit marginally (1%).

On the other hand, the share of over three-year pending cases increased, reversing the trend that had characterised the variable over the last decade. However, data for 2021 show a recovery in performance. The number of over-three-year pendants decreased by 6 per cent compared to 2020, which was also lower than the figure for 2019. The total number of pending cases fell by 10 per cent, thanks to a marked recovery in the number of proceedings settled and higher than the number of registered cases (18 per cent and 8 per cent, respectively). Great impetus was given by the reopening and technological innovations adopted in the midst of the Covid-19 pandemic, which favoured the development and continuation of trials.

Figure 12: Change in defined and registered proceedings in 2019 and 2020
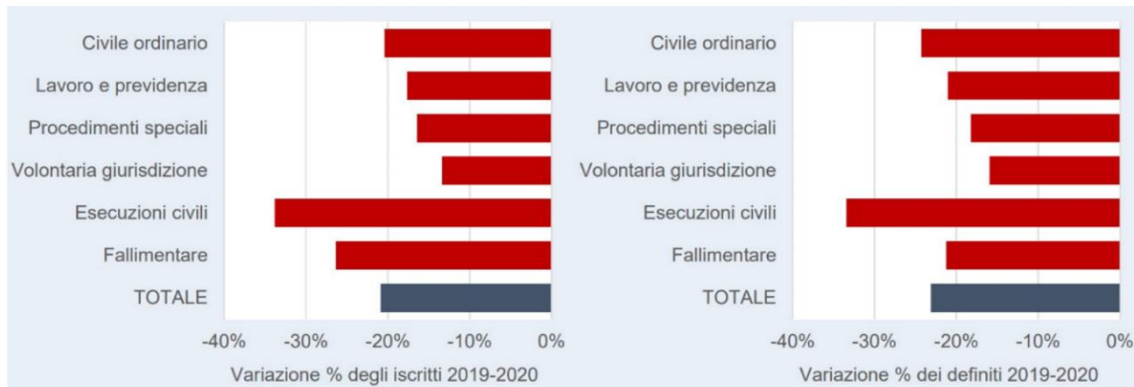
Source: Banca d'Italia

2.2. NPEs and the Italian Juridical system

2.2.1.Regulation

Improvements have been facilitated by the reforms undertaken by the legislator from 2005-2006, dictated by the desire to overcome the purely liquidationist approach of the 1942 Bankruptcy Law and to endow the legal system with tools aimed at favouring the restructuring of companies in crisis and, in particular, by Decree-Law No 83/2015, which sought to remedy the excessive length of the recovery period. The latter decree introduced the possibility of using electronic auctions and this immediately brought positive effects on enforcement procedures, with important benefits on the system's ability to clear the huge backlog.

A further boost to efficiency may come from the application of the new Business Crisis Code, recently published in the Official Gazette, which will radically reform bankruptcy regulations, aiming to stimulate the early emergence of the state of crisis with the safeguarding of business continuity and the reduction of 'judicial liquidation' procedures. It will be necessary, however, to wait at least five years to verify whether, and to what extent, the inspiring principles have achieved their objectives of promoting a more efficient and rapid exit from the market of companies in crisis. Another key point of the 2015 reform that has undoubtedly contributed to reducing the duration of bankruptcies concerns the introduction of intra-procedural time limits in the liquidation activity carried out by the administrator. This concerns, in particular, the amendment of Article 104-ter, first paragraph (known as the 'liquidation programme'), which currently reads: 'Within 60 days from the drawing up of the inventory and in any case no later than 180 days from the judgment declaring bankruptcy, the liquidator shall draw up a liquidation programme to be submitted to the creditors' committee for approval'. The 60-day deadline, already introduced with the 2006 reform but reduced with the latter, is now flanked, in the text of the bankruptcy law still in force, by the deadline of 180 days from the bankruptcy decree, within which the liquidator must prepare the liquidation plan. This is a rule that has been viewed with absolute favour by practitioners to the extent that it temporalizes the curator's activities.

The actual liquidation activity also has, in the bankruptcy law, a maximum duration, which must be indicated in the liquidation programme unless the liquidator deems a longer period necessary for certain assets, expressly stating the reasons (Article 104-ter,

paragraph 3). In the event of non-compliance with the 2015 reform in the Crisis Code, Article 213, paragraph 5, provides that "the programme shall indicate the period within which the liquidation of the asset will commence and the period of its presumed completion. Within 12 months from the opening of the procedure the first trial of the sale of the assets must take place and the debt collection activity must begin [...]. The time limit for the completion of the liquidation may not exceed five years from the filing date of the opening of the procedure". In other words, on the one hand a time limit within which the liquidation activity must be commenced has been introduced, and this is a positive fact, but, on the other hand, the period within which the liquidator must complete the liquidation activity has been extended: no longer two years but five. In this way, the legislator has sought to prevent the duration of the proceedings in which a bankrupt is a party from having a cascading effect on the duration of the bankruptcy proceedings, with a chain proliferation of appeals under the Pinto Law (which can be resorted to when the bankruptcy proceedings last more than five years or seven years for particularly complex proceedings).

On the other hand, the main reforms that have affected the civil enforcement sector in the three-year period 2014-2016 have as their common denominator the objective of speeding up the enforcement procedures in their individual phases and of carrying out the compulsory sale of real estate, in order to obtain the best realisation of the attached assets in the shortest possible time. Below are the main regulatory sources: Decree-Law No. 132 of 12 September 2014, converted by Law No. 162 of 10 November 2014 Decree-Law No. 83 of 27 June 2015, converted by Law No. 132 of 6 August 2015 Decree-Law No. 59 of 3 May 2016, converted by Law No. 119 of 30 June 2016. The legislator has, on the one hand, intervened by amending individual articles of the Civil Code and Civil Procedure Code, and on the other hand, wanted to reform the entire stage of the compulsory sale by introducing the telematic mode and establishing the public sales portal (operational since 19 February 2018). Public area of the Ministry of Justice website, with the obvious aim of making the assets more attractive and increasing the audience of bidders and consequently the value of the possible realisation of movable and immovable assets. Moreover, in the same perspective, the legislator has reformed some rules, introducing new peremptory terms for the proceeding creditor, in order to accelerate the initial phase of the initiation of executive actions, halving the terms

provided for by the rule on precedence (see for example the new articles 497 and 567 of the Code of Civil Procedure) which reduce by half the peremptory terms for filing the sale petition (now 45 days) and for filing the notarial certification (now 60 days) or the new wording of art. 569 of the Code of Civil Procedure, which reduces from 30 to 15 days the time limit for the issuance of the order for the parties' appearance hearing by the enforcement judge). In addition, the sale operations are now delegated to a professional who sets the sale without an auction and in the event of multiple bids there is a tender procedure.

Still with a view to the sale of real estate, the most important regulatory innovation introduced to make judicial sales more attractive by speeding up the time taken to complete them is the possibility of submitting bids reduced by ¼ of the base price set by the judge (minimum bid) This new modality has had the immediate effect of attracting a greater number of bidders by enlivening the judicial sales market compared to the free market. Finally, again with a view to acceleration, to enable the creditor to collect the proceeds more quickly, the legislature also provided for the possibility for the creditor to anticipate the collection of the proceeds by requesting a partial distribution during the proceedings when the object of the sale is represented by several lots.

2.2.2. The Structure of the System

In 2021, the number of bankruptcy proceedings closed was 14,545, a sharp increase (+14.9%) compared to 2020, which was affected by delays related to the health emergency. Despite the increase in the number of cases processed by the courts, analyses conducted by Cerved (October 2022) on data from the "Registro delle Imprese" show that the average closing time has fallen by about 1 month over the past year. As is well known, the high duration of judicial procedures for debt recovery can have important repercussions on the economic and financial system; it is no coincidence that the real estate enforcement sector in the last thirty years has been marked by profound changes aimed at making procedures increasingly efficient and competitive, also from a European perspective.

The data on civil justice in Italy, as already extensively discussed in Chapter I, reveal an evident delay in judicial activity and a significant backlog to be disposed of. In particular, the analysis conducted on the activity of the courts showed that there are more than

380,000 civil executions pending (considering an average time frame of 7 years). For years, justice reform has been the thorn in Italy's side, slowing down its economic growth; according to estimates by Brugnara and Orlando (2022), the slowness of civil trials produces a loss of approximately 3% of GDP in 2021. Also contributing to slowing down the machinery of justice, making it less efficient and effective, is the involvement of many parties in the various processes and the absence of structured and incentivised service levels, resulting in a directly proportional increase in the duration of proceedings and their costs. An emblematic example is the enforcement process, in which, in addition to the creditors, the debtor and the Judge, several procedural subjects are involved, such as the Auxiliaries (CTU, Custodian, Delegated Professional) and the GOT (Honorary Judges of the Court) with respect to which there is neither a control system nor a reward system to incentivise virtuous practices. But how is the Italian system structured? It is mainly composed of two groups which are the SICID and the SIECIC Registers and their main subgroups are shown in Table 1. The latter is known to be the register of movable and real estate executions and insolvency, while the former manages the registers of civil litigation, voluntary *jurisdiction,* and labour.

Table 1: The internal structure of the Registro SICID and SIECIC in the Italian legal system

SICID Register	SIECIC Register

• Civil Litigation
  ○ Contracts
    ▪ Bank Contracts
    ▪ Miscellaneous contracts and obligations
  ○ Separations and Divorces
    ▪ Consensual Separation
    ▪ Juridical Separation
    ▪ Etc.
• Work and Welfare
  ○ Care and Welfare
    ▪ Compulsory Care
    ▪ Social Security
    ▪ Etc.
  ○ Private Work
    ▪ Private Employment
	• Civil Executions
	  ○ Real Estate Executions
	    ▪ Real Estate Executions
	    ▪ Real Estate Executions post-law n°80 sales
	  ○ Movable Asset Executions
	    ▪ Movable Asset Executions with sale
	    ▪ Movable Asset Executions post-law n°80 sales
	    ▪ Movable Asset Executions without sale

▪ Para subordinate
▪ Individual/collective
  dismissal
▪ Special forms of procedure
  ○ Injunction Proceedings
  ○ Special Forms of Procedure for Interim
    Measures
    ▪ Protective Measures
    ▪ Possession Proceedings
    ▪ Etc.
● Voluntary Jurisdiction
  ○ Family
  ○ Succession
  ○ Etc.
	● Bankruptcy and Other Insolvency
	  Proceedings
	  ○ Bankruptcy
	  ○ Application for Bankruptcy
	  ○ Other Insolvency
	    Proceedings
	    ▪ Restructuring
	      Agreements
	    ▪ Compulsory
	      Administrative
	      Winding Up
	    ▪ Etc.

Source: Italian Ministry of Justice

In this thesis, only the SIECIC Register will be analysed, but some statistics and performance, in particular by referring to the Bank of Italy report (October 2022), of the SICID Register will also be provided. For each item, shown in Table 1, it is possible to further classify the proceedings and data into subcategories (or stages). It is possible to complete the various stages of the proceedings in three moments that mark specific events and which it will be called macro-phases:

1. Start: from the official registration to the first evidence of an auction or passage in the archive;

2. Sale: from the publication of the first auction to the transfer decree;

3. After-sales, divided into:

   a. Distribution: from the decree of transfer to the distribution of the proceeds;

   b. Storage: from the distribution of the proceeds to the passage in the archive.

Each macro-phase is identified by events that establish the transition to a new macro-phase. The term 'duration of a procedure' indicates the time between the first and last phase in the 'history lines'. In concrete terms, it is the difference between the date of the last event in the register for the file in question and the date of the first event.

Applying this calculation to the closed proceedings, the actual duration of each file is obtained, thus confirming the standard of productivity of the courts with regard to the finalisation of each individual phase and overall. At the same time, the trend announced in Chapter I concerning the average duration is confirmed, it is slightly decreasing although increasing considering the penultimate year.

From Figure 13 showing the durations of the individual macro-phases, a similar trend can be observed in all three years considered (2017, 2018 and 2019) in the report published by the T.S.E.I. Committee (2020). After the first start-up phase, the duration of the 'sale' increases, with a subsequent decrease in the timing of the subsequent phases. Specifically, in 2019, 36.25% of the time is determined by the start-up phase, 41.7% by the duration of the sale (a phase that does not depend entirely on the judge but is also linked to other external factors), 9.78% by the duration of the distribution and 12.05% by the storage time.

Figure 13: Change in years of the stages from 2017 to 2019
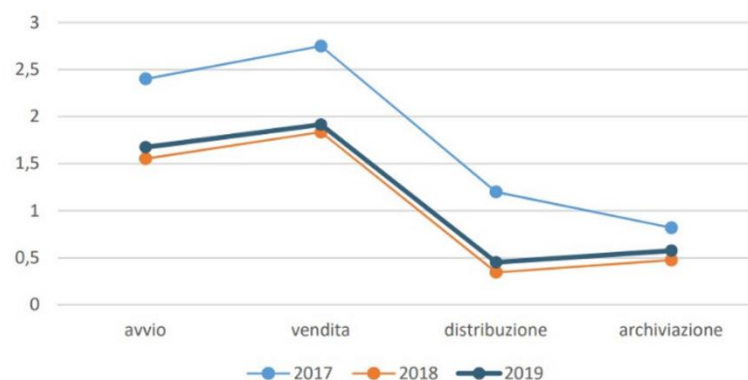
Source: Comitato T.S.E.I.

Effective duration measures the time between the date of registration of a case and the date of judgment. Proceedings initiated in a judicial office, of whatever nature, until they end with the issuance of a decision (judgment, decree, other) are referred to as 'pending'. Pending proceedings thus represent the extent of the workload of a judge, a court or the entire judicial system. A distinction can be made between physiologically pending proceedings, which include those trials or cases that have been pending for a short time and have a really good chance of being concluded within a reasonable time, and pathological proceedings (on which the focus will be placed in this thesis), i.e. those that have not been resolved within the time limits set by law at the reference date and for which the interested parties could claim compensation from the state for

unreasonable duration. The latter are defined as 'Pinto risk', i.e. those pending cases that have been pending for more than three years. The courts that show signs of criticality in the management of backlogs are those that have a share of Pinto-risk proceedings exceeding 20%.

2.2.3. Literature on the efficiency of the juridical system

As already stated in Chapter I, since there is no research linking the efficiency of the legal system with the performance of NPEs, it was decided to analyse work concerning the first item. Starting from the analysis of the work of Jappelli et al (2005), they reported that judicial inefficiency has high economic costs in credit markets. Speed and efficiency are the key principles that should guide debt recovery. Slow recovery, whether actual or even perceived, reduces the value of bad and doubtful debts with significant impacts on banks' balance sheets and the economy of the entire country. The researchers' work analyses the effect of judicial efficiency on the availability and cost of credit, using a model of opportunistic debtors and inefficient courts. The model illustrates that improvements in judicial efficiency reduce credit constraints and increase the volume of loans. Interest rates may increase or decrease depending on the competitive structure of banks. For example, increased judicial efficiency may open the credit market to low-level borrowers previously judged to be uncreditworthy, thus increasing the average default rate. Controlling for unobserved heterogeneity at the provincial level, it was found that where the backlog of pending cases is relatively large, credit is less available, the average interest rate is lower and the default rate is higher.

Historically, countries have developed different legal systems, characterised by different degrees of protection of creditors' rights (internationally, differences in the degree of protection of creditors' rights are positively correlated with the size of credit markets). Even within one and the same country, the efficiency of courts can vary widely depending on the allocation of resources and the geographical distribution of 'demand for enforcement'. By affecting the borrower's future willingness to pay, these characteristics help determine the ex-ante willingness of creditors to lend and the terms they will demand. Likewise, they determine the effectiveness of credit markets in intermediating and allocating savings among alternative users. Judicial efficiency is measured by the fraction of internal or external collateral that lenders can expect to

recover from an insolvent borrower at the end of a trial. Thus, as can be seen in their estimates, the results of Jappelli, Pagano and Bianco are not driven by cross-provincial differences, such as differences in social, cultural or economic institutions, that are potentially correlated with local credit market activity and judicial efficiency.

The key function of courts in credit relations is to force solvent borrowers to repay when they do not do so voluntarily. Therefore, poor judicial enforcement will increase the opportunistic behaviour of borrowers. Lenders will not be able to recover their loans easily and cheaply through the courts and therefore borrowers will have a strong incentive not to pay. Lenders will respond by reducing the availability of credit. Judicial reform can also increase the default rate through another channel. Banks are more protected by collateral in case of default and therefore have less incentive to screen (collateral and screening are substitutes from their point of view). Less screening will increase the riskiness of their loans and the average default rate. As can be seen, they addressed the issue of legal efficiency in a quantitative manner (as this thesis proposes to do), but completely ignored performance related to court employees or other similar metrics.

It was therefore decided, considering the fact that what can be immediately affected by changes is only personnel (even technology at this level takes time to adapt), to keep the focus on these variables. In support of the latter idea, there is the work published by Cugno et al. (2022) on behalf of Banca d'Italia. Their work starts from the observation that measuring the quality of the justice service is complex, both because of the plurality of dimensions that contribute to it and because it is difficult to quantify them. First, an effective justice system should be able to provide timely, accurate and impartial responses (while ensuring an adequate degree of stability and predictability, so as to ensure legal certainty). One of the major difficulties lies in identifying objective and measurable indicators for each dimension. As already mentioned in the previous chapter, the most frequently used variable to assess the functioning of judicial systems is the duration of proceedings, since the timeliness of decisions is a prerequisite for effective protection. The use is also explained, however, by the fact that this parameter is easier to measure than the other dimensions. Agreeing with Cerved, the work proposed by the Banca d'Italia shows that the duration of proceedings is highly differentiated between courts and is significantly higher in the South, regardless of the

indicator chosen; moreover, on average, in the courts of the South, the actual duration of ordinary civil proceedings is about 60% higher than in the Centre-North, and the number of cases pending per inhabitant and the proportion of cases pending for more than three years is also significantly higher.

Over the last decade, there has been a sharp decline in pending proceedings (-33% between 2010 and 2019 for total civil proceedings; -40% excluding enforcement and insolvency proceedings). This trend benefited from a positive net balance between finalised and registered proceedings, encouraged by the decline in registrations. During the same period, there was also a reduction in the duration of pending proceedings: the percentage of cases pending for more than three years out of the total fell from 28% to 26% (from 27% to 22% if enforcement and insolvency proceedings are excluded). The increase in effective duration observed until 2014 is due to the adoption of backlog clearance policies whereby priority was given to dealing with proceedings with the longest registration.

The reduction in duration in the second half of the decade, on the other hand, can be attributed to a redistribution of the defined in favour of younger procedures. Disposal times decreased by about a quarter over the decade. Both for the judiciary (togata and honorary) and for administrative staff, the allocation of resources in relation to the population is on average more favourable to the Mezzogiorno, but the differences are significantly reduced if account is taken of the different level and complexity of the demand for justice (number of registrations and composition by subject), which is higher in the Mezzogiorno. Over the decade, the availability of judiciary personnel has increased while the availability of administrative personnel has significantly decreased, in analogy to what has been observed in other areas of public administration. For administrative staff, the decline was constant until 2018, a year that saw a turnaround. The degree of digitalization of the courts (approximated with the use of electronic deposits by magistrates) is greater in the Centre North. However, it has grown significantly over the years across the country, receiving a major additional boost in 2020, as a result of the outbreak of the Covid-19 health crisis.

Surprisingly, there is no correlation between the duration of proceedings and the productivity of the courts (measured by the number of cases settled each year compared to the number of judges assigned to the civil division). In other words, while in some

cases the worst performance in terms of duration is attributable to a lack of resources in relation to the demand for justice, in other cases organisational and office efficiency factors prevail. As done for the work carried out by Cerved in Chapter I, it will now examine in more detail in the next paragraph the research carried out by the Banca d'Italia in order to specifically analyse the parameters used and use this work as a basis for the future development of this thesis.

2.3. The Efficiency of the Italian Juridical System

The Banca d'Italia report, given its late release compared to the start date of the work of this thesis (which began in March 2022), confirmed the goodness of the project because many of the variables worked on in the thesis project were in turn also analysed by the national body's document, and the remainder of this chapter will briefly describe both those in common and those not in common (leaving a more detailed and quantitative determination in Chapter III).

2.3.1. Disposition Time

Both papers work on both flow data (proceedings entered and settled) and stock variables such as pending cases per court for the entire time period under consideration (2010-2020 in the case of the Banca d'Italia while 2019-2021 for the thesis). Starting with duration, both actual duration and so-called disposition time are observed. The former measures the average time that it took to dispose of completed proceedings in the reference year, calculated as the difference between the date of registration and the date of publication of the defining judgment or order. Actual duration was discussed at length in Chapter I (Section 1.5.) and is referred to there for subsequent statistics and analysis.

Disposition time provides an estimate of the expected average time to disposition of cases by comparing the stock of pending cases at the end of the year with the flow of cases disposed of during the year, assuming that the capacity to dispose of cases remains constant and that no new cases are entered and its calculation is illustrated in Formula 2. The correlation between actual duration and disposal time is high (0.88), suggesting that the "ranking" of courts does not change much depending on the duration indicator chosen. The heterogeneity in the duration of proceedings described

has a strong territorial connotation: in the average court in southern Italy, the effective duration is 84 percent longer than in the Center-north: about 661 days versus 359.

$$Disposition\ time_t = 365 * \frac{Pending\ Process_t}{Defined\ Process_{t-1,t}} \qquad (2)$$

Analysing this in evolutionary terms, the comparison between 2010 and 2019 shows when considering disposition time, a significant and steady decrease of it over time. Over the decade, observable in Figure 14 on the right, the decline was 28 percent for total proceedings (and 25 percent for SICID litigation, but this is not relevant to this thesis). The actual duration initially increased at the beginning of the decade and then decreased (from 2015 onward) especially for the SICID segment (Figure 14 left side).

The trend in disposal time is related to that of pending proceedings, the numerator of the indicator. Thus, the observed reduction is a direct result of the decrease in the number of pending cases, which, as will be seen shortly, benefited from the sharp drop in demand. On the other hand, the trend in effective duration is related to the seniority (age of entry) of the proceedings defined in each year, the procedural rules, and the level of efficiency of the system, which affects the actual time taken to reach definition. Disposition time, partly due to the lack of comparable data on actual duration, is the indicator used in international comparisons by the European Commission on the Efficiency of Justice (CEPEJ). It is the indicator on which the goals of the NRP are defined.

Figure 14: Historical Trend for Duration and Disposition time
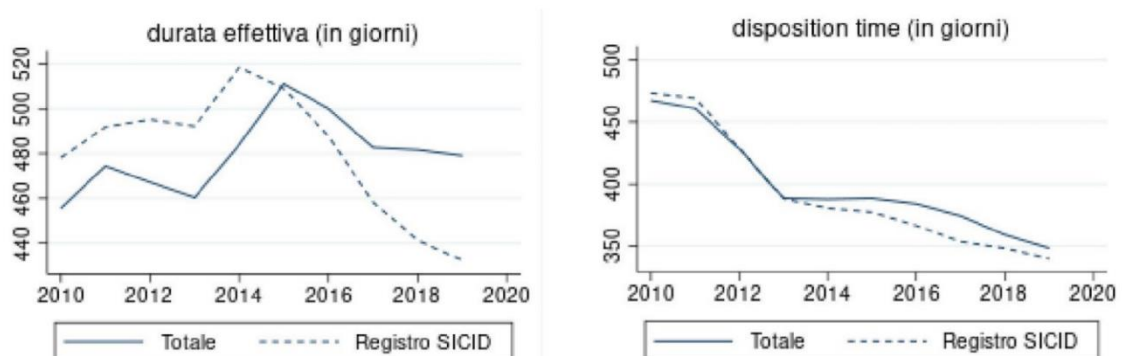
Source: Banca d'Italia

Instead, in the work done in this thesis it will be used revisitations of disposition time, in fact it will be utilized variables as in Formula 3 and 4 known as DEF/PEN and DIF/PEN

respectively:

$$\frac{DEF}{PEN_t} = \frac{Defined\ Process_{t-1,t}}{Pending\ Process_t} \tag{3}$$

$$\frac{DIF}{PEN_t} = \frac{(Defined_{t-1,t} - Registered_{t-1,t})}{Pending\ Process_t} \tag{4}$$

These two new variables were constructed to represent the "potential speed of re-entry," for DEF, i.e., how many years would be needed, assuming zero new case entries, to completely clear the stock of pending cases, and the "actual speed of re-entry," for the second variable, i.e., the actual time, assuming this rate as constant, needed to clear the stock considering new entries this time as well. The similarities between DEF and Disposition time are obvious; both mathematically (essentially one is the inverse of the other) and logically and deductively.

2.3.2. Flux of Proceedings

In Italy, always reporting the report of the Banca d'Italia, in 2019 there were 33 pending proceedings per thousand inhabitants. The average national figure reflects a strong difference between the two macro-areas: in the Mezzogiorno the pending proceedings in relation to the population are 52.4 against 23.3 in the Centre-North.

Between 2010 and 2019, the number of pending processes decreased by 37%. The decrease concerned all macro-matters with the exclusion of voluntary jurisdiction which, however, contributes marginally to the overall variation due to its limited numerical relevance (Figure 15 on the left). At the territorial level, the decrease concerned 90% of the courts and was most marked in the Mezzogiorno (Figure 15 on the right).

Figure 15: Evolution of Pending Proceedings per subject and geographical area
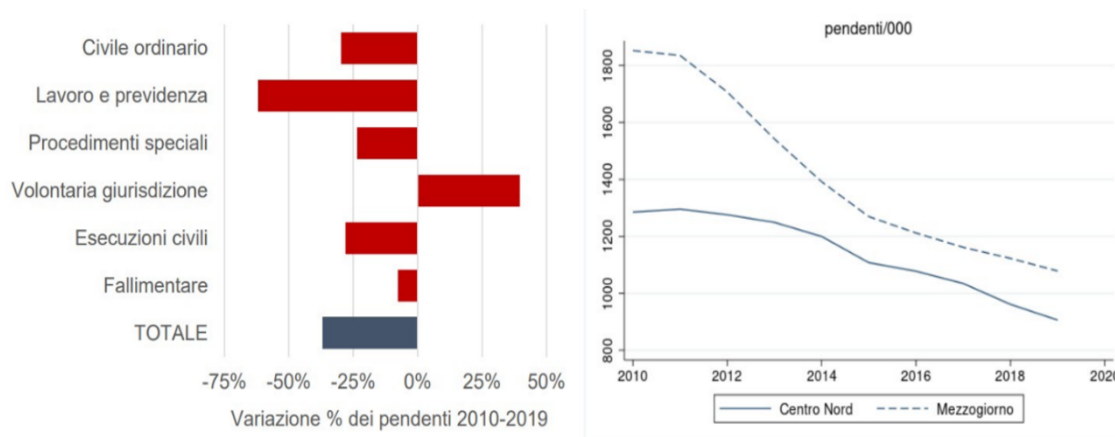
Source: Banca d'Italia

The trend of pending proceedings is mechanically linked to that of registered and defined proceedings. There is a reduction (increase) in pending cases when the number of defined cases in the year exceeds (is less than) the number of registered cases. For this reason, it is crucial to analyze the variable mentioned above, i.e., DIF. A court may perform incredibly well from the point of view of the volumes of defined cases (resulting apparently as a very good court) but if new admissions exceeds this value, this appearance is lost. It follows that the trend of pendency is influenced by both the demand trend and the ability of the offices to dispose of them (in this regard, an indicator that is properly monitored is the so-called clearance rate given by the ratio of defined to overdue). Over the period analyzed, the decrease in pendency is largely due to the reduction in demand, which has more than compensated for the lower capacity to define proceedings as shown in Figure 16.

Figure 16: Evolution of Pending, Defined and Registered Processes from 2010 to 2019

Source: Banca d'Italia

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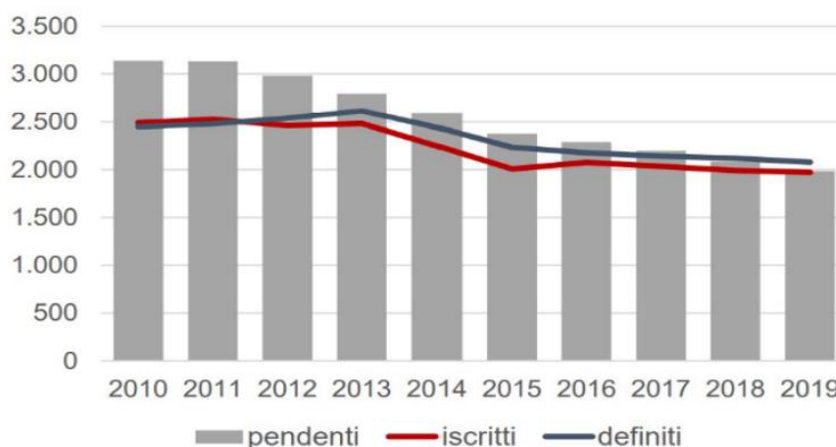
The demand for justice, which when related to population can also be defined as the litigation rate, is very heterogeneous across the territory. On average, 32 new cases per 1,000 inhabitants are registered in the courts each year, and said rate is higher in the Mezzogiorno. In this area of the country, 7 more new cases per thousand inhabitants are registered than in the North Center (38.6 versus 31.6). This may be due, in the first place, to the greater prevalence of situations of economic and financial fragility that lead to greater difficulties in fulfilling contractual obligations and thus to an increase in litigation. The longer duration of proceedings also provides an incentive for parties to breach contracts in order to defer payments. In the decade examined by the Bank of Italy document, demand for justice fell significantly (-21%), the decline was most pronounced in the Mezzogiorno where the number of proceedings registered fell by a quarter as can be seen in Figure 17.

Figure 17: Evolution of the Demand for Justice
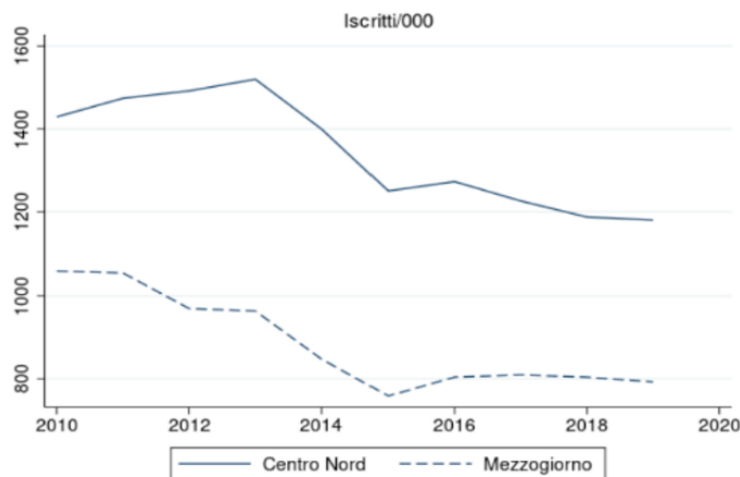
Source: Banca d'Italia

Both papers (Banca d'Italia and this thesis) look at the stratigraphy of pending cases, i.e., the distribution of cases by year of registration of proceedings. Using this information, it is possible to calculate the backlog, i.e., the number of proceedings that have not been resolved within the reasonable time limits prescribed by law and their impact on the total number of those pending. This time limit was established by Law No. 89 of March 24, 2001 (Pinto Law) and defined the limit of reasonable duration for proceedings before the Court as three years. In 2019 there were 8.8 over-three-year pending proceedings per 1,000 inhabitants. Again, as in the previous case, there is an important difference

between the southern and southern regions. In the former, there are 15.9 over three-year pending cases related to population compared to 5 in the North-Center with a percentage weight (of the total) of 30.2% compared to 21.3%.

As found in Figure 18, the reduction in this variable was smaller in the first half of the decade (-2% between 2010 and 2014) than in the second (-35% between 2014 and 2019). The impact on total pendants also decreased over the decade by 1.5 percentage points for all proceedings, considering also that the reduction is entirely concentrated in the second half of the period. Here, however, there remains an important difference between the two papers; in this thesis, in fact, the focus will be on a subcategory of proceedings that have been in the stock for more than three years, in particular the focus will be on those that were registered before 2011 (more than ten years ago). The latter are an important part of the stock, see Figures 4 and 5 in Chapter I, as they represent the historical portion of pending proceedings that are difficult to resolve, to which the courts must devote time and resources, and which inevitably affects duration, but once culled leaves ample room for manoeuvre and significantly improves time performance.

Figure 18: Evolution of the Backlog (according to Pinto Law) from 2010 to 2019
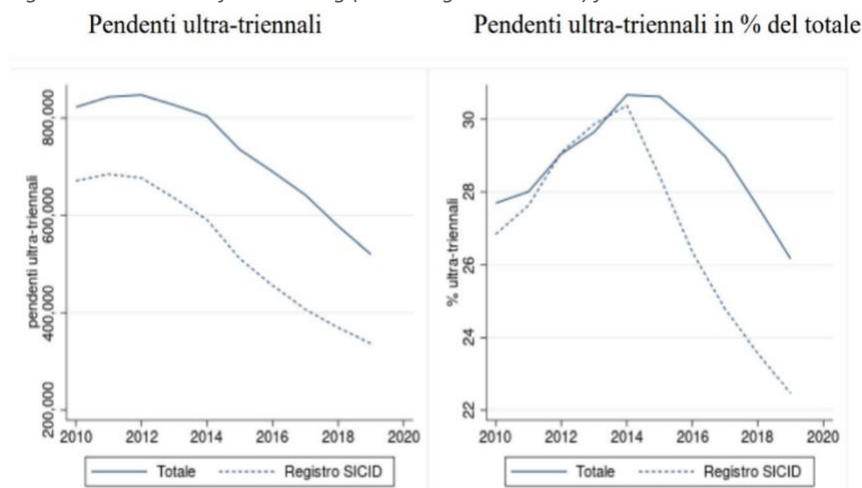
Source: Banca d'Italia

2.3.3. Productivity

The delivery of justice also depends on the productivity of offices. Productivity captures the degree of efficiency with which resources are deployed and is attributable to several factors, including the characteristics of judges and organizational and management

factors. Productivity is commonly defined as the ratio of the volume of output to the volume of inputs that contribute to its realization. To measure it, Banca d'Italia researchers use as input the number of judges assigned to the civil sector and as output the total number of cases settled. Each year an Italian judge handles about 550 cases. This average, again, hides significant heterogeneity among courts. If we look at the data provided by the national authority, the courts occupying the 90th percentile of the productivity distribution and compare them with those at the 10th percentile, it emerges that the former are more efficient by almost 70 percent: in the former, each judge defines about 700 cases per year, in the latter, 400. In terms of geographical area, productivity is 16 percent higher in the North-Central (the latter with an average of 587 cases closed per judge versus 507 in the Mezzogiorno).

This thesis will provide an in-depth analysis, in the third chapter, of both variables (proceedings entered and finalized) comparing them not from a purely numerical point of view that may be misleading (or only partially explanatory). In this respect, it is much better to see how registered and defined proceedings are impacted by each individual employee such as judges (considering specialized and non-specialized ones), honorary judges, and administrative staff. This is done to provide a comprehensive view of how the individual court is performing, trying to be as objective as possible, and with these metrics the courts will have the ability to identify their gaps and know how to fix them. For example, if a court has a low ratio (relative to peers) of defined cases to administrative staff, there is no point in adding more staff (as most courts write in their opening reports for judicial years) because the existing staff is already underperforming. In fact, in these cases it is much better to reorganize the office and try to understand what are the causes of these differences.

The presence of magistrates (with the distinction also between togati and onorari) and the number of administrative staff (with the distinction by professional area) as imaginable are analysed by both researches. As will be seen in the next chapter, the subject of personnel (administrative and legal) plays an enormous role, much more so than the one presented by Banca d'Italia, and usefulness in the scoring system developed. Labour input, in terms of quantity and quality, is the main determinant of the functioning of a court. In the analysis developed by the national body, it emerges that the number of magistrates and administrative staff assigned to civil cases is

significantly higher in the Mezzogiorno. On average, there are per thousand inhabitants 0.066 judges with the Centre-North standing at 0.057 and the South at 0.082. While looking at judges per thousand proceedings registered, there are respectively 1,930, 1,797 and 2,134. The figures for administrative personnel, again with reference to one thousand inhabitants, are 0.654 for the Italian average, 0.543 for the Centre-North average and 0.865 for the South. With reference to one thousand registered cases, the data refer to a national average of 19.24 against a Centre-North average of 17.18 and a Southern average of 22.43. At the end of 2019, the total number of magistrates (civil or criminal) was just over 6,800 units, it has increased by more than 500 units compared to the beginning of the last decade considering also that the percentage of women among the magistrates has increased from 50% to 58% and that the share of people over 50 has increased from 30% to 45%. Instead, the administrative staff at the courts decreased progressively over the time frame considered, from over 16,000 in 2005 to 14,800 in 2010 to 13,400 in 2019.

During this period, in the face of a substantial stagnation of auxiliary staff, there was a recomposition between officials and chancellors in favour of the latter (Figure 19). On the other hand, the proportion of over-50s has increased significantly from 54% to 70% over the last decade, imposing great problem for the future. However, this trend has come to a halt and has even reversed in 2018. All the above variables capture, with a good approximation, the number of people actually operating in the court.

The main demographic features (gender and age) are also observed for all the variables in the paper while it is excluded in this thesis (due to difficulties in getting this type of information). In fact, data on judicial staff in Italy are not systematically collected centrally, so one of the big differences between these two works relates to the actual number of staff. In the report published by the Bank of Italy, the distribution of judicial and administrative staff between civil and criminal cases was reconstructed on the basis of two surveys carried out by the Superior Council of the Magistracy, so it is estimated. Whereas in this thesis, as will be better seen in Chapter III, the collection of staff data and its use is clearly different because it is not estimated but actually collected.

Figure 19: Number of togate and honorary judges (on the left) and administrative personnel with the different distinctions (on the right)
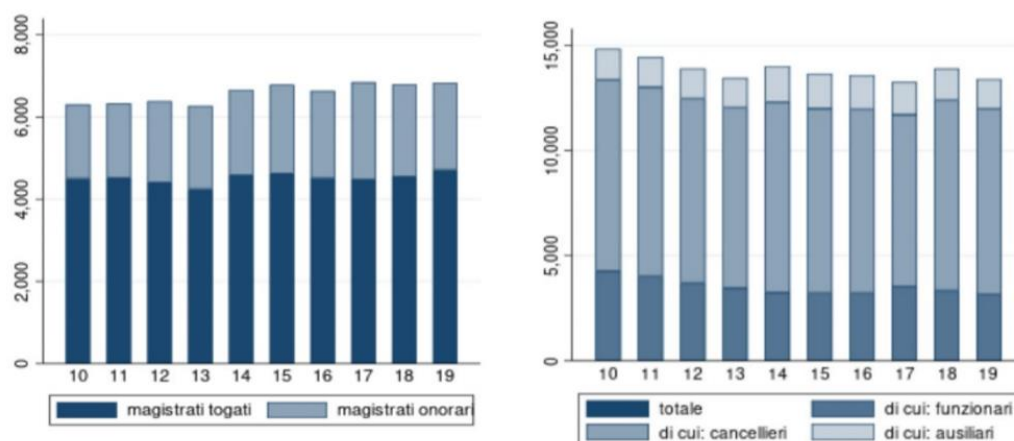
Source: Banca d'Italia

The Bank of Italy's work also analyses the appeal rates of civil proceedings and the outcomes of appeals. Appeal rates are calculated as the ratio of the proceedings registered in the Court of Appeal in a given year, broken down by subject matter and court of origin, to the proceedings settled by the court in the same year and in the same subject matter. Since it was not possible to reconstruct this information by tracking individual proceedings but by using aggregated data, it is possible that there is a time lag between appeals and outcomes, complicating their combined reading.

It is essential that decisions made are accurate, impartial, and sufficiently stable and predictable (to ensure legal certainty). High appeal rates associated with high rates of reform of the judgment (and thus acceptance of the appellant's reasons) are an indication of poor quality of the judgments issued by the courts. On average, in the five-year period 2016-2020, almost a quarter of first instance judgments in these matters were appealed. Of these, 40% were reformed (totally or partially), thus receiving a different outcome from the first instance trial. The interplay between the two variables suggests that, overall, almost 9% of appealed judgments are reformed (in part or in full). Appeal and, more importantly, reform rates are very heterogeneous across courts: those at the 10th percentile of the distribution have higher reform rates of appealed judgments by 40% than those at the 90th percentile. Contrary to what one might think, the Banca d'Italia's analysis of the data does not reveal a correlation between the performance variables considered: duration, appeal rates and outcomes. This suggests that, on the one hand, a higher speed of trial does not imply less robust and, therefore,

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more appealable, and reformable judgments. On the other, that the variables capture different dimensions of a court's performance. This variable, specific in particular to the SICID segment (whereas in the thesis, as already mentioned, the focus is imposed on the SIECIC segment) was not used.

2.4. Performance and Comparison with other EU Countries

It can be argued that effective judicial systems are also essential for mutual trust and for improving the investment climate and the sustainability of long-term growth, thereby also fostering competition. For this reason, improving the efficiency, quality and independence of national judicial systems continues to be one of the priorities of the European Union, fostering digitisation and the exchange/accessibility of information. For this reason, according to research published by the European Commission (2022), the EU uses a scoreboard that provides an overview of the functioning of the judicial systems of all Member States, based on indicators of common interest and relevance to all Member States, covering civil, commercial, and administrative cases as well as certain criminal cases (e.g., money laundering cases in first instance courts). All this is intended to assist Member States in their efforts to create the most efficient environment possible and to benefit citizens. This makes it easier to identify best practices and shortcomings and to track challenges and progress.

The data cover the period 2012-2020 and were provided by the Member States in accordance with the CEPEJ methodology in particular with regards to the Disposition time. It is important to note that there have been difficulties in collecting or providing consistent data, either because of insufficient statistical capacity or because the national categories for which data are collected do not exactly match those used for the Scoreboard. An efficient judicial system manages its workload and backlog of cases and issues its decisions without undue delay. In the following graphs, the names of the countries are shown in this way: BE stands for Belgium, BG for Bulgaria, CZ for the Czech Republic, DK for Denmark, EE for Estonia, IE for Ireland, EL for Greece, ES for Spain, FR for France, HR for Croatia, IT for Italy, CY for Cyprus, LV for Latvia, LT for Lithuania, LU for Luxembourg, HU for Hungary, MT for Malta, NL for the Netherlands, AT for Austria, PL for Poland, PT for Portugal, RO for Romania, SI for Slovenia, SK for Slovakia, FI for Finland and SE for Sweden.

2.4.1 Caseload Comparison

The caseload of national justice systems decreased in several Member States, compared to the previous year, while increasing or remaining stable in others (as it is possible to see in Figure 20, and it varies considerably between Member States). Under the CEPEJ methodology, litigious civil/commercial cases concern disputes between parties, e.g., disputes about contracts. Non-litigious civil/commercial cases concern uncontested proceedings, e.g., uncontested payment orders while administrative law cases concern disputes between individuals and local, regional, or national authorities. As it is possible to see in the graph, Italy performed quite well from this point of view compared to the other members with a low number of caseloads per 100 inhabitants. Comparable countries (for size, economic importance and/or cultural similarities) such as Spain and Germany perform much worse than Italy from the point of view of administrative cases for example. The category 'civil and commercial litigation' continued to decrease or remained stable. In about half of the Member States concerned, the same two graphs show an increase in the duration of proceedings, sometimes exceeding 2012 levels. Overall, about half of the Member States experienced an increase in the duration of proceedings in administrative cases in 2020.

Figure 20: Number of incoming civil, commercial, administrative, and other cases per year (instance/per 100 inhabitants)
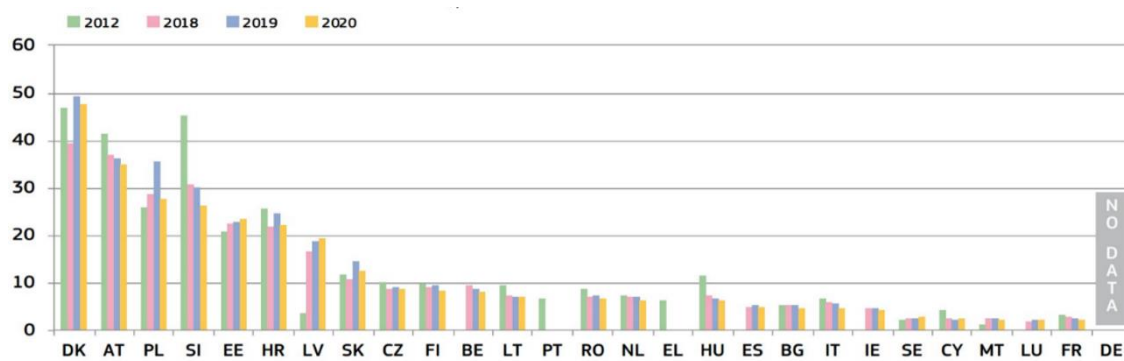
Source: CEPEJ Study

The indicators of the efficiency of proceedings in the broad areas of civil, commercial and administrative cases are the disposal time, the clearance rate and the number of pending cases. Concerning the former, as already mentioned, the higher the value, the higher the probability that the court takes longer to reach a decision. Italy is the worst country in the EU (with the available information) in terms of disposal times.

Comparable countries have done much better than the aforementioned, apart from France, and this should motivate the Italian government to act with a long-term perspective to tackle this huge problem. However, it is important to point out that if we also consider administrative cases, the situation improves slightly, given the small number compared to other countries). The situation worsens even further when considering all judicial instances, with a surprisingly negative performance achieved by Italy, compared to the others especially with comparable, and shown in Figure 21.

Figure 21: Estimated time needed to resolve litigious civil and commercial cases at all court instances in 2020.
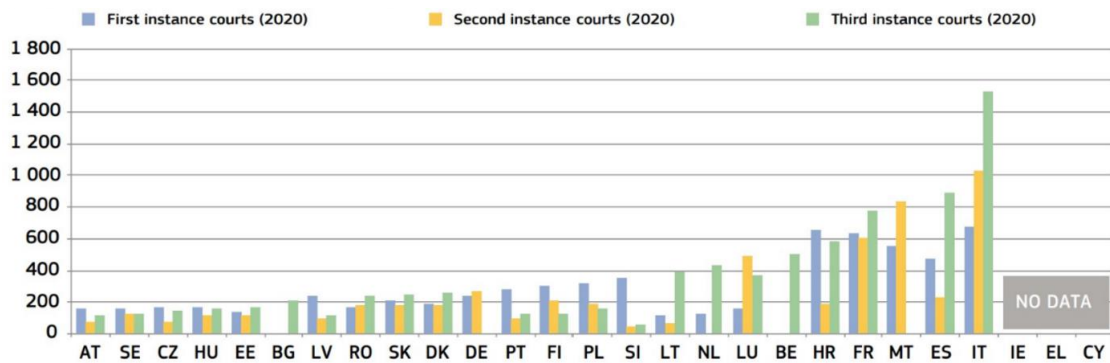
Source: CEPEJ Study

The clearance rate (equal to the cases settled in a year divided by those registered) measures whether a court is keeping up with the incoming workload. As already mentioned in the chapter, this ratio is, together with the clearance time, the main variable used by CEPEJ to measure the quality of the legal system. When the clearance rate is 100 per cent or more, it means that the justice system is able to settle at least as many cases as are coming in. One can see that most countries are in line, at the appropriate level of 100%. The overall number of Member States whose clearance rate is above 100 per cent has decreased from the previous year, approaching 2012 levels. This means that the courts are generally able to handle incoming cases in these categories, but there are some countries such as France and Spain that perform rather poorly compared to Italy, an indication that the latter has good statistics in this respect. Pending cases express the number of cases that remain 'pending' in the various courts and represent a measure of inefficiency that needs to be addressed (as most countries correctly do) to avoid future problems in the management of the justice system. Considering the number of pending cases (which also affects disposal times), as shown in Figure 22, Italy is one of the worst countries in Europe, while similar countries such as

Germany perform better in this respect. However, since 2012, the situation remains stable or continues to improve in almost all Member States that face major challenges with their backlogs. Again, as in the case of disposal times (considering the link between these two variables), it can be seen that the situation improves for Italy if the component of administrative proceedings is added to the graph.

Figure 22: Number of pending processes (civil and commercial) per year considering only the first instance per 100 inhabitants.
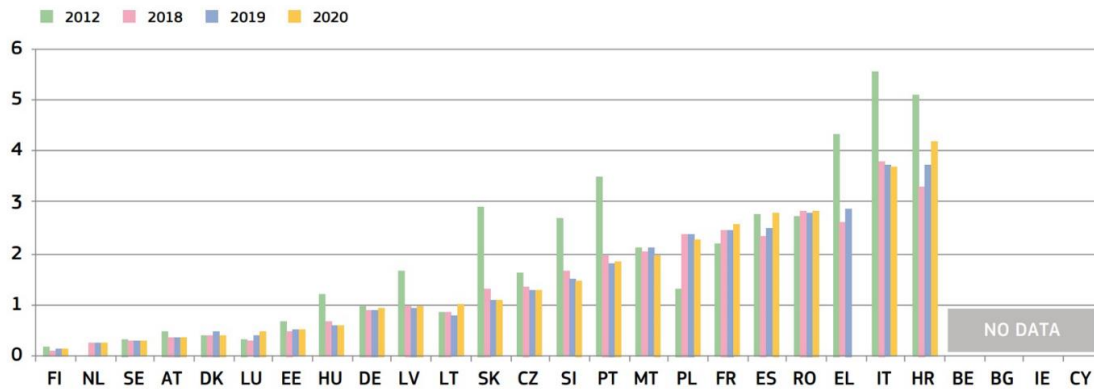
Source: CEPEJ Study

2.4.2 Quality Comparison

As has already been seen, there is no single way to measure the quality of justice systems. The European Commission's Scoreboard continues to examine factors generally recognised as relevant for improving the quality of justice, adding them to the efficiency measures just mentioned. The study focuses on the analysis of the financial and human resources used and the degree of digitalisation. Indeed, sufficient resources (which include the necessary investments in physical and technical infrastructure) and well-qualified, trained and adequately paid staff are required for the proper functioning of the justice system. Without these, the quality of proceedings and decisions is compromised. Figure 23 shows actual public expenditure for the functioning of the justice system (excluding prisons) as a proportion of gross domestic product (GDP). Italy is in line with other countries and with an increasing trend. This apparently contradicts the common knowledge that it is one of the worst in this respect. Comparing this situation with that achieved, for example, by countries such as Denmark or Germany (in terms of performance), it becomes clear that there is a problem of inefficiencies related to the performance of human resources or the structure of the legal system rather than purely financial resources. Almost all Member States increased their expenditure as a

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percentage of GDP in 2020 (an increase compared to 2019) and the majority also increased their expenditure per capita.

Figure 23: General government total expenditure on law courts as percentage of GDP per year
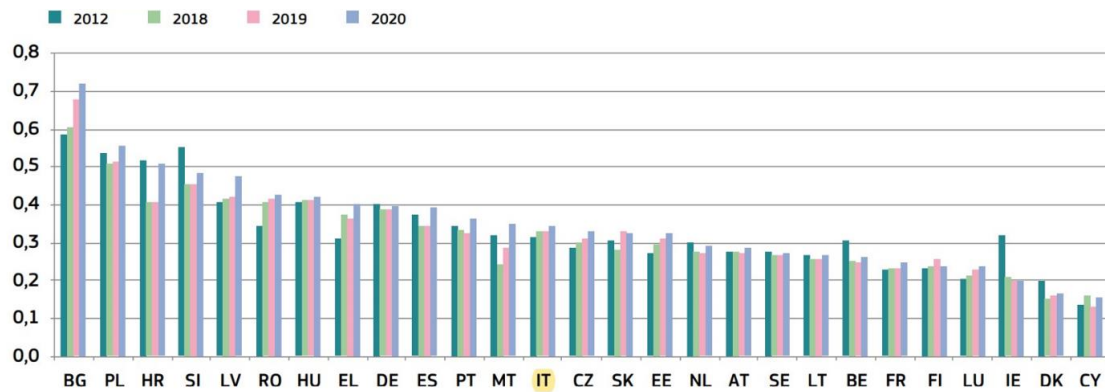
Source: CEPEJ Study

An adequate number of judges and staff in general, also supported by a good performance, increases the capacity to handle the stock of pending cases and increases the clearance index. Looking at Figure 24 (top), one can see that Italy has a huge gap of judges compared to other countries, which inevitably affects the previous results. The few presents will be overwhelmed by new trials and the stock of pending ones, inevitably affecting the duration of the total. At the same time, looking at the number of lawyers present in the different countries in the lower part of the same Figure, it is possible to verify that, contrary to the number of judges, the Italian scenario is one of the most prolific environments for lawyers in Europe in relation to the number of the population. This aspect, linked to the already mentioned propensity of the population to litigate, increases the number of new trials and inevitably the slowdown of the judicial system.

Figure 24: Number of judges per 100,000 inhabitants (top) and number of lawyers per 100,000 inhabitants per year
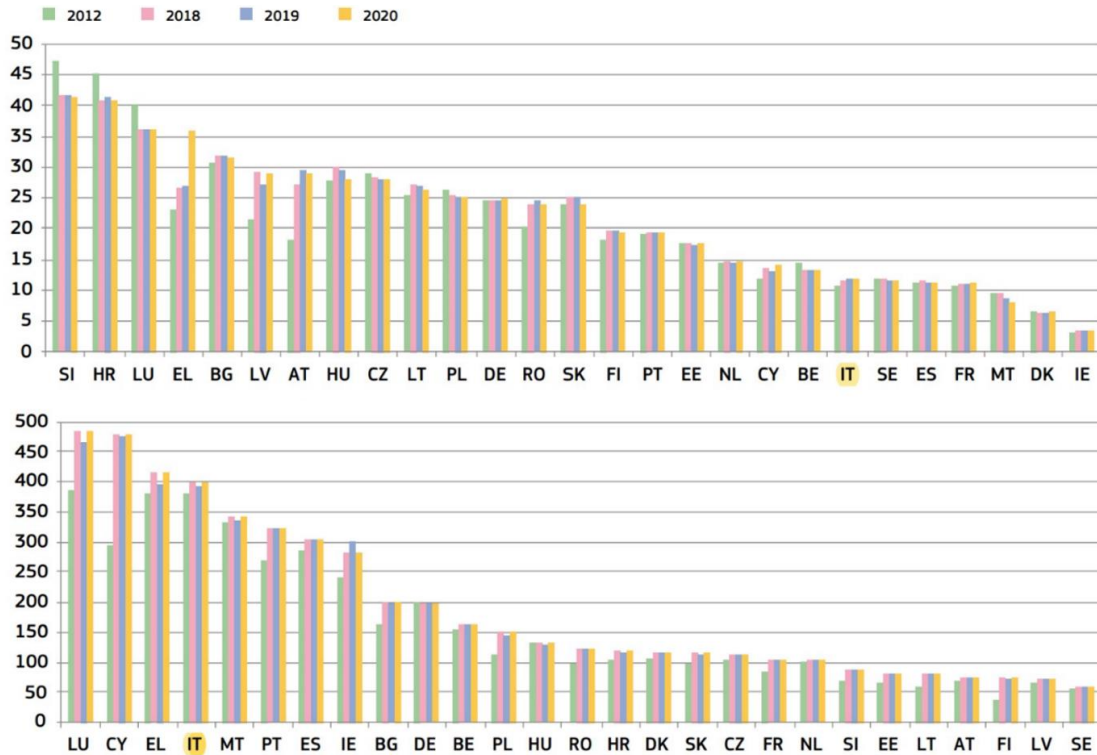
Source: CEPEJ Study

The use of information and communication technologies (ICT) can strengthen Member States' judicial systems and make them more accessible, efficient, resilient and ready to face current and future challenges. The availability of various digital tools at the disposal of judges and court staff can streamline work processes, ensure a fair distribution of workload and lead to a significant reduction in time, thus contributing significantly to the quality of judicial systems.

The COVID-19 pandemic has highlighted a number of challenges affecting the functioning of the justice system, showing the need for different national justice systems to further improve their degree of digitisation. Citizen-friendly justice requires that information on national justice systems is not only easily accessible, but also tailored to specific groups in society who would otherwise have difficulty accessing it and who need speed and efficiency. In addition to digital-ready procedural rules, courts and prosecution offices need to have adequate tools and infrastructure for remote communication and secure remote access. Adequate infrastructure and equipment are also needed for secure electronic communication between court services and legal professionals. In the Italian context, the possibility to monitor and advance proceedings online or to serve documents electronically can tangibly facilitate access to justice for

citizens. In addition, the use of innovative technologies such as AI and blockchain, which play an important role in supporting the work of judicial authorities, will have to take hold more and more. What the Peninsula should really address is the ability to automate the allocation of cases, which, compared to other countries, has performed rather poorly. The availability of such digital public services helps to bring the courts closer to the citizens. The last aspect analysed by the Scoreboard concerns the independence of the court.

It is important to emphasise that a good court system (and its employees/judges) should be as independent as possible from the outside. This is achieved when the body in question exercises its functions independently, without being subject to any hierarchical constraints or subordinate to other external parties and with internal impartiality. The latter is achieved when a fair distance is maintained from the parties to the proceedings and their respective interests in relation to the subject matter of the proceedings. A high perceived independence of the judiciary is crucial for the confidence that justice in a society governed by the rule of law should inspire in individuals and contribute to a favourable economic environment for growth.

Judicial independence is primarily a qualitative variable and the study proposed by the EU Commission addressed this issue by analysing the results of several surveys that sought to capture sentiment on this value. We report only one of the many surveys proposed in their document, but it is quite explanatory of the Italian context. Italy, according to common knowledge, is not perceived in a positive way. The many judicial scandals about its interpreters have undermined the trust of citizens. These results are the worst among comparable countries, especially among Northern European countries. In order to meet the parameters imposed by European legislation and budgetary constraints, the Italian justice system must be able to improve the efficiency of judicial proceedings by reducing their duration and costs through a process of profound transformation.

The decade has seen significant improvements in the functioning of civil justice. The number of pending cases has been significantly reduced and, as a result, the actual duration of court proceedings has also decreased, although to a lesser extent. Analyses show that the quality of service provided varies widely across the country. Policies aimed at improving the functioning of civil justice should, in addition to generally increasing

the efficiency of the system, also reduce the existing territorial disparities, in order to ensure uniformity in the protection of rights in order to achieve more homogeneous levels of use of technology and the diffusion of organisational methods capable of guaranteeing high levels of productivity and quality of service. One of the commitments set out in the National Recovery and Resilience Plan, which provides the resources to accelerate national efforts to complete the digital transformation of judicial systems, is to reduce the length of court proceedings and the stock of pending cases.

As regards the EU scenario, it is more difficult to determine the 'quality' of the system, given the lack of truly comparable information, but the comparison shows that Italy is still in a critical situation, with respect to the main performance indicator, but with a virtuous dynamic. The difficulties still present appear to be attributable to certain features of the judicial organisation, not so much as regards the availability and use of resources (financial and human), which are generally in line with those of other countries, but in terms of their use (organisation of offices, the court, and case management), which affects productivity and the level of service offered by the offices themselves. The achievement of this objective is, in particular, entrusted to the project of investing in human capital also to increase the productivity of the offices, based on the specialisation of activities. Personnel policies (judicial and administrative) have received special attention in recent years with a view not only to increasing resources, but also to greater flexibility in management and adaptation to regulatory, organisational, and contextual changes. In addition to increasing staffing levels, the intervention has in fact aimed to achieve a rebalancing in the various territories in order to reduce the discrepancies listed above. A specific objective is to reduce turnover costs by allowing the temporary allocation of additional resources to centres facing staff shortages.

CHAPTER III: Empirical Analysis

3.1 Introduction

In Italy the excessive duration of the processes represents the main element of weakness of the system with the consequence that the reduction of the times of the judgments is an objective on which the action of the legislator has strongly focused in these years. The reduction of the times of the processes is between the objectives of the National Plan of Recovery and Resilience, that it engages Italy to a reduction of the duration of civil trials (measured on the three degrees of judgment and based on the disposition time) by 40% by June 2026.

The timing of the courts and the performance of judicial recovery, as mentioned above, have a considerable impact on the macroeconomic system as a whole, and there is still considerable room for improvement in this respect, given that the length of execution procedures in Italy is still far from the average of other European countries. In this context, the effects of the Covid-19 pandemic have been inserted which, on the one hand, have strongly accelerated and encouraged the push to digitize and simplify the bureaucratic process (favoured above all from the development of the hearings from remote and from the restarts through the Internet), on the other side they have unavoidably influenced the performances of recovery.

However, the NPLs market is expected to grow in the coming years, given the economic and social crisis that the country is going through, and in this scenario, it is more than ever necessary to have an effective judicial system that can respond to new market needs in a timely manner. The pandemic has changed the scenario but there are still things that need to be changed in particular the use of paper documentation in the management of some stages of the process, especially in the executive, as well as a lack of technological tools for the management of some procedural activities. To this is added, as widely seen in the two previous chapters, also a tangible territorial heterogeneity of the operational processes adopted by the various courts, that can also be seen in the different availability and management of staff capacity and in the absence of a structured and centralised system for monitoring the performance of the activities of judges and administrative staff. To slow down the justice machine, making it less efficient and effective also contributes the involvement in the various processes of many

subjects and the absence of structured and encouraged levels of service, resulting in a directly proportional increase in the duration of procedures and their costs. There is no control system or reward for encouraging virtuous practices.

To proceed with the idea behind this thesis it was needed to collect all the available data regarding the efficiency of all the courts in Italy, these measures, as already citied, refers to the duration of the process (how much time is needed, on average, to define a pending proceeding), the number of backlogged processes standalone and with respect to the current stock of the defined ones, the flow of them (including the number of processes initiated and defined for every different year) and the historical development of the pending proceedings (how the stock that was initiated before the year 2011 developed through the time). In association with these variables, it has been calculated further parameters, from the already citied one, that should help in understanding how the court effect impact on the NPL returns.

Reading the report on efficiency by the department of statistics of the Italian Ministry of Justice (2022) the reference measure is the ratio between defined process and the registered one (for every year) which is also known as Clearing ratio and is the most common used measure to represent the efficiency of courts. Of course, it is a really useful reference to understate how a court perform in the year but it is necessary to dig deeper to figure out possible trends in performance for the different tribunals. In fact, apart from that measure, in this thesis the focus was placed on the weight of pending proceedings and human resources performance. Analysing the development of the stock of backlogged processes (if it increased or decreased during the path), how the oldest stock is treated/cut off by every court , how the ratio between defined processes and pending stock has evolved (this will give a potential view of how fast the tribunal can recover/eliminate all the stock) and finally how the ratio of the different variables in relation to the different organisational units is essential to understand what direction the various courts have taken.

3.2. Methodology

In this chapter, it will be pursued the idea of creating as broad and comprehensive an evaluation system as possible with regard to court performance. It is important to reiterate, as already extensively emphasised in the previous chapters, that the average

duration of proceedings is not sufficiently explanatory to state the success/failure of a court. As will be seen in more detail in Section 3.5 of this chapter, specifically structured for a comprehensive analysis of the time parameter, duration does not offer a complete view of court performance, as it can be "distorted" by the poor performance of individual courts that focus, instead, on ongoing trials to be optimal in this chronometric aspect. As this is the most widely used and considered parameter in NPEs, the need arises to refine the valuation models used to estimate the value of a compromised position.

Unfortunately, there is no single variable that can explain the efficiency of these courts; the literature on the subject, as seen in Chapters I and II, has been varied in defining it. Efficiency has been assumed to be the output produced (cases defined) in relation to the number of judges present, as determined by Cugno et al. (2022) or by the number of cases overturned in cassation in relation to the total (European Commission [2022]) or again for Bischof et al. (2022) productivity is determined by the cost and overall duration of the bankruptcy petition. As can be seen from this brief excursus, each point of view is correct but offers only a partial view of reality. For example, in the first context mentioned, no analysis of the performance of administrative or judicial staff is provided, nor is a more in-depth investigation into the details of the proceedings concluded, analysing which and how quickly these proceedings were concluded. To avoid this dispersion, it was therefore decided to proceed with the creation of a scoring system that could encompass all these individual parameters (appropriately weighted) and offer an overall assessment of a court's performance.

It was decided to initially analyse the role and impact of administrative and judicial staff in each court, section 3.3 of this chapter, trying to assess their importance and possible recurring organisational structures that could ensure better performance. To obtain this data, without using estimates, each Italian court was contacted, specifically asking each of them about its specific administrative and organisational structure, in fact requesting the staffing plan. With regard to this last parameter, it was not always possible to collect all the information, as some courts (less than 10%) did not provide (all or part of) the requested information. As it was not possible to find ideal structures, it was necessary to use additional variables that could include the different facets of a court's performance, so the following were included in the model: the volume and weight of

historical proceedings (those older than or equal to ten years, i.e. exceeding the Pinto Law), the total backlog, the reduction in the considered time period (2019-2021) of the latter, the number of cases defined, registered and their difference. For this purpose, all the information and values assumed by the specific variables were collected through the website of the statistics department of the Italian Ministry of Justice.

From these 'basic' parameters, other variables were derived, analysed specifically in section 3.5 in relation to duration. Thus, variables were adopted such as DEF/PEN, i.e. the ratio of completed proceedings to the total stock in a given year, or DIF/PEN or even the clearance rate corresponding to the ratio of completed and registered proceedings in a given year. In addition to these, variables derived from the ratios between the above 'pure' parameters and the various human resources metrics (such as the ratio of defined/registered cases with respect to the number of civil judges or administrative staff) were analysed in Section 3.6 to capture the actual impact of staff on overall performance. The combination of these new variables should be able to provide a comprehensive view of the Italian judicial system, rewarding those courts that, despite their still suboptimal timing, have initiated procedures aimed at a massive reduction of the backlog and an increase in staff efficiency.

In this chapter, therefore, relying mainly on the work done by Cerved (2022, 2019), Comitato T.S.E.I. (2020) and Cugno et al (2022), for the analysis of the first two please refer to Chapter I and for the last one to Chapter II, it will be given continuity to this project. Before proceeding with the development of the topic of the thesis it is necessary to make a clarification because the data and analysis considered (both at the level of number of proceedings, that of performance and personnel) may differ from other sources, also official, for various reasons such as (considering the dataset is not stable because it is always possible to make updates):

- technical difficulties in data collection;
- errors or anomalies in the data contained on the databases;
- erroneous attribution of acts and events in the original data entry;
- files which have not been summarised or closed following the opening of a new file by judgment of division;
- multiple lots with partial sales;

- delay in assigning the status of "closed file" by the Court with respect to the extraction of the sample analysed;

- presence of many, too many events inserted by the operators of justice under the simple generic heading of "uncoded act" without taking the trouble to assign a specific voice among those, numerous, complete, and precise, offered by the information system;

data inconsistencies (the information obtained might have holes due to various reason like courts did not respond to the requests or they were not authorized to lend such information).

3.3 Administrative Personnel Analysis

The first object of this thesis was to analyse the impact of the entire staff of a court (both administrative and juridical) on its performance so, it was collected all the available info regarding the structure of all the 140 tribunals in Italy. The activities of the magistrates are basically supported by two categories of human resources: personnel with administrative functions and the honorary judiciary. The latter has responsibilities of various kinds and ranging from mere support to the judge in the preparation of hearings, to its replacement only in some sessions, up to the actual handling of proceedings for selected subjects. In any case, the activity of honorary magistrates is not adequately reported and therefore calculate the actual workload also considering this category of personnel, which, as it has also seen, affects, is complicated but fundamental.

To start the work, all the available info regarding all the staff present in every court was incorporated in the dataset. Initially the idea was also to collect, directly from the tribunals or the central authority, information regarding understaffed reports but it was quickly found out that this information could be biased. In addition to this already big problem, the data about this topic were not present (or available) in every court and the ones that were received from the Ministry of Justice were not updated and calculus to justify those estimates were not given. These difficulties in obtaining such information will be a major trend in this thesis and for sure represent a huge inefficiency in the Italian justice system as well described in the works of Comitato T.S.E.I (2020), Cerved (2022) and Banca d'Italia (2022). This last report, unlike the others mentioned, also does

research work on the role of personnel within the court in the final part, but as will be seen more clearly in the remainder of this chapter, it is approached very differently.

In this thesis personnel numbers are not estimated; they are actually collected by phone calling/emailing/visiting the official website of every human resources/administrative department in every court in Italy (while for the research of the national body report these numbers are just estimates). As imaginable difficulty soars during the gather of this type of data due mainly to the fact that most of the official website were not updated (there were several courts with the latest staff update on the website dating back to before 2014). For the courts that presented this feature, it was necessary to proceed with requests by email and by phone call. These have not always been simple and linear processes, indeed quite the opposite, between authorizations required for obtaining data, authorizations to be granted by the Presidencies and general resistances (8 out of 140 courts did not provide information on staff, a share of 5.71%). Collecting these types of data required almost two months due to all these problems.

It is also important to highlight the fact that initially the research started by seeking out for all the administrative staff in the tribunal with respect to the civil section but due to the difficulty in the access of these information and the lack of relevance of subjects like Voluntary Jurisdiction with respect to the Non-Performing Loans, the path of the research was deviated by focusing the attention only on the Registro SIECIC and its main three sectors: "Real Estate Executions", "Movable Assets Executions" and "Bankruptcy and Other Insolvency Proceedings".

Ultimately, all the information regarding the profession of every person (in administrative roles) that worked inside these three sectors and all the data about judges and honorary judges (known as GOT or in Italian "Giudici Onorari del Tribunale") that were in the civil section of the court and that in particular dealt with the topics of the Civil Executions (which comprehend Movable Assets and Real Estates) and Bankruptcy (and Other Insolvency procedures) were collected. In the Appendix, at the end of this thesis, it is reported the summary of this research in Table A1 but it is also possible to consult the complete version of it in Table A2.

It is important to highlight that with regards to the total staff of the court (both administrative and juridical) about 10% of all the information asked about the courts are missing as it has not been received. In the judicial organization, the personnel working

in the judicial courts carry out functions of collaboration and support to the jurisdiction. It has the tasks of documentation, certification of judicial activity, custody, communication of procedural documents, service of the judgements of the court and the acts of the parties, the execution of judicial measures to support the judges. In addition to that they also support the entire structure by carrying out of accounting and financial activities, the design, organisation, management and coordination of training activities, the collection, processing and interpretation of judicial statistical data, analysis, care and supervision of computer systems and projects requiring a particular and specific IT skills. Finally, they also care of the library assets of the administration, translation of foreign language acts and interpretation.

For this reason, and their main role in the justice system, it was decided to collect the information about the number with the regards of the: Managing Directors, the one responsible of the entire office that in most of the cases was assigned only one for all the three offices, judicial officers (the ones who carry out activities of specialized content, with the assumption of management tasks for the realization of the guidelines and objectives of the office), Expert chancellors, judicial assistants which are responsible for drafting and signing the minutes of the sitting; they follow administration and accounting and deals with the cataloguing of documents and files, judicial operators (which its function relates to the retrieval, reorganization and classification of files, documents and documents, custody and supervision of assets and facilities and finally, secretarial activity), members from "Astelegali" which assist in the real estate and movable assets executions, drivers, employees of the "Ufficio per il processo" (a new figure that helps in the organization of the office, to perform and manage every situation in the optimal way) and finally the auxiliary. The role of the expert chancellor is essential in a court as it records the outcome of the work of judges and magistrates. It must also be responsible for issuing certified copies and extracts of professional productions. It must then carry out the procedure for registering the cases and make sure that the unified contribution is paid. It is always the duty of the experienced chancellor to form the files of his own motion, to retain those of a party and to forward to the parties the decisions of the courts in the form of communications and notifications. At the conclusion of a case, it is always this figure who publishes the judgment (with its annexed obligations), transcribes at the Council of the real estate registers those

judgments that concern a possible transfer of ownership of the property (also in the real estate field it has also the task of transcribing the inscriptions of judicial mortgages). In civil matters, the expert chancellor shall be responsible for all the preventive and subsequent activities which lead to the enforcement of the court's orders. They also keep track of the public register of special privileges, follow the bureaucratic process for acceptance and renunciation of inheritance, even those with the benefit of inventory (so much so that they themselves draw up the inventories). The auxiliary of the judge does not always play a necessary role in the proceedings but, when required by law, the judge can use this figure to make the process faster, both to compensate for their lack of knowledge in some specific areas that are the subject of the case. Primary auxiliaries in the civil process are represented by the technical adviser (known as CTU) and the judicial guardian. The judge then, when necessary, with a special order appoints his auxiliary useful to ensure a better trial.

At best, one hoped to be able to derive an ideal staff (with a particular focus on the number of the expert chancellor) structure that, compared to the duration and the dimension (e.g., Milan, Rome, and Naples have similar size), which would show the best performance but this was not the reality. Every tribunal has its own structure and its own organization chart (except that at the level of the administrative staff the single Judicial Officer combination plus one or two Judicial Assistants per office appears as one of the most common). So, it was not simply possible to compare performance of the NPLs with the relative structure of the court and check which one produced the best result. A greater effort was therefore required to capture the influence of staff on court performance.

To do so it was decided to increase the number of variables used, especially those ones that will provide a measure of the performance of the different courts (already cited in chapter II) and those reflecting the structure of the latter, including incoming and outgoing flows of processes, the stock of pending processes and the just analysed human resources. It then will proceed with a cluster analysis, but before that, it started with a preliminary exploration descriptive analysis to understand the intervals that were present for each variable, thus counting the observations that fall within all the possible intervals to assert a possible clusters of the data. Clustering is the process of grouping a set of physical or abstract objects into classes of similar objects. The cluster, therefore,

is a collection of objects that are similar to each other and that are dissimilar to objects in other clusters. There are several clustering techniques and they are based on measurements of similarity between elements. In many approaches, such as the one used in this thesis, this similarity (or dissimilarity) is conceived in terms of distance in multidimensional spaces. This task was tackled using the R program and its features. Once the analysis is completed, the work will proceed with the creation of the score system to effectively evaluate the present and future potential of the various courts, not forgetting their past (and the decisions taken) reflected in the duration.

3.4 Additional variables

Taking up what has just been said, to complete the previous analysis, information has been retrieved (everything was found in the Department of Statistics of the Italian Ministry of Justice official website) on the following variables:

- The dimension of the court (collected from the report of the Comitato T.S.E.I [2020]) because it will be useful to categorize and differentiate the different tribunals and their needs.

- Flow of defined procedures from 2016 to March 2022 they are the procedures defined by judgment and without it (do not include changes of rite, suspended procedures and those interrupted). This is a gross measure, in absolute term, of the capacity of the court to resolve disputes.

- Flow of registered proceedings which include the new entries in the reference period (are not included therefore the summarized procedures). Here as for the previous variable with a time horizon from 2016 to March 2022. This is a gross measure, in absolute term, of the load that every court suffers and which they have to face every year.

- Stock of pending process ("Total") that is the backlog of pending proceedings not yet defined in charge to each court, this time with a time horizon from 2019 to March 2022. This is a measure, in absolute term, of the total load that every court suffers, as a weight that has been dragging along.

As imaginable these gross measures are not sufficient to determine the performance, in fact courts as Rome which is one of the biggest in the country will suffer in a comparison about these numbers (considering the number of the backlog) to the one of Aosta, that

is one of the smallest. At the same time the tribunal of Rome will benefit from the point of view of variables such as defined processes that inevitably, due to the huge amount of proceedings dealt constantly every day and thanks to the larger number of personnel, will be higher compared to others. So, for all of the reasons listed above, it was decided to elaborate the previous variables by combining them, and analyse mainly ratios that will provide a relative point of view (instead of an absolute one) which will be helpful in the comparison between the different courts. The result are the following new variables:

- The historical current weight (named PSO) that is the weight (percentage) assumed by the historical component on the total current stock. It is therefore necessary to define what is meant by historical. In this thesis, contrary to other works in which reference was made to the temporal dimension established by the Pinto law (which is 3 years), it was decided to focus on pending processes not yet defined whose date of registration appears to be before 2011. Considering also what was written in Chapter I (Figure 4 and 5) the distribution of this backlog is very diversified, it is therefore necessary to analyse how the oldest component (over 10 years) is currently present in the various courts since it is the most problematic and the most expensive, in terms of human resources, to be addressed. It will be also used the pure number of pending proceedings (not only the weight) especially when combining this variable with the personnel data.

- Direct consequence of the latter variable is the evolution of the historical current weight (variable named as EV of PSO) this one will show whether or not this outdated stock decreased in the biennium 2019-2021. This potential decrease inevitably affects the average duration of the processes of a court (negative side) but it is beneficial in the long-term view because as it frees up time and resources for more recent processes (positive side). If the focus is placed only on duration the latter side is not considered and this is one of the reasons that will bring to the score system.

- The reduction of the stock of pending proceedings (it will be called RID) is the ratio between the stock of pending processes in 2021 minus the one in 2019 over the latter. If it is negative represent a good thing as it means that in the time

horizon the court were able to have an excess of defined processes over the registered one and deal (by reducing) the stock of the pending ones.

- Clearing ratio (named as CLE) is one of the measures mainly used by the Italian Ministry of Justice (and at European level) to represent the efficiency of the courts; it is simply the relationship between defined and registered proceedings in a year. If this ratio is above one it represents an excellent aspect as the aforementioned court manages to define a greater number of defined than those registered.

- The difference between defined and registered processes (named as DIF) in a single year. This is a measure, in absolute term, of the gross total excess (if present) that every court has and that can help to reduce the stock of pending proceedings (can be seen as the Clearing ratio expressed in absolute term). Its main utility derived by the future application of this variable.

- The ratio between defined processes and the stock of pending proceedings (named as DEF/PEN); measure similar to the already seen in Chapter II (see Formula 3) disposition time. This relationship can be seen as a proxy of the "potential speed of re-entry" that is how long it would take the courts to erase the existing stock if there were no new registrations of proceedings.

- Natural consequence of the latter is the ratio between the difference between defined and registered processes compared to the stock of the backlog proceedings (the variable will be called DIF/PEN) also this one mentioned in Chapter II (see Formula 4). This relationship can be seen as a proxy of the "effective speed of re-entry" as it represents how much time the courts manage to re-enter of the stock also considering the new members. This measure is much more volatile than the previous one but offer an interesting point of view as it allows to see concretely the performance of a court despite the size or the volume of processes.

- The evolution of the defined processes is the difference between the value of this variable in 2021 compared to the one obtained in 2019; it shows whether the courts were able to increase the number of closed proceedings (measure of efficiency) in this time frame, that helps potentially to decrease the total stock.

It will be used in particular in relation to the different organisational units for a better comparable measure.

- Natural consequence of the previous variable is the evolution of the registered proceedings that is the ratio between the enrolled in 2021 with respect to the one of 2019; it shows whether the courts have undergone a numerical increase in the workload. This parameter, unlike the others, cannot be controlled by the court because it depends on several factors such as the number of the population, the litigation rate of the latter, social securities, the number of lawyers present in the territory, etc. but it is useful to report it as it indicates any potential situations of stress and excessive load for workers that need to be controlled and to which appropriate corrective action must be taken. Better to use in relation with the different organisational units.

- Another variable, similar to the previous ones, is the evolution of the difference that is the ratio between the difference between defined and registered processes obtained in 2021 with respect to the one obtained in 2019, as it can be seen in the Formula 5. It shows whether the courts have been able to numerically increase the number of closed proceedings compared to those registered (measure of efficiency), thereby increasing one of the items that compose the effective speed of re-entry. As reported above, the original variable (DIF) suffers from a high volatility and for this reason this evolution, although very useful in reporting positive or negative trends, it has obvious gaps in reliability.

$$EV\ DIF = (Defined - Registered)_{2021} - (Defined - Registered)_{2019}\ (5)$$

- Considering the variable DEF/PEN it very useful to analyse the evolution of this parameter (named as DEP). It represents the ratio of the difference between DEF/PEN 2021 and DEF/PEN 2019 with respect to the latter. DEP shows whether the potential speed has decreased or not in the biennium highlighting possible positive trend that can emphasize possible positive benefit resulted in different human resource allocation or new changes adopted in this timeframe.

- Linked to the previous context is the evolution (variable called DIP) represented by the ratio between the difference between DIF/PEN 2021 and DIF/PEN 2019 with respect to this last date as shown in the Formula 6; it shows if the effective speed is diminished or not in the biennium (with the usual problems and utilities related to the original variables)

$$DIP = \frac{\frac{(Defined - Registered)_{2021}}{Pending\ Processes_{2021}} - \frac{(Defined - Registered)_{2019}}{Pending\ Processes_{2019}}}{\frac{(Defined - Registered)_{2019}}{Pending\ Processes_{2019}}} \quad (6)$$

To these variables must be added those already available (especially considering parameters based on human resources) and their combinations. The combo of these sets of parameters creates a whole new pack of variables that track the performance of the staff and the judges in different areas. For example, useful variables will be the ratio between registered processes and the number of administrative staff in a court or the ratio between the number of defined proceedings and the number of judges.

These two measures, and the others that will be better and in depth described in the section dedicated to the score system, offer different point of view regarding the contribution of the staff to the overall context. The first, for example will provide a clear view, to complement what has been agreed before, of the actual workload that each court employee is subject to. If the load is excessive, new hires will be necessary (considered, before the decision, also other appropriate variables) to avoid worsening the general performance of the court. An excessive load does not allow the correct disposal of all the practices with the strong risk of increasing the stock of pending processes. The second ratio mentioned above, defined processes over the number of judges, can be seen as the type of parameters that complement the measurements on workload. This ratio in fact demonstrates the efficiency of the individual judge over the number of cases defined, making accessible at this point a total comparison at national level (very useful for any kind of benchmark). The presidents of the court can with these variables understand whether or not one's staff is actually working at the right pace (also considering other similar fields) and whether there is still room to manoeuvre and improve in this respect. The combination of these parameters in particular allow, always

for the presidents of the tribunal, to understand if it is necessary to hire or not new staff to obtain better performance or if it is "simply" necessary to review the internal structure to enable a better efficiency of staff/judges, avoiding in the latter case any damage to national taxation by allocating these resources to other initiatives.

From this new set of parameters, it is possible to see another big difference with the works cited in the previous chapter, in particular the one of the European Commission (2022). In that report the focus was on the ratio between the judges and the total number of the population in the country (as an independent measure to understand the level of the human resources implemented by every nation) whereas in this thesis the numerosity of the set of reference variables is considerably larger.

This was done to provide as broad and comprehensive a view of the context in which the various courts operate as possible, not only to show the level of resources used, so it would be slightly inconsistent to use the variables used by the European Commission in this work. Descriptive analysis of all the variables involved are given in Figure 25 and then it will be provided an analysis of any significant relationships between these variables and the overall duration of the processes. All this was obtained by using the statistical software R, its downloadable packages and Microsoft Excel.

What it has just been reported are the descriptive statistics of all the 90 (without considering the dimension of the court that can only assume six values which are "Molto Piccolo", "Piccolo", "Medio Piccolo", "Medio Grande", "Grande" and finally "Molto Grande", these values were taken from the report of Comitato T.S.E.I.) variables used in this thesis. These variables will not be addressed directly now but will be analysed in the remainder of the chapter in order to highlight certain contextually useful relationships. It only wish to emphasise how the duration has an average value of 1.97 years, always considering that it is a weighted average of the different types of proceedings characterised by short durations for some (securities executions) and very long for others (bankruptcies). The duration also varies from a minimum of 0.58 years (equal to 211 days for the settlement of proceedings) to a maximum of 4.12 years (equal to 1504 days). Considerable variability can also be seen in parameters such as the number of proceedings settled in 2021, which ranges from a minimum of 189 to a maximum of 30495, or the historical backlog of processes, which ranges from a minimum of zero to a maximum of 1494. As will be seen later, great caution must be exercised in assessing

these absolute variables because if analysed individually and not contextualised, they could lead to significant errors affecting the quality of the outcome.

Figure 25: Descriptive statistics of the 90 variables used in this thesis.

```
   Old Stock            Totale       Duration (years) Evolution Old Stock
Min.    :   0.00   Min.   :  202   Min.   :0.5768   Min.    :-0.8687
1st Qu.:   2.00   1st Qu.: 1191   1st Qu.:1.4586   1st Qu.:-0.5335
Median :   7.00   Median : 1848   Median :1.8787   Median :-0.4211
Mean    :  47.84   Mean   : 2998   Mean   :1.9667   Mean    :-0.4231
3rd Qu.:  26.50   3rd Qu.: 3532   3rd Qu.:2.4122   3rd Qu.:-0.3104
Max.    :1494.00   Max.   :28723   Max.   :4.1157   Max.    : 0.0000
                                                    NA's    :1
      PSO                RID          Administrative staff Totale x administrative
Min.   :0.00000   Min.   :-0.45100   Min.   : 0.000   Min.    :  40.4
1st Qu.:0.03983   1st Qu.:-0.22489   1st Qu.: 4.000   1st Qu.: 205.0
Median :0.07829   Median :-0.15470   Median : 7.000   Median : 268.1
Mean   :0.09384   Mean   :-0.13187   Mean    : 8.807   Mean    : 354.5
3rd Qu.:0.12219   3rd Qu.:-0.07508   3rd Qu.:11.000   3rd Qu.: 400.8
Max.   :0.37586   Max.   : 2.04311   Max.   :68.000   Max.    :3852.0
                                                    NA's    :5
Old Stock x administrative Ev Old Stock x administrative RID x administrative
Min.   : 0.0000   Min.    :-0.42765   Min.    :-0.17727
1st Qu.: 0.3333   1st Qu.:-0.09503   1st Qu.:-0.03708
Median : 1.0000   Median :-0.05729   Median :-0.02014
Mean    : 4.7913   Mean    :-0.07148   Mean    :-0.02073
3rd Qu.: 3.3095   3rd Qu.:-0.03308   3rd Qu.:-0.00720
Max.    :87.2941   Max.    : 0.00000   Max.    : 0.51078
NA's    :5         NA's    :6         NA's    :5
  Civil Judges    Totale x judge   Old Stock x judge EV Old Stock x judge
Min.   :  0.00   Min.   : 31.19   Min.   : 0.0000   Min.    :-0.17374
1st Qu.:  6.00   1st Qu.:144.58   1st Qu.: 0.1905   1st Qu.:-0.06343
Median :  9.00   Median :199.90   Median : 0.7500   Median :-0.04351
Mean    : 13.49   Mean   :214.17   Mean    : 2.8758   Mean    :-0.04689
3rd Qu.: 15.00   3rd Qu.:265.33   3rd Qu.: 2.1538   3rd Qu.:-0.02514
Max.   :122.00   Max.   :706.25   Max.   :74.2000   Max.    : 0.00000
                  NA's    :3        NA's    :3        NA's    :4
  RID x judge       Civil GOT       Totale x GOT     Old Stock x GOT
Min.   :-0.072183   Min.   : 0.000   Min.   : 64.5   Min.    : 0.0000
1st Qu.:-0.024925   1st Qu.: 4.000   1st Qu.: 181.5   1st Qu.: 0.3008
Median :-0.014105   Median : 6.000   Median : 283.1   Median : 1.0000
Mean    :-0.015184   Mean   : 9.479   Mean    : 363.2   Mean    : 4.7728
3rd Qu.:-0.005212   3rd Qu.:11.000   3rd Qu.: 405.4   3rd Qu.: 3.3611
Max.   : 0.102155   Max.   :90.000   Max.   :2584.0   Max.    :123.6667
NA's    :3                           NA's    :5        NA's    :5
EV Old Stock x GOT  RID x GOT        Execution GOT    Totale x Execution GOT
Min.   :-0.28326   Min.    :-0.16388   Min.   : 0.000   Min.    : 164.0
1st Qu.:-0.09904   1st Qu.:-0.02986   1st Qu.: 1.000   1st Qu.: 721.2
Median :-0.05922   Median :-0.02069   Median : 2.000   Median : 1129.8
Mean    :-0.07073   Mean    :-0.02310   Mean    : 2.243   Mean    : 1497.1
3rd Qu.:-0.03102   3rd Qu.:-0.00696   3rd Qu.: 2.250   3rd Qu.: 1795.6
Max.   : 0.00000   Max.    : 0.14594   Max.   :14.000   Max.    :13745.0
NA's    :6         NA's    :5                           NA's    :4
Old Stock x Execution GOT EV Old Stock x Execution GOT RID x Execution GOT
Min.   : 0.000   Min.    :-0.8687   Min.    :-0.32681
1st Qu.: 1.000   1st Qu.:-0.3350   1st Qu.:-0.13802
Median : 4.167   Median :-0.2117   Median :-0.06998
Mean    : 19.995   Mean    :-0.2589   Mean    :-0.07935
3rd Qu.: 15.000   3rd Qu.:-0.1375   3rd Qu.:-0.03424
Max.   :742.000   Max.    : 0.0000   Max.    : 0.68104
NA's    :4         NA's    :5        NA's    :4
```

Source: Own analysis of data from the Italian Ministry of Justice

```
 Defined 2021     Registered 2021 Difference 2021    DEF/PEN 2021
Min.    :  189    Min.   :  140   Min.   : -43.0    Min.   :0.3891
1st Qu.: 1064     1st Qu.:  876   1st Qu.: 183.8    1st Qu.:0.7314
Median : 1742     Median : 1409   Median : 312.0    Median :0.9619
Mean   : 2816     Mean   : 2239   Mean   : 577.2    Mean   :1.0231
3rd Qu.: 3190     3rd Qu.: 2552   3rd Qu.: 623.8    3rd Qu.:1.2245
Max.   :30495     Max.   :22512   Max.   :7983.0    Max.   :3.1617


 DIF/PEN 2021        Registered x administrative Registered x judge
Min.   :-0.09471   Min.   :   28.0            Min.   :  35.0
1st Qu.: 0.11391   1st Qu.:  146.7            1st Qu.:112.3
Median : 0.18520   Median :  208.3            Median :148.8
Mean   : 0.19814   Mean   :  265.9            Mean   :156.3
3rd Qu.: 0.27493   3rd Qu.:  299.9            3rd Qu.:185.2
Max.   : 0.72745   Max.   : 2926.0            Max.   :548.9
                   NA's   :5                  NA's   :3
Registered x Effective judge Registered x GOT  Registered x Execution GOT
Min.   :  61.29             Min.   :  46.67   Min.   : 140.0
1st Qu.: 335.50             1st Qu.: 133.02   1st Qu.: 529.5
Median : 495.35             Median : 205.33   Median : 886.8
Mean   : 563.11             Mean   : 268.73   Mean   :1084.3
3rd Qu.: 702.38             3rd Qu.: 303.25   3rd Qu.:1330.2
Max.   :4116.50             Max.   :2744.33   Max.   :7605.0
                            NA's   :5         NA's   :4
Defined x administrative Defined x judge  Defined x Effective judge
Min.   :  37.8          Min.   : 47.25   Min.   :  86.43
1st Qu.: 190.1          1st Qu.:143.20   1st Qu.: 430.38
Median : 254.0          Median :178.19   Median : 600.50
Mean   : 336.0          Mean   :195.30   Mean   : 702.89
3rd Qu.: 369.0          3rd Qu.:234.25   3rd Qu.: 846.19
Max.   :3872.0          Max.   :687.33   Max.   :5155.00
NA's   :5               NA's   :3
Defined x GOT       Defined x Execution GOT Difference x administrative
Min.   :  60.17    Min.   :  180.5        Min.   :-14.33
1st Qu.: 170.21    1st Qu.:  667.2        1st Qu.: 26.00
Median : 258.55    Median : 1119.5        Median : 48.00
Mean   : 335.47    Mean   : 1347.4        Mean   : 70.07
3rd Qu.: 356.57    3rd Qu.: 1595.1        3rd Qu.: 77.30
Max.   :3436.67    Max.   :10620.0        Max.   :946.00
NA's   :5          NA's   :4              NA's   :5

Difference x judge Difference x Effective judge Difference x GOT
Min.   : -7.167    Min.   : -21.50    Min.   :-14.33
1st Qu.: 21.636    1st Qu.:  63.58    1st Qu.: 29.21
Median : 32.000    Median : 112.25    Median : 43.57
Mean   : 38.961    Mean   : 139.78    Mean   : 66.74
3rd Qu.: 52.750    3rd Qu.: 181.15    3rd Qu.: 72.38
Max.   :141.300    Max.   :1038.50    Max.   :692.33
NA's   :3                             NA's   :5
Difference x Execution GOT DEF/PEN x administrative DEF/PEN x judge
Min.   : -43.0     Min.   :0.01219        Min.   :0.008702
1st Qu.: 101.5     1st Qu.:0.07828        1st Qu.:0.060953
Median : 190.6     Median :0.13800        Median :0.101501
Mean   : 263.1     Mean   :0.17632        Mean   :0.113932
3rd Qu.: 312.4     3rd Qu.:0.22421        3rd Qu.:0.157537
Max.   :3015.0     Max.   :1.00519        Max.   :0.526947
NA's   :4          NA's   :5              NA's   :3
DEF/PEN x Effective judge DEF/PEN x GOT     DEF/PEN x Execution GOT
Min.   :0.0442     Min.   :0.01180   Min.   :0.08874
1st Qu.:0.1993     1st Qu.:0.07814   1st Qu.:0.31009
Median :0.3148     Median :0.13814   Median :0.54729
Mean   :0.3815     Mean   :0.17582   Mean   :0.63760
3rd Qu.:0.4210     3rd Qu.:0.22430   3rd Qu.:0.86438
Max.   :1.6467     Max.   :0.78768   Max.   :3.16168
                   NA's   :5         NA's   :4
DIF/PEN x administrative DIF/PEN x judge  DIF/PEN x Effective judge
Min.   :-0.03157   Min.   :-0.015786 Min.   :-0.04736
1st Qu.: 0.01065   1st Qu.: 0.007157 1st Qu.: 0.03098
Median : 0.02365   Median : 0.017085 Median : 0.05346
Mean   : 0.03436   Mean   : 0.022075 Mean   : 0.07400
3rd Qu.: 0.04165   3rd Qu.: 0.031497 3rd Qu.: 0.09187
Max.   : 0.24559   Max.   : 0.090523 Max.   : 0.39092
NA's   :5          NA's   :3
DIF/PEN x GOT      DIF/PEN x Execution GOT
Min.   :-0.03157   Min.   :-0.09471
1st Qu.: 0.01060   1st Qu.: 0.04684
Median : 0.02401   Median : 0.09377
Mean   : 0.03386   Mean   : 0.11785
3rd Qu.: 0.04192   3rd Qu.: 0.16223
Max.   : 0.20800   Max.   : 0.46424
NA's   :5          NA's   :4
```

Source: Own analysis of data from the Italian Ministry of Justice

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     DEP                  DIP              EV DEF x administrative
Min.   :-1.480580   Min.   :-0.39584   Min.   :-1394.00
1st Qu.:-0.145545   1st Qu.:-0.02449   1st Qu.:  -78.95
Median :-0.015260   Median : 0.05032   Median :  -45.00
Mean   :-0.004185   Mean   : 0.06448   Mean   :  -60.30
3rd Qu.: 0.116997   3rd Qu.: 0.16315   3rd Qu.:  -17.92
Max.   : 0.953346   Max.   : 0.57565   Max.   :  402.33
                                       NA's   :5

EV Registered x administrative EV DIF x administrative EV DEF/PEN x administrative
Min.   :-1062.00            Min.   :-332.00     Min.   :-0.370145
1st Qu.:  -82.84            1st Qu.: -16.86     1st Qu.:-0.017949
Median :  -55.00            Median :   9.80     Median :-0.000918
Mean   :  -76.08            Mean   :  15.78     Mean   : 0.000740
3rd Qu.:  -32.55            3rd Qu.:  37.17     3rd Qu.: 0.019344
Max.   :  137.00           Max.   : 622.25     Max.   : 0.317782
NA's   :5                   NA's   :5           NA's   :5

EV DIF/PEN x administrative EV DEF x judge       EV Registered x judge
Min.   :-0.106759       Min.   :-209.24    Min.   :-196.18
1st Qu.:-0.003330       1st Qu.: -60.38    1st Qu.: -58.55
Median : 0.006094       Median : -33.75    Median : -42.37
Mean   : 0.012319       Mean   : -34.46    Mean   : -44.06
3rd Qu.: 0.023859       3rd Qu.: -13.38    3rd Qu.: -23.78
Max.   : 0.137688       Max.   : 150.88    Max.   : 127.33
NA's   :5               NA's   :3          NA's   :3

EV DIF x judge       EV DEF/PEN x judge    EV DIF/PEN x judge    EV DEF x GOT
Min.   :-159.000   Min.   :-0.0763481   Min.   :-0.053380   Min.   :-357.50
1st Qu.: -11.400   1st Qu.:-0.0138795   1st Qu.:-0.001928   1st Qu.: -85.11
Median :   5.889   Median :-0.0011012   Median : 0.004868   Median : -43.50
Mean   :   9.599   Mean   : 0.0006547   Mean   : 0.008455   Mean   : -50.57
3rd Qu.:  26.900   3rd Qu.: 0.0115833   3rd Qu.: 0.018875   3rd Qu.: -17.29
Max.   : 205.118   Max.   : 0.1493122   Max.   : 0.095855   Max.   : 587.00
NA's   :3          NA's   :3            NA's   :3           NA's   :5

EV Registered x GOT  EV DIF x GOT       EV DEF/PEN x GOT     EV DIF/PEN x GOT
Min.   :-717.00    Min.   :-185.500   Min.   :-0.212092   Min.   :-0.106759
1st Qu.: -89.43    1st Qu.: -16.409   1st Qu.:-0.019269   1st Qu.:-0.002742
Median : -57.40    Median :   8.222   Median :-0.001785   Median : 0.007199
Mean   : -76.24    Mean   :  25.672   Mean   : 0.001407   Mean   : 0.013892
3rd Qu.: -33.50    3rd Qu.:  32.619   3rd Qu.: 0.017800   3rd Qu.: 0.023688
Max.   : 152.80    Max.   : 915.500   Max.   : 0.238337   Max.   : 0.223050
NA's   :5          NA's   :5          NA's   :5           NA's   :5

EV DEF x Execution GOT EV Registered x Execution GOT EV DIF x Execution GOT
Min.   :-1338.00       Min.   :-6670.0       Min.   :-667.80
1st Qu.: -394.62       1st Qu.: -401.4       1st Qu.: -71.25
Median : -178.83       Median : -219.8       Median :  31.62
Mean   : -220.46       Mean   : -328.8       Mean   : 108.33
3rd Qu.:  -48.38       3rd Qu.: -102.8       3rd Qu.: 128.75
Max.   : 1174.00       Max.   :  764.0       Max.   :6974.00
NA's   :4              NA's   :4             NA's   :4

EV DEF/PEN x Execution GOT EV DIF/PEN x Execution GOT
Min.   :-0.493527      Min.   :-0.32028
1st Qu.:-0.072446      1st Qu.:-0.01475
Median :-0.007864      Median : 0.02317
Mean   :-0.001879      Mean   : 0.04118
3rd Qu.: 0.062523      3rd Qu.: 0.08731
Max.   : 0.895873      Max.   : 0.45385
NA's   :4              NA's   :4


EV DEF x Execution GOT EV Registered x Execution GOT EV DIF x Execution GOT
Min.   :-1338.00       Min.   :-6670.0       Min.   :-667.80
1st Qu.: -394.62       1st Qu.: -401.4       1st Qu.: -71.25
Median : -178.83       Median : -219.8       Median :  31.62
Mean   : -220.46       Mean   : -328.8       Mean   : 108.33
3rd Qu.:  -48.38       3rd Qu.: -102.8       3rd Qu.: 128.75
Max.   : 1174.00       Max.   :  764.0       Max.   :6974.00
NA's   :4              NA's   :4             NA's   :4

EV DEF/PEN x Execution GOT EV DIF/PEN x Execution GOT
Min.   :-0.493527      Min.   :-0.32028
1st Qu.:-0.072446      1st Qu.:-0.01475
Median :-0.007864      Median : 0.02317
Mean   :-0.001879      Mean   : 0.04118
3rd Qu.: 0.062523      3rd Qu.: 0.08731
Max.   : 0.895873      Max.   : 0.45385
NA's   :4              NA's   :4


EV DEF x Effective judge EV Registered x Effective judge EV DIF x Effective judge
Min.   :-878.80        Min.   :-1075.50      Min.   :-667.80
1st Qu.:-221.00        1st Qu.: -207.50      1st Qu.: -48.02
Median : -94.00        Median : -142.67      Median :  12.75
Mean   :-125.55        Mean   : -160.70      Mean   :  35.15
3rd Qu.: -37.23        3rd Qu.:  -70.75      3rd Qu.:  89.47
Max.   : 603.50        Max.   :  382.00      Max.   : 871.50

DEP x Effective Judge DIP x Effective Judge
Min.   :-0.246763   Min.   :-0.169439
1st Qu.:-0.048144   1st Qu.:-0.007958
Median :-0.003685   Median : 0.013275
Mean   : 0.004639   Mean   : 0.027943
3rd Qu.: 0.039672   3rd Qu.: 0.056597
Max.   : 0.476673   Max.   : 0.278412
```

Source: Own analysis of data from the Italian Ministry of Justice

3.5 Duration Analysis

It was decided to propose an analysis of the relationship between the duration and the main of these variables. This is to demonstrate that it is not sufficient to rely only on duration to prove the qualities of a court, especially if the focus is on the future, with a long-term vision. It should also be noted how the graphs that will be proposed in this sub-chapter are constructed. They were made in such a way, especially those that emphasize trend lines for the various time periods, to reach as a sum equal to 100% each item. For example, for DEF<647 there were 14 observations (out of 140 courts) and the sum of each component (e.g., for very short durations, with less than 545 days, there were 4 observations equal to 2.86% of the total but 28.6% on this specific sub-sector) of these subsets must reach the value of 100%. This was done to highlight the movements and oscillations of the various temporal dimensions compared to those of the other variables, showing characteristic behaviours or possible counterintuitive tendencies.

3.5.1 Dimension of a court

The first focus will be on the link between duration and size, given the possible direct link that one might think between the size and slowness of bureaucracy, with the consequent difficulties at the logistical level of the entire system. It should be emphasized that the duration, in the following graphs, is represented in days instead of years (ideally done to depict the phenomenon with greater precision) where 545 represents the year and a half, 745 indicates the two years, 910 days are 2 and a half years and finally, 1045 days represent the 3 years (here instead it has been chosen as the limit date of reference the one set by the Pinto law).

As it is possible to see from Figure 26, short durations (545<X<725) tend to increase with increasing size; medium ones (725<X<910) tend to decrease with increasing size. It is possible to spot a peak (percentage) of very short durations (X<545) for the medium-large size. If we look for absolute values, the number of courts with very short durations increases with increasing size (up to average). Although there are some small and weak trend, there is no clear correlation between these two variables; so, it is necessary to investigate in more detail the other variables.

Duration-Dimension
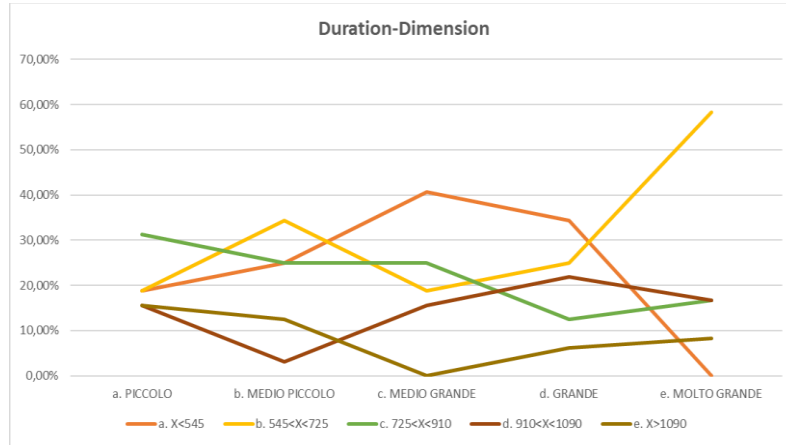
3.5.2 Total number of Pending Processes

By looking at the total number of pending proceedings and the duration, this time is possible to see a clear trend. The very short durations collapse seems linearly with the increase of the stock of the backlog processes while at the same time it is possible to witness an increase in the long durations (910<X<1090) corresponding to the decrease listed above, as illustrated in Figure 27. This highlights that the courts with reduced stock (TOT<1500), which have been able over time to significantly impact the backlog of outstanding processes obtained excellent performance from the point of view of the timing; at the same time, the courts that were not able to keep up with the pace of the registered proceedings and/ or fails to cut the stock of processes paradoxically suffers in a negative way. The problem with this variable, in absolute terms, is that is strongly linked with the dimension variable cited above. better processing is needed for this variable to obtain better and more in-depth descriptions.

Figure 27: Relationship between duration and the stock of backlogs of a court

Duration- Total Pending Processes
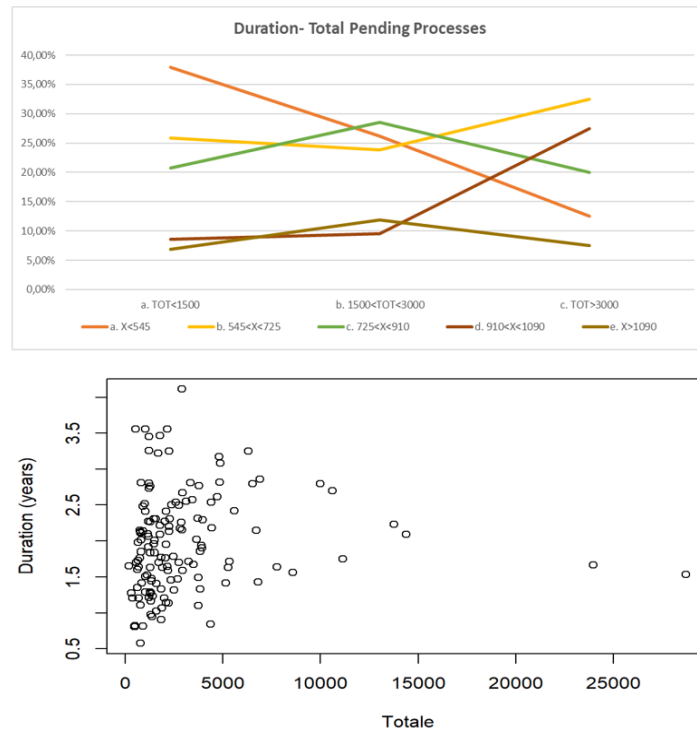
Source: Own re-elaboration of data from the Italian Ministry of Justice

3.5.3 Historical Current Weight

What it has just been said above can be proven also in Figure 28. In particular, as far as the weight of old stock (more than 10 years) in relation to the total is concerned, it can be seen that it has a strong correlation with duration. As can be seen, in fact, to 'obtain' a low relative duration it is necessary to have a low percentage of historical component. There are clear trends with regards of this variable, a decreasing one for low duration, highlighting that is quite impossible to obtain good results in terms of temporal efficiency if there is a relative important stock of old-dated pending processes; and an increasing one for long duration. This is also proven in the linear regression between the two variables which shows a p-value equal to 9.58e-16, sign of a strong relationship between the two. The same result was also achieved by extending the analysis to the use of several variables at the same time, e.g., by incorporating the size (but also found in all others) of the courts. Regardless of the value assumed by the latter, it turned out that the time performance of the courts depends only on the stock of dated processes. This situation can suggest possible arbitrage for specialized investor as it is possible to invest, assuming that exist two identical NPLs with the same features but in different

localities, in the one that is addressed by the court with lower percentage of old dated pending proceedings. As it will be possible to see in the in the continuation of the chapter, one variable is not sufficient to determine these kinds of better performances between peers and it is one of the main reasons that brought to the development of a score system.

Figure 28: Relationship between duration and the historical weight of the backlogs of a court
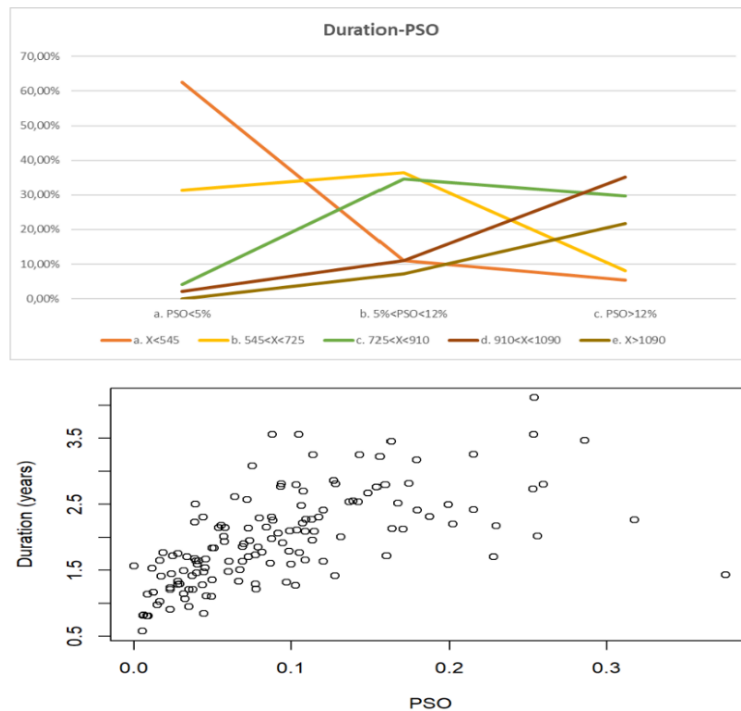
Source: Own re-elaboration of data from the Italian Ministry of Justice

3.5.4 Evolution of the Historical Current Weight

Linked to the previous context is the evolution of the weight of the backlog of the stock over the two-year period. In this timeframe, as it is possible to see in the Figure 29, courts that have faced a major reduction in this type of dated processes obtained better results compared to the one that did not. This may sound counterintuitive because if it is intended to reduce the stock of older pending trials, especially if such a cut is made significantly (as shown in the section of the graph with EV<-50% which means a decrease greater than half of the previous stock), courts should logically expect longer duration but this is not true. For this reason, it was decided to proceed with a core drilling of the cluster of courts that resulted in the very short duration range.

What it turns out is that important evolutions of the dated processes are on average associated to very low level of PSO (lower on average to 5%) that inevitably implies, the easy attainment of this quota cut, compared to counterparties with a weight greater than 12% of the total. Widening the core drilling with reference to the latter variable it has been noticed in fact that the majority of the courts that start from medium level of PSO (with said variable comprised between 5% and 12%) or elevated level (above 12%) fall, to whichever degree of evolution, in sections with higher durations.

So, what emerges from this combined analysis is that those who have a historical stock of low pendants tend to reduce it quickly without significantly affecting the duration while less marked reductions, due also to higher weights, lead to higher durations. This last aspect is made evident by the graph below in Figure 29 that shows a significant coefficient between the duration and the evolution of the historical equal to 1.32.

Figure 29: Relationship between duration and the evolution of the historical weight of the backlogs of a court
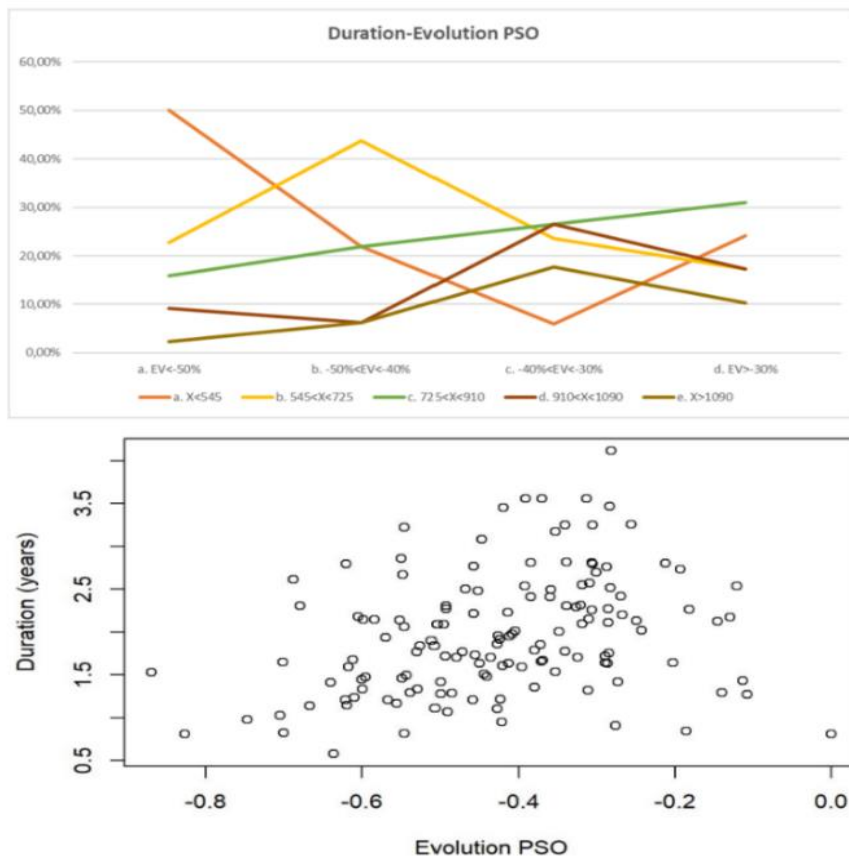
3.5.5 Reduction of the Total Stock

The problems associated with the use of the total number of pending cases as a variable have already been discussed; analysing the reduction of the latter, however, reveals peculiar and comforting trends. If one focuses only on very short durations, those that should actually matter (to be taken as a benchmark) by all courts, they are found in courts that have implemented significant reductions in the total stock (RID <-20%) and those with smaller reductions (RID>-10%). The main differences between the two sides come from the ability of the courts to manage a greater number of defined than the registered ones and the load of historical pending (this confirms what has been said previously about the importance of this variable in the overall system). Thus, there are courts that manage to reduce stock and achieve very good time performance and those on the other hand, despite poor case management, manage to achieve good durations. For the relevant durations, on the other hand, there is a linear increasing trend justified not only by a lack of ability to increase the defined over the registered ones but even by a greater weight of the historic proceedings. If the analysis proceeds by focusing on these aspects, it is possible to create arbitrage by reducing the NPL/NPE exposure held on a particular court that does not behave like its competitors with respect to these two parameters, thus creating an imbalance in the valuation (bearing in mind the principle that it is very difficult to find two impaired exposures equal). This report offers further food for thought in that it shows that duration cannot be taken as the sole benchmark for evaluating courts because, as just mentioned, inefficient courts can be optimal in terms of time. In addition to that, as shown in Figure 30, no correlation emerges. Given the importance just described, this lack of statistical reporting is no small problem and this is also why an evaluation system must be created to reward the most efficient courts in this respect.

Figure 30: Relationship between duration and the reduction of the backlogs of a court
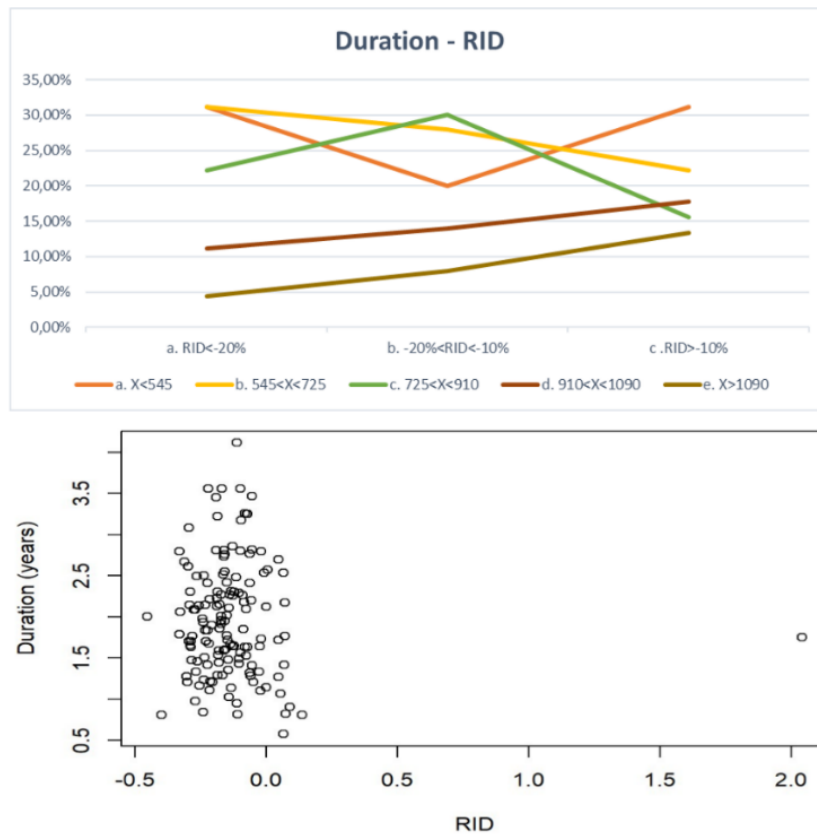
Source: Own re-elaboration of data from the Italian Ministry of Justice

3.5.6 Defined, Registered processes and the Difference between the two in 2021

As it is possible to see from the charts below and as the reader can easily guess logically, as regards the processes defined and registered in the year 2021, they move in an almost specular way. Obviously these two measures, reasoning for absolute values, do not consider the size of the courts, the location of the latter (therefore whether or not to be part of a metropolis rather than a little densely inhabited province) and other characteristics that do not allow a true and real comparison of the courts. For this reason, analysing these "pure" variables, without relating them to anything else, can be harmful for the overall result. Already studying the difference between defined and registered procedures, more particular and interesting aspects can be noted. The shorter durations are obtained when the difference between these two parameters is much reduced; solving only the current processes, barely affecting the pre-existing stock, the durations inevitably cannot assume high values. The more the difference increases the more these last durations collapse vertically in favour of linear growth of the long ones. This may seem contradictory to what has just been said about stock

reduction but it is important to keep in mind that longer durations (as seen before) are influenced in particular by the value of the current weight of the historical procedures that it assumes inside of the stock of pending proceedings. This time, therefore, the courts' internal policies on the management of pending cases are of great importance. Focusing on reducing the high case load inevitably impacts on the temporal performance. Finally, as it is possible to see on the three charts on the right side in Figure 31, none of the three variables is related to duration. This is not a big problem as more importance will be given to the derivations of these variables.

Figure 31: Relationship between duration and the defined, registered processes and the difference of a court in 2021
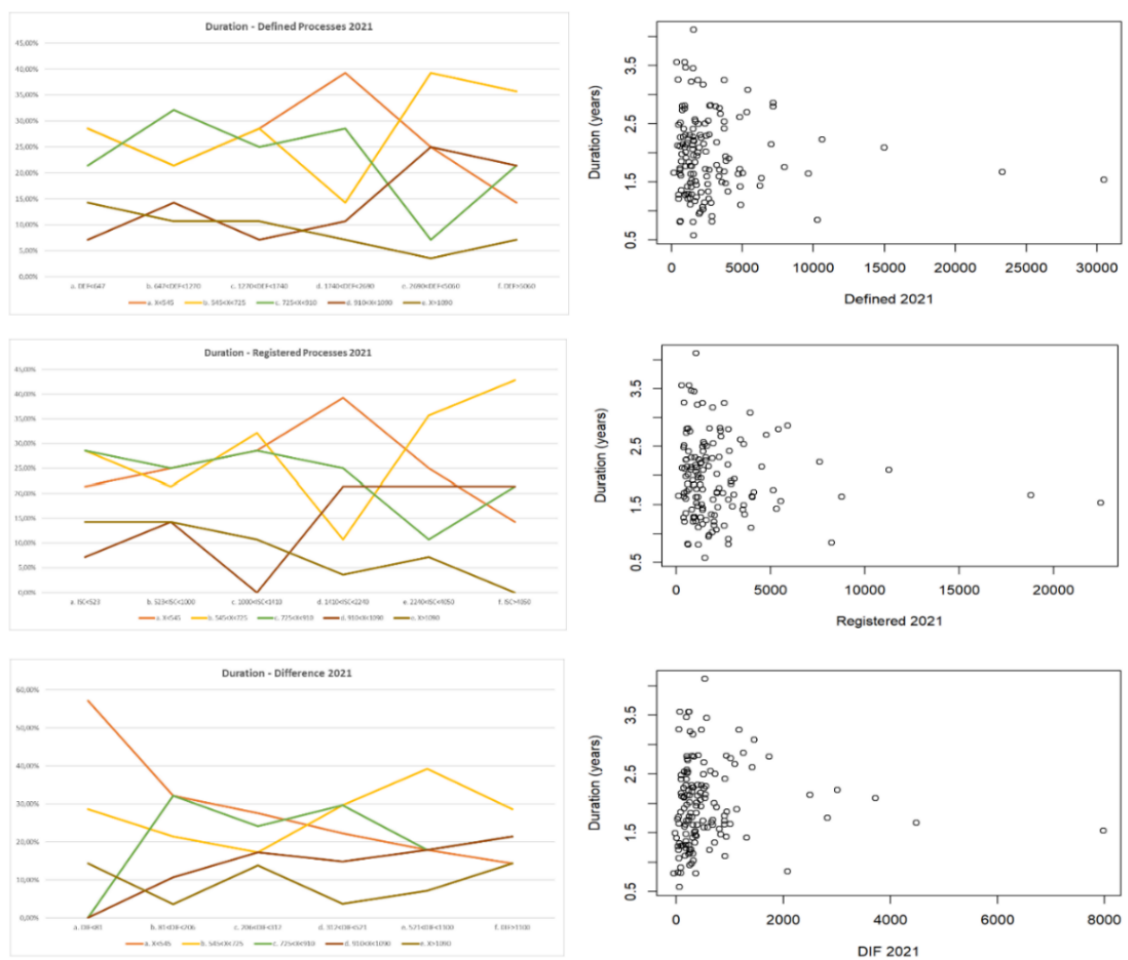
Source: Own re-elaboration of data from the Italian Ministry of Justice

3.5.7. DEF/PEN and DIF/PEN in 2021

By looking at the graph below even the link between duration and defined over pending processes (in the year 2021) shows a relationship not immediate easy to understand from the logical point of view. The increase of the defined over the pending proceedings,

the durations diminish, clear relation evidenced above all from Diagram 2, which shows a correlation coefficient between the two variables of -0,9905. Logically, having such a high ratio, one should expect a significant deterioration/diminish of the pre-existing stock and consequently increase the duration. The first assumption is not guaranteed as, however, the final outcome of the reduction depends on the number of processes registered. Theoretically it is plausible to assume that considering such high ratios, the number of defined proceedings is greater than the one of the new registered. This should lead to greater durations by eroding the pre-existing stock. For this reason, as already done before, it was decided to proceed with a drilling performed for courts that have a significant ratio between defined and pending (DEF/PEN > 125%). In this cluster there was a high difference between defined and registered processes over the pending ones (DIF/PEN >25% in 10 out of 23 cases) and this should consequently increase the durations, but the really fundamental data is the weight of the historical ones (in fact there are 22 out of 23 observations that have PSO <5%). This allows, as already described, tribunals to reduce sensibly the stock of pending processes without significant alteration from the point of view of the duration. It is also important to note that, as shown in Figure 32, courts that have a ratio of definite over pending low (less than 50%), it has only long/very long durations. With respect the ratio DIF/PEN, the "effective re-entry speed", it has common characteristics with the pure variable (DIF) that determines it. For this reason, reference is made to the above point for considerations especially with reference to the reason for a greater presence of short durations in the first segmentations. It was found out that the ratio DIF/PEN was not significantly correlated, which is shown in graph 3, with the duration and this is a huge problem given the importance of the variable in determining the timing of stock cancellation.

Figure 32: Relationship between duration and the ratio DEF/PEN and DIF/PEN in 2021 of a court
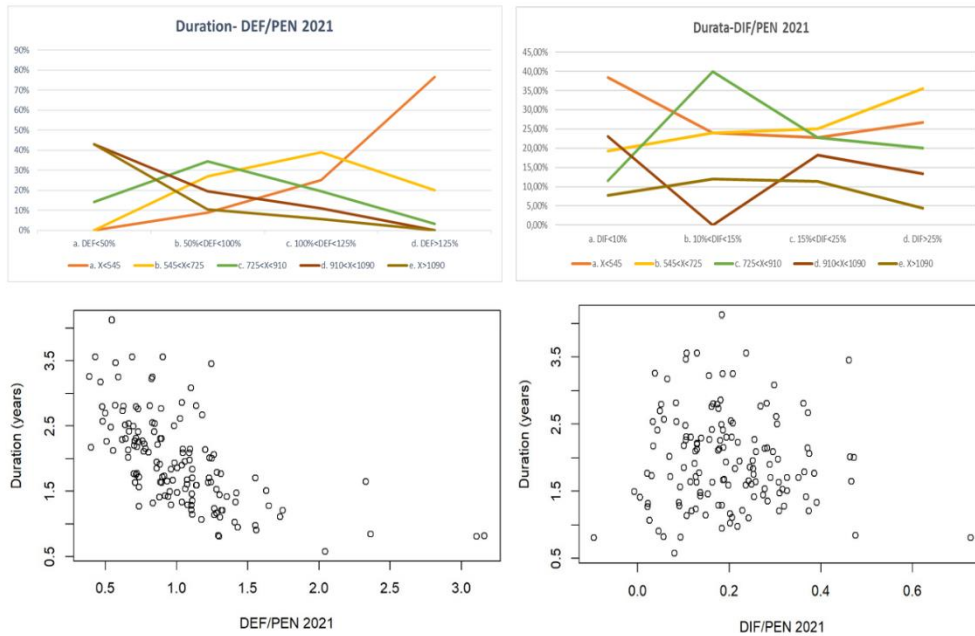
Source: Own re-elaboration of data from the Italian Ministry of Justice

3.5.8 DEP and DIP

It finishes the analysis begun in the previous point by focusing on the evolution of the DEF/PEN and DIF/PEN ratios. By looking at Figure 33, those who reduced the first one (DEP<-10%) and those who improved it (DEP>2%) over the period of time 2019-2021 have shorter durations. While in the first context this makes sense, by reducing the number of defined processes, affecting less the existing stock by effectively focusing only on the most recent processes, in the second case a more thorough investigation is needed. Proceeding with the core drilling the real difference this time comes from a less marked reduction of the general stock (in 11 observations out of 17 the reduction was less than 10%) always maintaining a current historical weight high. The collapse of the very short durations is due to a lower average historical weight in that cluster and to less marked reductions of the latter (lengthening of the durations but not excessive). The relationship, underlined in the bottom left-hand corner of Figure 33, is not significant, it is not a driver of the duration. The latter is therefore influenced by the most recent component (DEF/PEN 2021) but not by the evolution of this variable over the time horizon. Therefore, it does not reflect any progress or failure in court efficiency when this aspect should be addressed/included in the assessments made. The same is true for the evolution of the DIF/PEN ratio with the difference that for this variable not even the "present" factor is significant. With regard to the DIP parameter, it is in fact in line with

the logic outlined above, since the more the defined (so positive ratio) increases, the more the old stock is affected and the duration increases accordingly. For DIP, the majority of observations have a high weight of the pending historian (in 34 observations out of 42 the historical current weight is greater than 5%) and in 23 of these, the reduction of this burden was more than 40%. This inevitably led to an increase in the average duration. It is important to remember that these variables should be considered with caution, as there are cases where there is a reduction in the ratio but the 2021 figure is still largely positive (DEF/PEN> 125%), with the addition that the DIF/PEN ratio is much more volatile than the first one.

Figure 32: Relationship between duration and the evolution of the ratio DEF/PEN and DIF/PEN in 2021 of a court
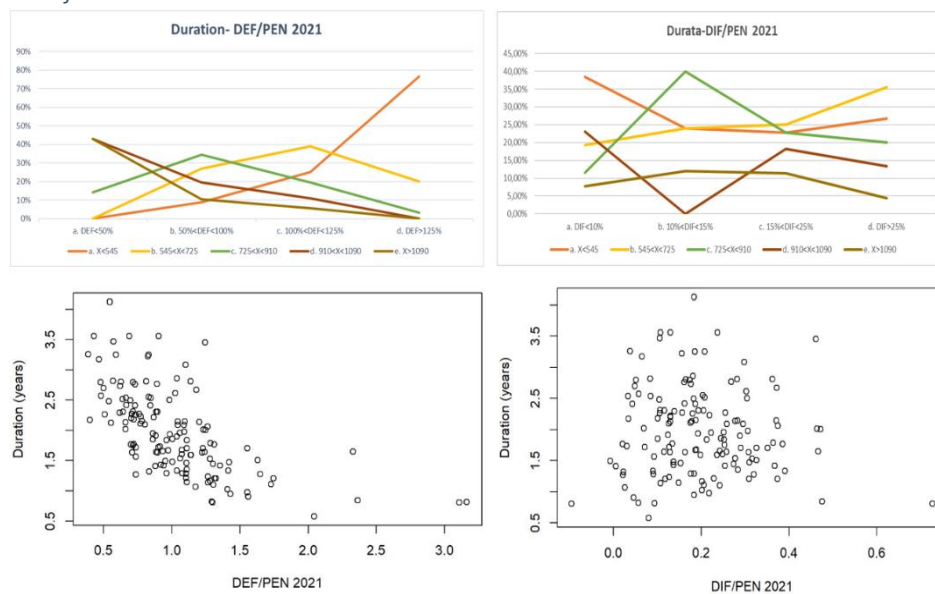
Source: Own re-elaboration of data from the Italian Ministry of Justice

3.5.9 Administrative Staff

It has been widely said earlier that the incidence of administrative staff is crucial in the performance obtained by the court itself. The fact that the various judges/magistrates have the appropriate support for their activities makes the whole system more streamlined and efficient at the same time. Empirical evidence suggests that, as shown in Figure 33 that it is not possible to infer a clear relationship between the administrative staff and the duration of the proceedings even if the "ideal" structure seems to be the one with personnel between 5 and 7 units as it has a greater absolute number of very

short and average durations. It is a big problem that the administrative staff is not correlated, also demonstrated in the lower part of the graph.

The simple duration, therefore, can neither provide food for thought on the organizational structures of the various courts, establishing any positive or negative reports on the efficiency of the staff nor propose arbitrage opportunities by reducing exposure to courts with over staffing and higher durations, for example. This, as will also be seen in more detail in the following points, increasingly confirms the thesis that it is necessary to broaden the reference horizon in order to have a broader view of the actual performance capabilities of a court, significantly including human resources performance.

Figure 33: Relationship between duration and the number of the administrative staff of a court
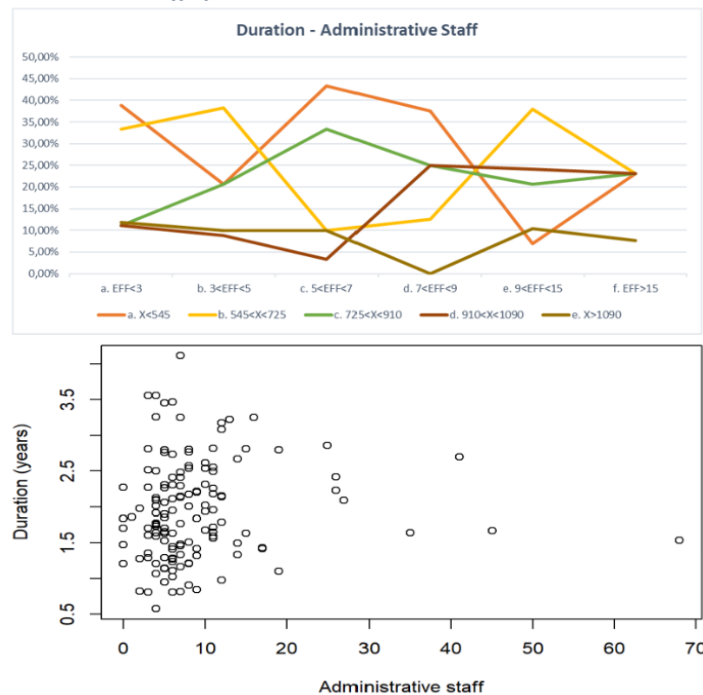
Source: Own re-elaboration of data from the Italian Ministry of Justice

3.5.10 Civil and Effective Judges

It has been decided not to use, with this series of data of the total average duration of the various proceedings that targets the total SIECIC area, the reference to specific individual areas of the judges. Therefore, for example, an analysis of the duration compared to the individual judges involved in the execution of Real Estate as the result could be misleading and wrong. But considering the specificity of the area it was decided to add these singularities to have a more specific and calibrated reference. The latter

was categorized as "Effective Judge" and includes the judges assigned to executions (movable assets and Real Estate) and to the bankruptcy area (with the concordato preventivo and other forms). In this context, the second type of judges assumes greater importance because, as just announced, it is more specific and calibrated but the total number of judges, used in other reports such as the one of the Banca d'Italia, should not be neglected, is seen as a proxy for the efficiency of courts so it cannot be overlooked. By analysing the total number of civil judges in a court, shown in Figure 34, it is possible to see a linear decreasing trend for very short, medium, and long durations while the opposite, i.e., a linear increasing trend, for short and long durations. Similar results are also obtained with regards to the effective judge. The increasing trend of short-term durations (545<X<725) is justified by a lower historical weight (a lower reduction of the latter over a period of time 2019-2021) and a smaller reduction in the overall stock due also to the fact that as the number of judges increase, usually happen also the same for the size/ structures of the courts and with them the volumes of trials. This is another reason to consider the number of civil judges as a fundamental variable as it can also represent a proxy of the size. Moreover, for these two variables, both do not appear to be significantly correlated with duration, although the number of effective judges, given its particular discretionary nature (as opposed to the continuous nature of duration) should be treated in a more specific and particular manner (a task that is beyond the scope of this thesis and this sub-section in particular).

Figure 34: Relationship between duration and the number of civil and effective judges of a court
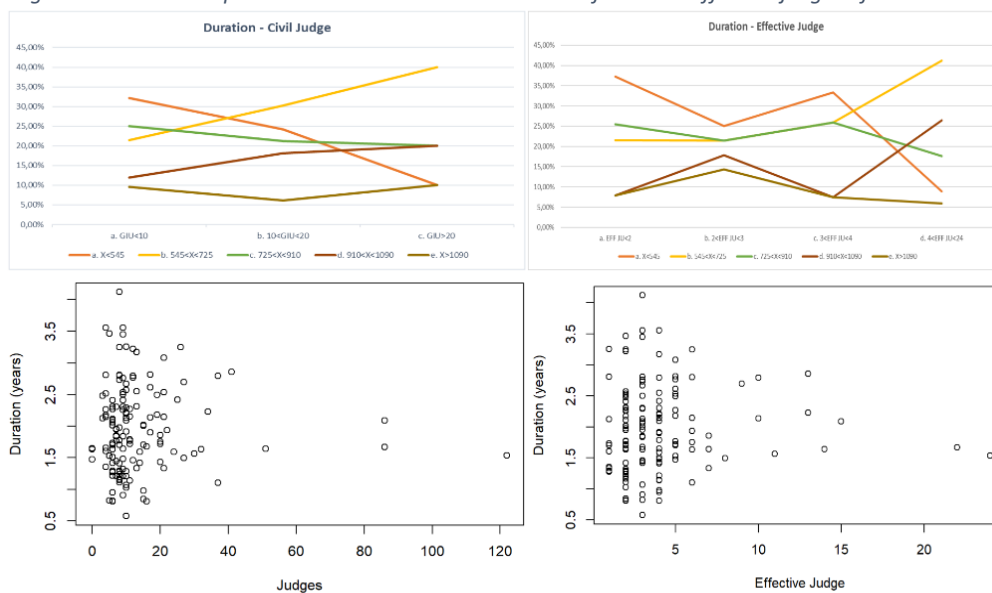
Source: Own re-elaboration of data from the Italian Ministry of Justice

3.5.11 Civil and Execution GOT

What was just written for the "traditional" judges/magistrates can also be applied for the GOT (honorary judges of the court). Their role assists the latter especially in processes of small size (and for this reason they are not involved in the most delicate regarding bankruptcies) so their presence is essential to obtain better temporal performance. It should be noted that the usefulness of this legal figure is, according to several operators specialized in the distressed sector, contested because of budget limits/ lack of higher professional figures. They no longer appear as mere assistance to a principal judge but takes its place with all the limitations of the case (also given the form of remuneration) but this goes beyond the scope of this thesis. Analysing the Figure 35, it can be seen that in reference to the number of civil GOT in the various Italian courts, there is the presence of a growing trend linearly for only long durations while the other durations are not characterized by unidirectional behaviours. With regard to the GOTs employed for executions (movable assets and real estate) an increasing trend is observed for short periods (even if the latter remain constant in absolute values). The increasing trend of short durations is justified by a smaller historical weight (a smaller reduction of the latter in the period of time 2019-2021) and a smaller reduction of the total stock while a decreasing trend is noted for very short and medium durations. It seems that the ideal structure for a court is to have in its staff between 3 and 6 civilian GOTs in total and only one employed for civil executions as this leads to better overall performance. Again, as in the previous situation of civil and effective judges, the two variables are not significant (see the two graphs below in Figure 35). All this evidence, given the importance of these legal figures, makes it increasingly necessary to construct/adopt a scoring system that takes all these shortcomings into account.
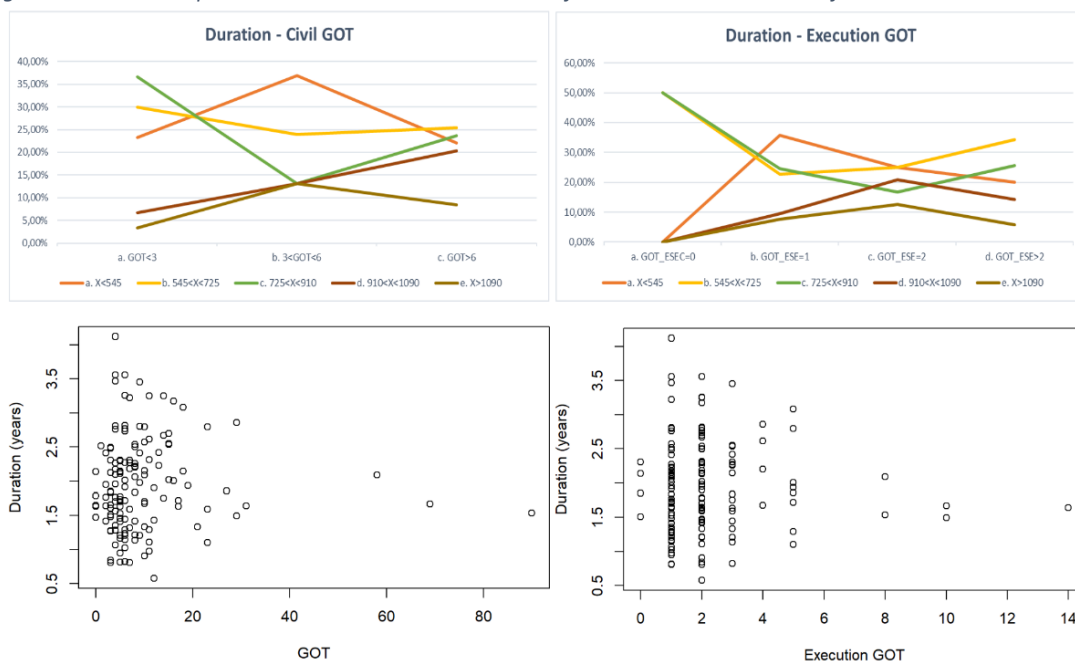
Source: Own re-elaboration of data from the Italian Ministry of Justice

3.6 Introduction to the Score System

There is not a single driver (or few of them) to determine the duration and above all it is necessary to consider not only this last one but also other variable like the reduction of the stock, the reduction of the historical, the evolution of the latter and all the others that characterize the performance of each individual court. In fact as widely seen in the previous paragraph the duration is not correlated, affected, by almost no variable of performance with regard to judges, GOT and administrative staff; it is therefore not possible to make inference with reference to these parameters. So, it is wrong to focus only on duration, you have to build something that allows you to analyse in depth every possible feature of each individual court so you can offer as complete and varied an overview as possible. So that the courts themselves have a methodology of comparison, which offers references and justifications on possible improvements to be undertaken, possible personnel to be included or to be released.

From the perspective of specialised investors and banks (which usually owns these NPEs), this new measure must immediately make visible the strengths and weaknesses of each court, making possible arbitrage and improving the methods of valuing the purchase and disposal of impaired positions. Specialized investors increase their profit margin by intensifying pressure on sellers which are usually banks therefore the latter

need to implement a cautious approach to prevent underselling Non-Performing Loans. The aim is to define the most proper monitoring measures also considering the external environment in which financial institutions operate and not to force banks to dispose those toxic exposures rapidly and unconditionally to the market. As just said the duration can be seen as the summary of what the court has been and has done to date, the set of performance of the court and its staff (although not directly reflected); therefore, it offers a backward view of the court. The drivers that determine the duration (such as the current historical weight) are precisely the result of decisions taken in the more or less recent past on staffing, job allocation, the intention to concentrate on the past stock or the most recent cases, efficiency with regard to the latter, etc. The duration is therefore a quite good summary metric (although it can be improved in any case) to represent what was, in a rather generic and not in-depth, a court. That is why it cannot simply be removed in this future analysis that will be undertaken shortly.

In a long-term future-oriented perspective, that is, the one that most interests investors and court presidents (to undertake structural reforms to the whole system) it is not enough to dwell only on this variable to determine the ability or not to be able to deal with the everyday challenges of a court efficiently. For example, as mentioned in the previous paragraphs of the chapter, there are contexts in which certain courts have initiated important processes of stock reduction of pending proceedings (especially considering courts where the PSO is greater than 12%) but for this they now inevitably suffer from an increase in average durations. If a person were to dwell only on analysing this parameter, the aforementioned courts would inevitably and unequivocally be penalized under this point of view when in fact by the same when in reality, thanks to these manoeuvres undertaken, these will benefit in the near future, with higher time horizons.

To the contrary the courts that have not affected such stock dated of processes, focusing exclusively on the current proceedings, can currently in any case have of the optimal durations, but they will pay this result of bad performances to expensive price in the future. What you want to say by quoting these two examples is that you have to rationalize the performance of the courts as you do in the Discounted Cash Flow modelling for each individual company. In the latter model, account is taken of any differences that make up the various companies; they are adjusted for interest

expenses, leverage, and other measures. In particular, it considers the expenses incurred for research and development (R&D), that is, the expenses that are unlikely to yield at the current time but will positively affect the future profitability of the corporation. The similarities with what have been said with regard to the impact of the reduction of the history of pending proceedings are obvious for this reason it is suggested to treat both the assessment of companies and that of the courts in the same way that is with deepening, with a retrospective and anticipatory look at the same time. On these bases and criteria, therefore, a need is created to provide a more real and relevant representation of the perspectives of each individual court. Why not limit yourself to the measurements also reported by the Ministry of Justice or to the parameters selected at European level? In reply to the first point, it is difficult to assess different courts on the basis of absolute numbers, since, as has already been amply pointed out above, they will have different dimensions, consequently organic and substantially different overall workloads. Compare in this respect for example Aosta and Rome, as well as useless could lead to serious errors of judgment. With regard to European parameters, they focus mainly on duration, disposition time (see Formula 2 in Chapter II) and clearing rate (defined procedures compared to those registered during the year). Both parameters, already described above, offer interesting insights, add details to the global vision but continue to lack an assessment of the human component (as well as a more detailed investigation of other items of the very structure of a court) indispensable to grasp the actual validity of a court.

For this reason, it was chosen to evaluate with greater specific gravity objective variables that went to probe and compare the variables previously listed but relating them for example to the total stock or to the staff in the court, to obtain in this way objective and comparable measurements between the various courts.

It was decided to divide the new evaluation model (which will lead to a subsequent ranking system) of the courts into three components:

- Efficiency of the staff (administrative and judicial);
- Efficiency of the court itself (general performance measures);
- Duration (as it would be wrong to disregard the past)

3.7 Efficiency of the Staff

On the duration so much has been said in particular in Chapter I for this reason the focus will be placed, in this and the next point, on the efficiency of the staff (aspect to which it has attributed the greatest weight in the rating system) and on the productivity of the court. The first is represented, in the modelling designed for this thesis, by twelve variables related and clustered by business unit (that is, with respect to each unit of administrative staff, civil judge, judge, civil GOT and GOT executions). This "per capita" score should be able to define which courts best employ their human resources; if the courts achieve high efficiency rates inevitably over the long-term variables such as the duration and reduction of the stock will be positively affected. The parameters analysed are the reference parameters used and described in the previous sections of the chapter, namely:

- o Total number of pending proceedings;
- o Number of processes part of the Old Stock;
- o Evolution of the Old Stock;
- o Reduction of the Total Stock;
- o Defined Processes in 2021;
- o Registered Processes in 2021;
- o Difference in 2021;
- o Evolution of the Defined Processes;
- o Evolution of the Registered Processes;
- o Evolution of the Difference;
- o Evolution of DEF/PEN (DEP);
- o Evolution of DIF/PEN (DIP)

These variables, when compared to administrative staff units, broaden the concept of productivity on which Banca d' Italia researchers have worked on their report. As explained above, in terms of productivity, the national authority refers to the number of judges and the number of cases registered for the population of the area; in fact, it increases the number of these benchmarks and the units to which they relate, the result should be better. There is no absolute certainty because as you will see later, since the score system is a "new" variable that includes the duration, it is not possible to anchor it to another parameter as a reference to trace its goodness and validity; For this will

take time and a series of future tests. Dwelling on the variables listed above will now propose a graphical and descriptive analysis for each of them (it will not be done for all the different organizational units as conceptually applied reasoning will be the same).

3.7.1 Total Pending Processes per Administrative Staff Unit

Starting in order of writing, starting then with the total stock compared to the administrative staff of the court with respect to duration and observing Figure 36 you can see that: as in the work done by the Bank of Italy, using averages of both variables, four areas of evaluation are created. In the first quadrant (top left), that is the one with lower-than-average employee pending values but with longer durations, it highlights those courts that are in an optimal loading context for their employees but the timing is not favourable. Obviously, there are several possible explanations for this situation, the main one, as it often happens lies in the weight of the historical component and in the evolution of the latter; if the latter has been deeply affected over time inevitably the duration suffers. The courts belonging to the first quadrant, in a dynamic perspective, are those potentially most likely, given their peculiar structure, to fall back in time in the third quadrant or the best. The latter (bottom left of the graph) is characterized by short durations, below average and a very low payload and payload for administrative staff. The second quadrant (top right in the graph), unlike the third, is the worst because for both parameters, the courts present here are above their averages; the risk in these cases is that if, leaving the structural situation unchanged, a vicious circle is created that feeds, in negative, more and more the loads to which the staff of the court is subjected. In order to better address this situation, it is necessary to increase the number of staff who assist magistrates in such employment so that, over time focusing particularly on the outdated stock, this court can be brought into the first quadrant. Finally, the last sector highlighted by the graph (bottom right) suggests that there are courts that despite the excellent durations suffer from considerable loads of pending against the staff. This is not a sustainable situation in the long term, policies to reduce stocks need to be changed but the recruitment of new staff for these courts is not necessarily mandatory; to this context in fact it is necessary to combine at the same time the analysis of the variable processes defined for administrative staff in order to verify where these tribunals are located and to observe whether with reference to the latter

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way is still room for improvement or whether the maximum possible (as an employee claim).

Figure 36: Relationship between duration and the ratio between the total number of pending processes with respect to the number of the administrative staff of a court

Pendings x administrative staff
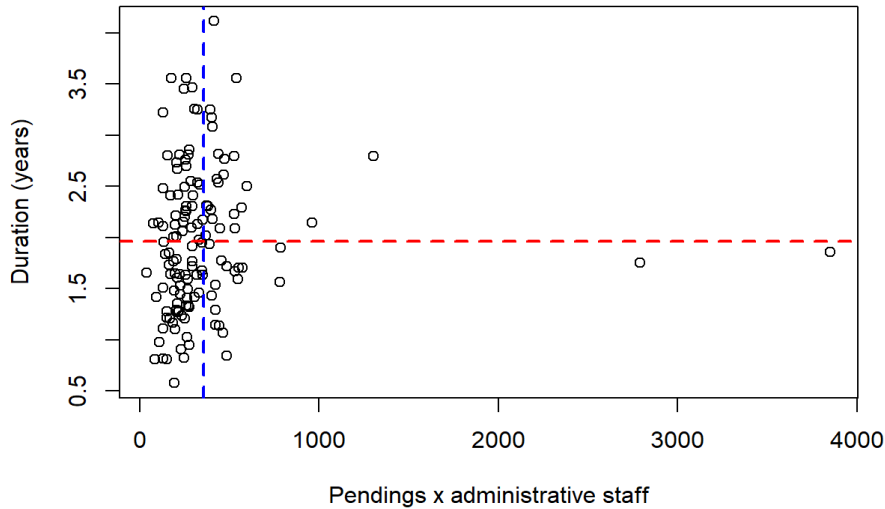
Source: Own re-elaboration of data from the Italian Ministry of Justice

3.7.2 Historical Processes per Administrative Staff Unit

Continuing with the analysis of variables, it arrives at the number of historical procedures for administrative staff (that is, how many dated processes per unit you have in a court) and reported in Figure 37. Compared to the previous chart it can be seen that in this case the distribution is more concentrated (especially below the average) and there are many more outliers with significant values that inevitably inflate the above average. Analysing and breaking down in more detail the above chart, starting from the first quadrant (top left), there are courts with loads of historical trials for staff below average but with longer durations; This, as mentioned above, may be the result of transitions initiated in the recent past (aimed at reducing this historical past) and that are still reflected in greater durations but that will bring greater benefits in the near future. The latter are destined, with the continuation of long-term policies to slip into the third quadrant (lower left) characterized by loads and durations below the middle; therefore, belonging to the best context. The second sector (top right) turns out to be contrary to the previous point the worst. This is where the courts are located with greater historical burdens on the shoulders of administrative employees and with higher durations. As in the case of the total stock, a vicious circle opens up here. These courts highlight structural problems as they have started the process of downsizing the

outdated stock but the burden is excessive on employees. To complete the analysis of the aforementioned courts you should compare this parameter with others such as the proceedings report defined for staff and registered for staff as so you could understand if in these courts is "simply" You need to demand more from your employees (maybe assigning some to this specific task) or if you need more staff. For the courts of the fourth quadrant (lower right) there were no policies to reduce the stock dated (found in low durations). In this context too, the problem should be addressed as soon as possible in order to avoid problems similar to those in the sector described above, counting that in this case the employment of ulterior staff will be necessary seen however the already enormous load present on the shoulders of a single employee.

Figure 37: Relationship between duration and the ratio between the volume of the historical backlog with respect to the number of the administrative staff of a court

Source: Own re-elaboration of data from the Italian Ministry of Justice

3.7.3 Evolution of the Historical Processes per Administrative Staff Unit

Proceeding with the evolution of the parameter just described, it can be shown (Figure 38) how, rightly from a logical point of view; it repeats almost in the same measure what has been said for the static variable. Starting from the best courts, third quadrant in the lower left, they were able to significantly reduce the older component of their warehouses and at the same time not to significantly affect the durability. As already seen, in the specific cores undertaken, these courts started from a limited load base (both at a comprehensive and specific level for organizational units). Despite the limited "weight" must be highlighted regardless of the efficiency of these courts in reaching

levels of disillusionment for very high organizational units. Going up, it can be observed the first quadrant or the courts with significant reductions but with still high durations. As in the previous case, they are destined to "reach" the sector analysed previously if they were to continue with these policies of management and efficiency of the staff. Such courts, unlike those in the third quadrant, starting from larger stocks of pending dated proceedings, simply pay more for this higher number of trials that inevitably raises the durations. The second quadrant (top right) illustrates the courts that during the two-year period failed to bring marked reductions per administrative unit of the old stock with the addition of sensitive durations. For the latter and for the fourth sector (bottom right), as regards future decisions to be taken, the same considerations as set out in the previous paragraph apply

Figure 38: Relationship between duration and the ratio between the evolution of the volume of the historical backlog with respect to the number of the administrative staff of a court
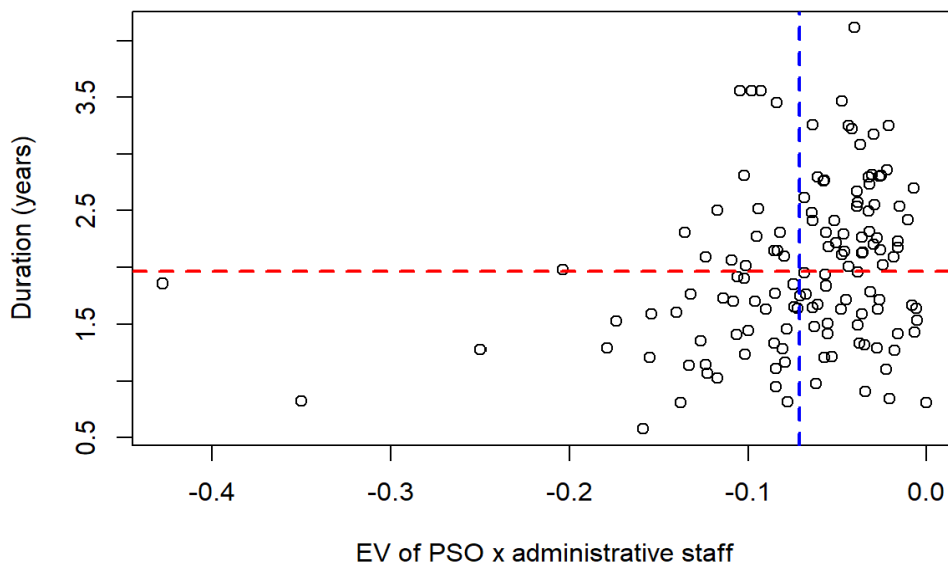
Source: Own re-elaboration of data from the Italian Ministry of Justice

3.7.4 Reduction of the Stock per Administrative Staff Unit

Passing now to the reduction of the total stock for administrative staff, shown in Figure 39 it is possible to notice that the average of this last one falls in next of the zero sign that for many courts the reduction is very reduced (emphasizing even more this aspect if it is considered the value brought by the individual) with uniqueness as the court of Torre Annunziata which saw the stock increase by 50% per administrative unit. Also, in this context it is possible to distinguish four quadrants resulting from the tracing of the

two lines representing the averages of the two reference variables. In the first (top left) are located the courts that have implemented significant reductions in the stock in relation to the size of the staff but suffering from high durations, it will not be focused again on the motivation of this phenomenon already widely described. In the second sector (top right) are the worst courts with reference to these two variables; they are characterized by high durations and reductions in relation to administrative staff almost absent (if not increasing).

According to the previous examples, these courts also highlight substantial structural problems because, contrary to the contexts already mentioned that focused on a subclass of this variable (therefore totally arbitrary management by the Presidents of the Court), in this case there are difficulties in the pure management of the general procedures defined compared to those entered. In this area, in fact, the courts have an excess of the latter than defined, making it necessary to recruit more employees and at the same time better management (with an internal change of policies) human resources to avoid further worsening of the situation. In the third quadrant are highlighted the best courts, with marked reductions and very short durations, the result of long-term policies launched in previous years (assisted by excellent personnel management). In the fourth and last quadrant (bottom right) are highlighted the courts that have not affected neither the duration nor the total stock of pending proceedings in relation to the staff.

This is the manifest demonstration of a management of the resources (and of politics) based only on the resolution of the current; will be fundamental therefore for these courts to analyse the voices regarding the performances of the dependent in optical of defined procedures (and difference between the latter and the processes recorded) to analyse whether room for improvement.
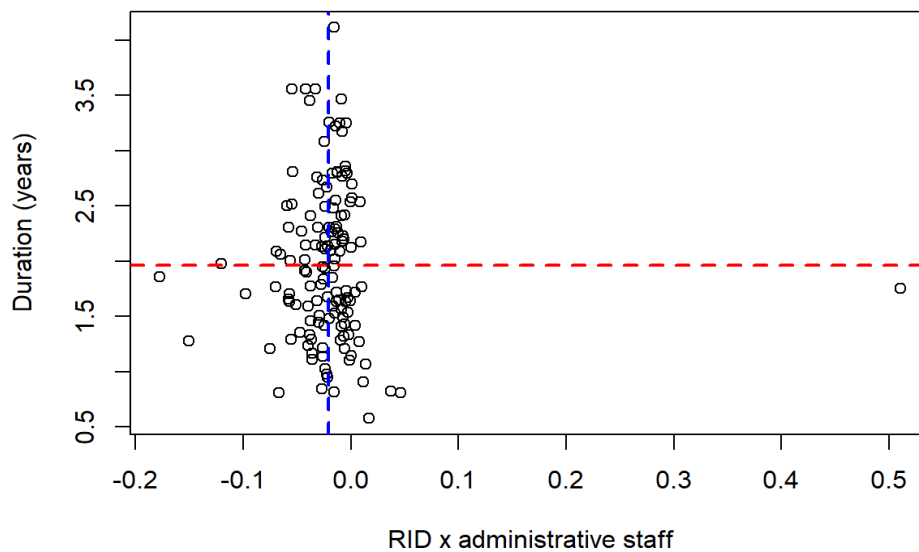
3.7.5 Defined Processes per Administrative Staff Unit

Shifting the attention towards the analysis of the flow components of the study of this analysis, in particular starting by studying the number of procedures defined by administrative unit, it is also possible to see in Figure 40 that the order of evaluation of the various sectors has now changed slightly. In addition, analysing the context very quickly you can see how high the number of courts below the threshold is characterizing the productivity parameter; this to show that for many of them the room for manoeuvre to make improvements exists and is more than significant. The best courts for this comparison now reside in the fourth quadrant (bottom right) characterized by reduced durations and defined for larger units than average. They represent excellence in individual employee productivity and efficient management of policies and human resources (The organizational structures, by size, shown in the first paragraph of this chapter could be replicated by the less efficient courts).

The worst courts are allocated in the first quadrant (top left) characterized by high durations and a low relationship between defined processes and administrative unit. The non-judicial staff of these courts are found to be underemployed and there are problems of time management in the concluded proceedings; as mentioned above, use the organisational structures of the courts belonging to the fourth sector, Reallocating human resources could help prevent the situation from worsening. The second quadrant

is characterized by relatively high durations (less than those of the first) and a distinct level of productivity by staff. The potential, as in the previous cases, is to slide and finish in the first ideal quadrant, once the demolition of the oldest stock has been completed. Finally, the third quadrant highlights the courts that have big potential problems but solvable trying to increase the work done by their staff perhaps through changes in structure or job redeployments.

Figure 40: Relationship between duration and the ratio between the volume of defined processes with respect to the number of the administrative staff of a court
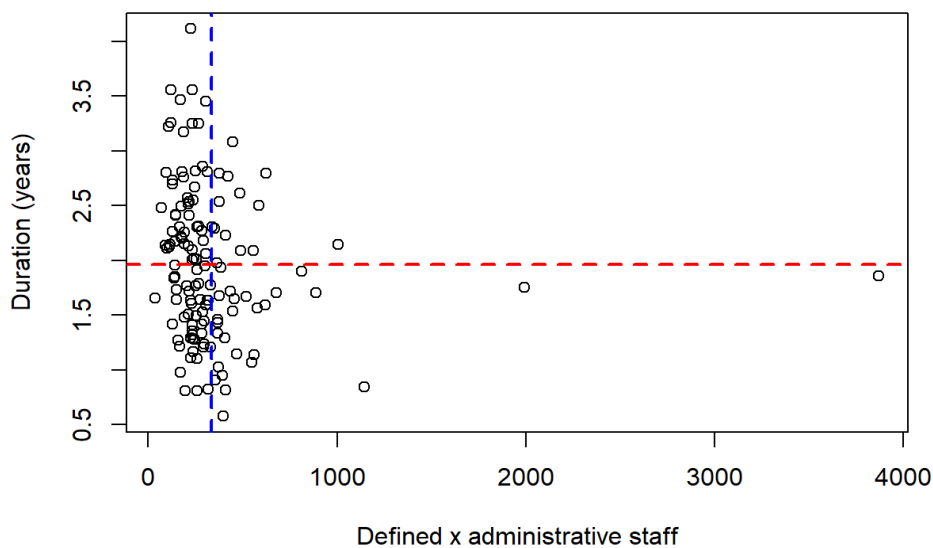
Source: Own re-elaboration of data from the Italian Ministry of Justice

3.7.6 Registered Processes per Administrative Staff Unit

As regards the analysis of the processes entered in relation to the administrative staff, Figure 41, it can be seen that the logic is reversed again returning to the same of the previous examples. The personnel now, in order to operate at best in sight of discouragement of the total stock (since this is the main objective prefixed from the Italian Ministry of Justice)it must be discharged as far as possible in current processes and be able to concentrate its potential on addressing the existing stock. Obviously, it must be kept in mind that, since it is impossible to control the litigiousness of a population, the only "tool" that allows to control and influence this variable is represented by the number of personnel; increasing or decreasing the latter (the denominator of the ratio) inevitably changes the actual load. It is necessary to observe this variable simultaneously with the previous one in order not to exceed in excessive dilutions of the staff (in order to reduce the impact in the first one) that would damage

the productivity of the procedures defined for staff. In this perspective the best result is obtained by the courts that are located in the third quadrant (lower left) characterized by loads of current proceedings and shorter durations. The courts more in difficulty instead turn out to be those placed in the second quadrant as crushed by loads for greater individual and long durations. Regarding the first and the fourth quadrant, it is difficult to comment on this variable individually, as although fundamental in the internal dynamics of performance of a court (especially if you intend to drastically reduce the existing stock) It is necessary to rely on other variables to have an overview as complete as possible. In the first area, for example, there are courts that have a low burden of proceedings registered in the current year for staff units and high durations. Unlike the previous cases, this being an input data, it is not possible to add more on what this data has entailed for the court being the litigiousness, as mentioned above, an exogenous parameter not controllable.

Figure 41: Relationship between duration and the ratio between the volume of registered processes with respect to the number of the administrative staff of a court
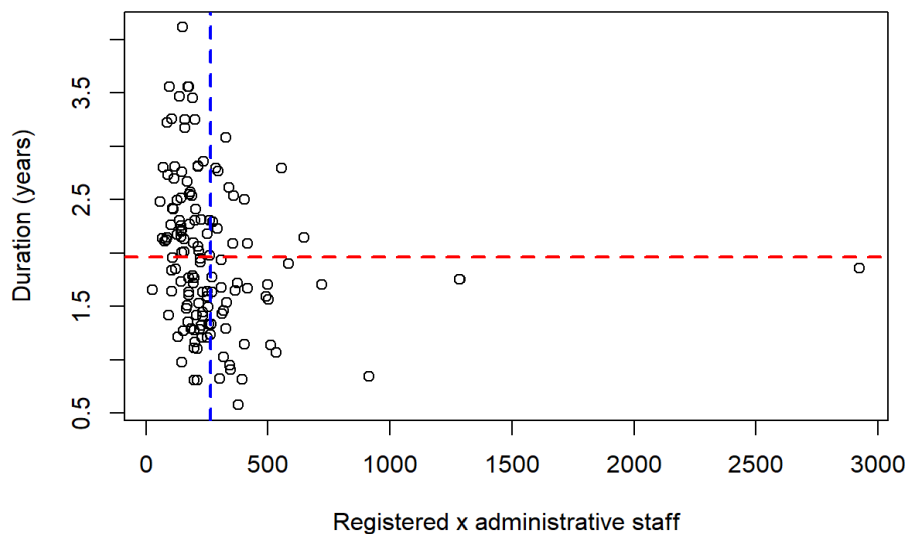
Source: Own re-elaboration of data from the Italian Ministry of Justice

3.7.7 Difference per Administrative Staff Unit

The "summary" of the two variables just described is represented by the difference between the two, compared to the administrative staff units. This context, illustrated in Figure 42, illustrates how the effective rate of return in relation to administrative staff is distributed among the 140 courts. The best, framed in the fourth quadrant (lower right) are characterized by a high (very high for some) effective return speed per

organizational unit and very limited duration; this allows the aforementioned courts to significantly reduce (also in the near future) the total stock of outstanding assets without having marked temporal consequences. This is also due to past policies, sometimes immediately, to a drastic reduction in the oldest stock. The first quadrant, on the other hand, shows smaller personnel differences than average and longer durations. This is the result of a mismanagement of human resources (linked especially in key defined procedures) with excessive incoming loads and too low outgoing (even if the average value is 70.07 therefore relatively satisfactory). In the second quadrant (top right) are reported all courts with "effective re-entry speeds" for personnel and high durations. They potentially represent those courts that have initiated policies to optimize the residue of pending processes, less time than the best quadrant, and that will fully benefit in the not-too-distant future. Finally, analysing the last sector, namely the third (bottom right) it can be seen that the courts that compose it, characterized by reduced loads per unit of staff and low durations, are evidence of what has been reiterated so far, they are the courts that "limit" to current management; focusing only on the latter (objective however commendable in a more stable and characterized by reduced backlog of processes) the duration is not affected in negative. In this quadrant it is therefore legitimate to expect a better organization of human resources in order to obtain performance in line with stable benchmarks from the best contexts.

Figure 42: Relationship between duration and the ratio between the difference of defined and registered processes with respect to the number of the administrative staff of a court

Source: Own re-elaboration of data from the Italian Ministry of Justice

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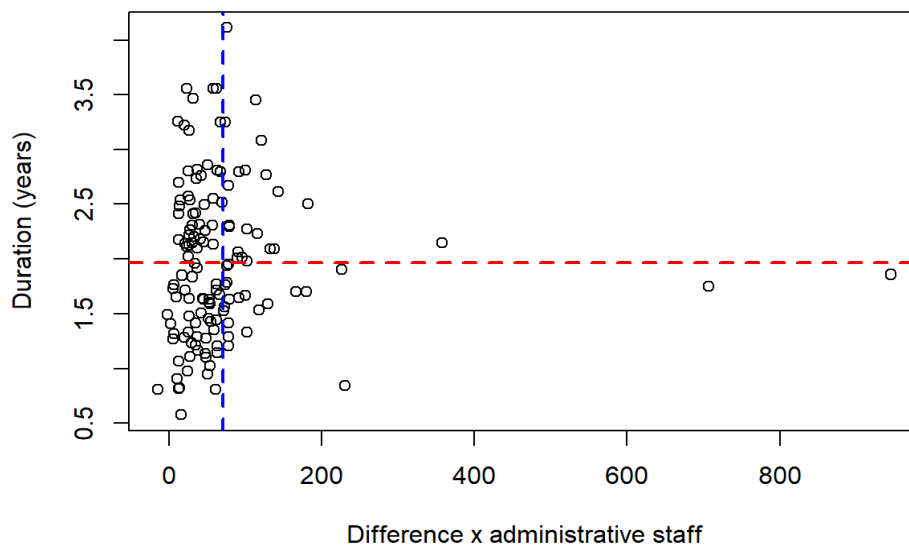
3.7.8 Evolution of Defined Processes per Administrative Staff Unit

Analysing in a dynamic perspective the three variables just described, starting in particular from the evolution of the procedures defined over the two-year period, it can be seen from the beginning that the general trend shows a general decline in the defined in 2021 compared to 2019 (shown in Figure 43). This is a fairly obvious result given the issues mentioned above relating to the consequences and decisions taken to combat the Covid-19 pandemic, in particular with regard to the closure of the courts, the postponement of many trials. Despite the two-year period 2019-2021 has been one of the most difficult to deal with, not only at the judicial level given the general decrease, but it is also important to analyse said variable as it highlights, with the change undertaken, how the various courts have been able to face these new challenges, limiting the damage or in the best cases succeeding, despite everything, even to increase their performance. Starting to analyse the latter (in the fourth quadrant at the bottom right), these courts have managed to increase the number of defined by administrative unit over the two-year period and to keep the average duration of conclusion of proceedings low. All this always belongs to the reflection of optimal management policies undertaken for some time that allow better management of flows even in difficult and unique contexts. Going up vertically (in the second quadrant in the upper right) there are other courts that have managed to increase or at least significantly limit the reductions in the procedures defined for staff at the expense of longer durations. As in previous contexts, here too it can be said that the effort of the policies undertaken by these courts will be repaid in the near future. For the other two quadrants, the situation has worsened at the level of definitions but this is not a reason for categorical rejection as it is still possible that despite the decrease, the level of said original variable is still excellent. It is necessary, as in the case of the procedures entered, to use this variable in combination with others before providing specific analyses.

Seen the unique context (and hoping unrepeatable) just concluded by all courts can lead to distortions of this variable it is therefore necessary to constantly analyse the evolution of the procedures defined also in the near future to confirm whether or not it was a uniqueness of behavior or whether it was actually the result of a more structured and problematic trend.

Figure 43: Relationship between duration and the ratio between the evolution of the volume of defined processes with respect to the number of the administrative staff of a court
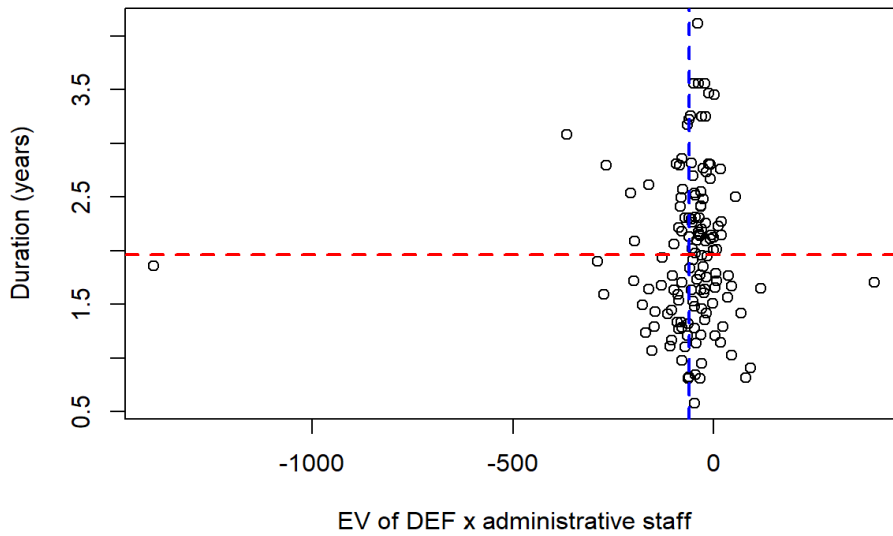
Source: Own re-elaboration of data from the Italian Ministry of Justice

3.7.9 Evolution of Registered Processes per Administrative Staff Unit

Continuing with the evolution over the two-year period of the registered proceedings (shown in Figure 44). It can be noted as in the previous case, a general reduction associated with all courts. Obviously, it derives from the same reasons listed in the previous paragraph, just as it was not possible to define a process given the closure of the seat of the tribunal in the same way it was impossible to proceed with the opening of new applications. The main difference from the previous context is that in this case, the more negative the development, the better the situation for the court in question. As it was seen for the variable "static", in an optical politics of reduction of the total stock of arrears, it is fundamental that the load of input for staff is as reduced as possible (obviously always remembering the problems associated with an excessive dilution of the staff). Thus, the courts that have succeeded over the two-year period in reducing the burden of personnel cases while maintaining relatively low durations (located in the third quadrant at the bottom left), represent the benchmark for all others. Other good results have been obtained in the courts that are placed in the first quadrant in terms of reduction of the load of processes recorded in the biennium but not from the point of view of the durations. As in the previous case and in the case of the static parameter, interpreting these results by means of this variable alone is not easy and can be misleading; it is necessary to integrate it with the other parameters to have a view as complete and detailed as possible.

Figure 44: Relationship between duration and the ratio between the evolution of the volume of registered processes with respect to the number of the administrative staff of a court
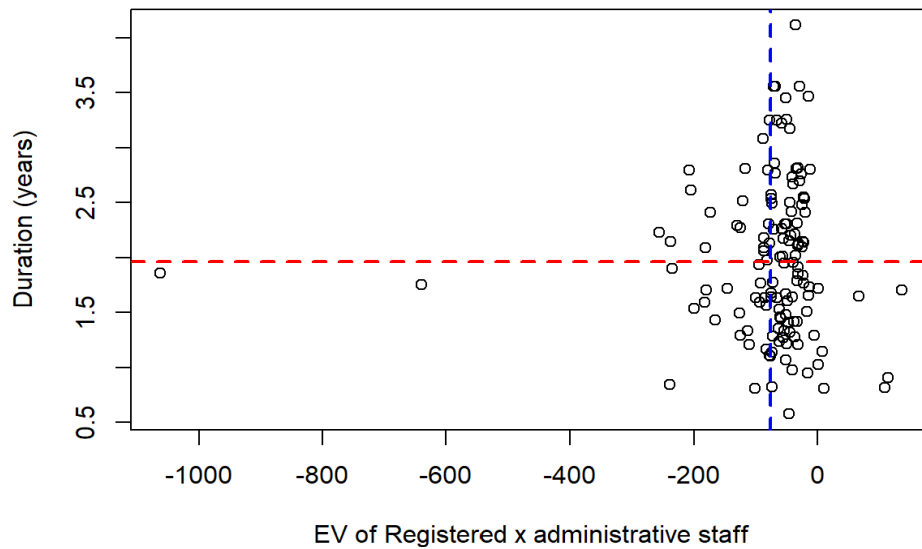
Source: Own re-elaboration of data from the Italian Ministry of Justice

3.7.10 Evolution of Difference per Administrative Staff Unit

To conclude the dynamic set on the evolution of the flow components, it will be analysed the development over the two-year period of the difference between defined and enrolled procedures (Figure 45). Unlike the other two previous, the distribution is much more "balanced" scores equally and with fewer outliers. As already stated for the static variable, it represents the effective rate of return that a court is able to obtain through a correct and balanced, if positive, management of human resources and internal policies of the court. The two variables that make up this parameter, that is the negative effect brought by the Covid-19 pandemic that has inevitably slowed down in general all the courts, are again highlighted. Also, in this case the best courts are placed in the fourth quadrant (lower right) characterized by high differences in personnel and low durations; despite what has just been said they have managed to achieve performance (with a view to reducing the stock of pending processes) excellent, thanks also to ideal and congenial organizational structures. Slightly worse in terms of final result are the courts located in the second sector (top right); unlike the previous example suffer from longer durations but should fall to more appropriate values in the long-term. For the other two quadrants, however, there is a significant reduction in the difference between the two types of employees per staff unit. This figure, despite the excuses of the case given the situation created in the world context, will be viewed and monitored constantly in the future to avoid negative structural trends especially for those courts

that report to the first quadrant (top left and therefore already characterized by high durations) in which it is already necessary to intervene in the not too distant future on the number of staff and the efficiency of the latter.

Figure 45: Relationship between duration and the ratio between the evolution of the difference of defined and registered processes with respect to the number of the administrative staff of a court
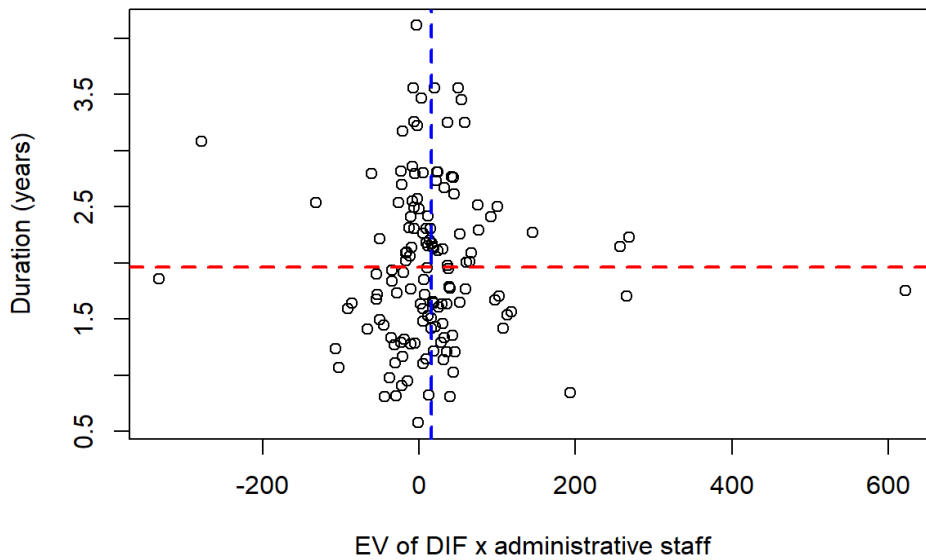
Source: Own re-elaboration of data from the Italian Ministry of Justice

3.7.11 Evolution of DEF/PEN per Administrative Staff Unit

Turning now to the analysis of the evolution of the relationship between defined procedures and the total stock of pending over the two-year period (parameter renamed as DEP in this thesis), proposed in Figure 46, it is possible to notice the classical subdivision in four quadrants with the best courts placed in the last of these (lower right), characterized by short durations and a high percentage of the dynamics of the mentioned relationship in charge to a single employee. During the two-year period, these courts were able to increase on average the number of procedures defined and, at the same time, to reduce the stock of employees (thus creating a virtuous circle) characterized by few dated processes that allow to maintain relatively low durations. On the contrary, the worst courts are located in the first quadrant (top left); in these contexts, a vicious circle has been created fuelled by smaller defined proceedings and/or stock of backlog proceedings on the rise. In this case the situation must be tackled as soon as possible, also with the inclusion of new staff, in order to break this vile circle. The courts belonging to the second sector take almost entirely all the characteristics of the similar belonging to the fourth quadrant, The main difference lies in the greater

average duration faced by the former caused by a greater weight of the historical component and a higher number of definitions of this type of process. Once this phase of skimming is over, these courts should slide (provided that the management policies undertaken persist) into the best sector. Opposite risk for the short ones placed in the third quadrant; they due to the reduced DEF/PEN ratio in the current year, compared to that of two previous years, must inevitably change human resource management policies and reduce the stock of arrears. They must avoid entering into a vicious circle that will cause increasing problems in the management and timing of internal procedures, thus avoiding in the future unnecessary recruitment of staff otherwise. Unfortunately, as already mentioned for the general static variable (without considering the per capita impact of staff) it is possible that there has been a reduction in value during the two-year period and therefore this analysis leads to negative conclusions although the DEF/PEN report of the year was still largely positive.

Figure 46: Relationship between duration and the ratio between the evolution of DEP with respect to the number of the administrative staff of a court
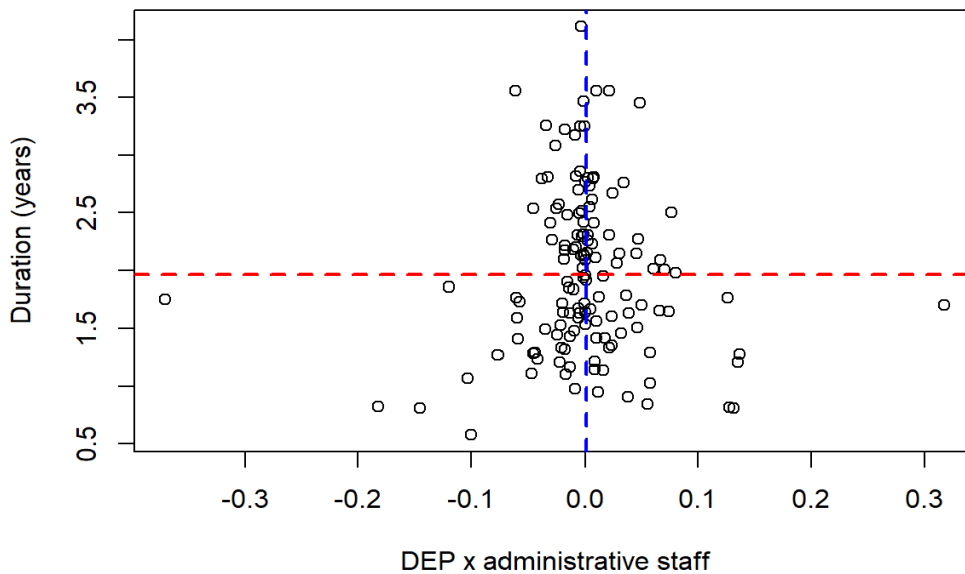
Source: Own re-elaboration of data from the Italian Ministry of Justice

3.7.12 Evolution of DIF/PEN per Administrative Staff Unit

Finally, it is possible to conclude this analysis with the evaluation of the evolution of the relationship between the difference between defined and registered processes compared to the total stock (parameter renamed as DIP in this thesis) and proposed in Figure 47. In this context too, a well-balanced and balanced distribution of the various observations can be noted. As in the case of the variable DEP for units of administrative

staff also in this situation the best courts are placed in the fourth quadrant, characterized by an excellent ratio for organizational units and short durations. In this sector, staff have been able to achieve a very high level of effective output per single person, it has helped (since it is the result of multi-annual policies) to reduce in the recent past the oldest stock of pending proceedings, benefiting accordingly from a temporal point of view. Considerations similar to the previous variable and the static parameter can be made for the remaining three quadrants; therefore, it will proceed further by not repeating similar concepts. It is again highlighted as for the general static variable (without considering the per capita impact of staff) it is possible that there has been a reduction in value during the two-year period and therefore this analysis leads to negative conclusions although the DIF/PEN ratio of the year was still positive with the addition that this variable, Unlike the previous one, it suffers from increased volatility, which calls into question the validity of this parameter.

Figure 47: Relationship between duration and the ratio between the evolution of DIP with respect to the number of the administrative staff of a court

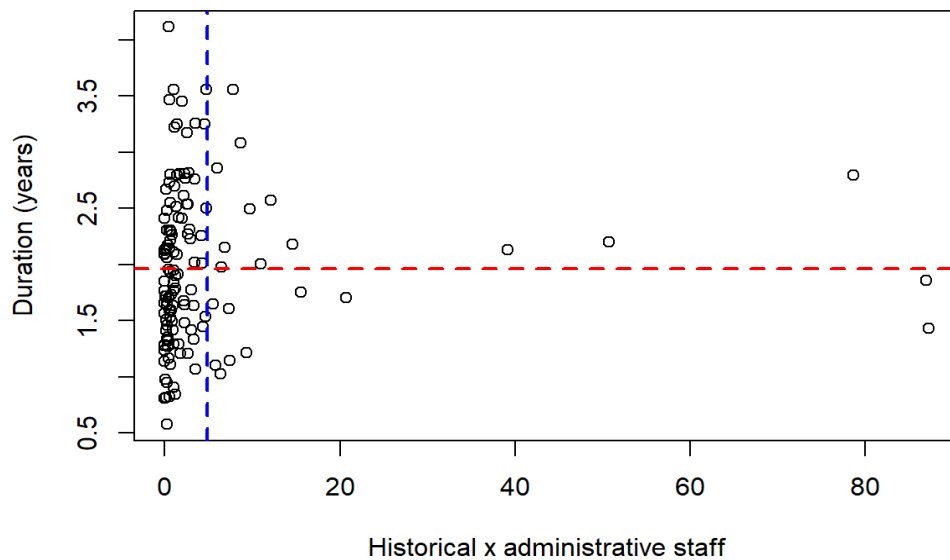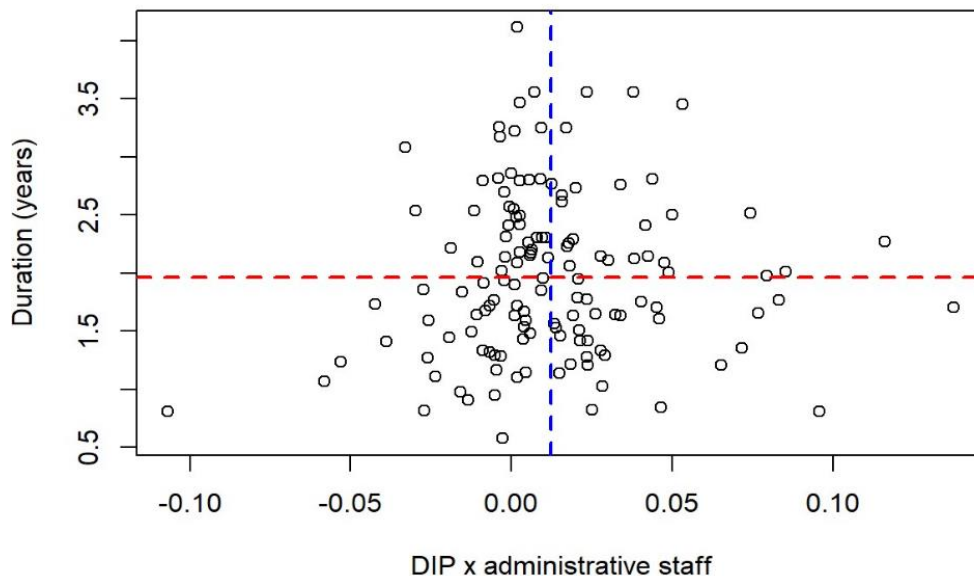*Source: Own re-elaboration of data from the Italian Ministry of Justice*

3.7.13 Pro Capita Results

Of course, as mentioned at the beginning of the analysis of these variables, the same evaluation methodology, with roughly the same judgments, can be applied to the remainder of the four organizational units. In this thesis, in order to avoid overextending and avoid repetition that would have distracted and bored the reader, it was preferred

to focus in detail on only one of these. The above corresponds to the "method" used by the Bank of Italy, aimed primarily at providing a visual and descriptive representation of the variables used, but this does not correspond to how the work in this thesis was structured. First, for the various parameters, related to the different organizational units, six clusters of representation were defined based on the quantile in which they fell (obtained by code written in R, balancing the observations equally) so that each could then be given a score. The "higher" the cluster in which the specific observation falls, the higher the score is obviously.

Taking for example the Historical by Staff column (Table 3A attached in the Appendix), it can be seen that if the above weight (relative to staff) is less than 0.0333 i.e., less than one case file per head, the court falls into the first cluster (the one with the highest rating i.e., "Ottimo"), for courts with historical by staff files between 0.0333 and 4.61, it falls into the second cluster, with slightly lower rating ("Distinto") than the first. To top it off, it gets that in the last cluster, the one where the courts have per head of administrative staff more than 7.61 historical cases, the value will be strongly negative ("Grave") and as a result those courts will be strongly penalized. The quotation mark on the reference to "high" position refers to the first cluster. The ratings as guessed from the period just ended were classified as: excellent, distinguished, good, sufficient, insufficient, and severe. However, the dynamics that lead a specific observation to fall into the first cluster may be different. In fact, as just seen with reference to historical practices per administrative staff unit, to fall into the first cluster one had to have as low a ratio as possible; this is to emphasize that the burden suffered by employees with respect to this specific variable was low (thus being able to focus on something else) a sign of excellent present and past internal management, from which they will obviously benefit in the future as well.

Similar parameters, as a treatment, are the ratio of registered proceedings per organizational unit, the reduction of the stock always with respect to operational units (in this case the more negative the value, and consequently the assumed reduction of the stock, the better for the court itself). With opposite philosophy, on the other hand, behave variables such as the processes defined in the current year or the evolution of the DEF/PEN ratio by organizational unit. In this case, to fall into the best cluster, the ratio must be as high as possible. In the first reference cited (e.g., defined by staff) it

signals how efficiently its administrative employees were deployed by a specific court. These values can be seen regardless of a court's volume of defined proceedings because if employees are under-employed, there is a strong structural problem to be addressed; this makes possible comparisons between courts such as Aosta and Rome, which due to the obvious differences in volumes previously mentioned, could not be addressed. Once a score has been assigned for each variable for each operational unit (a total of sixty i.e., the twelve variables listed above multiplied by the five organizational units) the scores obtained for each court are simply added together (not assigning specific weights to the various variables.

With reference to what was said earlier with respect to improving the scoring system here there could be a first possible modification in case, creating different scoring systems in which specific higher or lower weights are assigned to certain parameters to highlight precise relationships. There are two scoring systems developed: a balanced one and a penalizing one. In the first context the scores assigned in the first cluster and the last have the same magnitude but opposite sign (three points are assigned whenever one falls into the first while three points are subtracted when one falls into the last, also the other clusters at the scoring level tend to balance each other). In the penalizing score system, on the other hand, the first cluster is assigned a significantly lower score than the last, in fact in the first case 1.75 points are added each time one falls into this segment while in the worst situation, from the point of view of performance for a given variable, four points are subtracted, in case of a grade equal to "Distinto" you will get 1.25 points, with "Bene" 1, with "Sufficiente" 0.8, if the data is missing ("NA") you will get 0.95 points (slight penalty unlike the balanced model that assigned 1 point to the miss value) and finally -2.5 points for a grade equal to "Insufficiente".

At this point, a "Pro Capita" capacity evaluation system of the various courts was obtained, as comprehensive as possible of the actual management and performance capacities of all court employees. The result is shown in the Table 2.

Table 2: Results for the Efficiency of the staff

COURT OF APPEAL	LOCATION	BALANCED SCORE SYSTEM	PENALIZED SCORE SYSTEM	DURATION (YEARS)
BOLZANO/BOZEN	BOLZANO/BOZEN	116,5	67,9	0,81
L'AQUILA	LANCIANO	107,0	65,9	1,36
TRIESTE	PORDENONE	61,0	62,6	1,63
CAMPOBASSO	CAMPOBASSO	105,5	57,7	1,77
ANCONA	ANCONA	93,0	54,7	2,67
L'AQUILA	PESCARA	70,0	54,6	1,79
SASSARI	NUORO	78,5	54,3	1,70
CATANZARO	LAMEZIA TERME	94,0	53,8	2,27
MILANO	BUSTO ARSIZIO	92,0	52,9	1,71
L'AQUILA	L'AQUILA	92,0	52,4	2,01
PALERMO	TRAPANI	84,5	48,9	1,42
FIRENZE	PISTOIA	73,0	48,0	2,30
BOLOGNA	PIACENZA	82,5	47,9	2,06
PALERMO	TERMINI IMERESE	75,0	45,7	1,96
FIRENZE	LUCCA	77,0	45,2	1,46
REGGIO CALABRIA	LOCRI	77,0	45,1	3,46
MILANO	LECCO	58,5	44,2	2,31
L'AQUILA	CHIETI	63,0	43,5	1,51
ANCONA	ASCOLI PICENO	66,5	43,3	2,30
CATANZARO	CROTONE	81,5	43,0	1,21
ROMA	VITERBO	79,5	42,2	1,95
SALERNO	VALLO DELLA LUCANIA	79,5	42,1	2,52
BOLOGNA	MODENA	17,5	40,5	1,47
BRESCIA	CREMONA	82,0	40,5	2,09
PERUGIA	SPOLETO	67,0	40,2	1,77
L'AQUILA	AVEZZANO	72,0	39,8	2,81
L'AQUILA	VASTO	77,0	39,8	1,61
BRESCIA	BRESCIA	80,5	38,1	2,15
TORINO	VERCELLI	65,0	36,2	1,53
ROMA	CIVITAVECCHIA	73,5	36,0	2,50
TORINO	BIELLA	74,5	35,0	2,14
ROMA	FROSINONE	58,0	34,6	3,25
TORINO	IVREA	64,5	34,0	1,14
BOLOGNA	PARMA	72,5	33,0	1,34
POTENZA	POTENZA	57,0	32,3	4,12
BOLOGNA	REGGIO EMILIA	34,5	29,5	1,65
FIRENZE	GROSSETO	52,5	28,7	1,63
TRENTO	ROVERETO	69,0	28,6	1,28
CAMPOBASSO	ISERNIA	60,5	27,7	2,11
SALERNO	NOCERA INFERIORE	59,0	27,0	2,29
VENEZIA	BELLUNO	64,0	26,7	1,98
NAPOLI	NAPOLI NORD	62,5	24,6	1,56
TORINO	VERBANIA	33,0	23,4	1,85
CAGLIARI	LANUSEI	79,0	23,0	1,66
CATANZARO	VIBO VALENTIA	57,5	22,4	1,29
SASSARI	TEMPIO PAUSANIA	53,0	21,8	3,56
MESSINA	PATTI	50,5	21,2	2,76
GENOVA	MASSA	49,0	20,2	1,22
ROMA	TIVOLI	45,5	18,8	2,77
POTENZA	MATERA	39,0	18,4	3,47
VENEZIA	VENEZIA	36,5	17,4	1,59
REGGIO CALABRIA	REGGIO CALABRIA	57,5	17,0	2,01
VENEZIA	TREVISO	49,5	16,9	2,61
CATANIA	RAGUSA	52,0	16,8	2,81
MESSINA	BARCELLONA POZZO DI GOTTO	43,0	15,5	3,56
MILANO	SONDRIO	52,0	14,5	1,64
MESSINA	MESSINA	32,0	12,8	2,55
L'AQUILA	TERAMO	43,5	12,4	2,26
BOLOGNA	FORLI'	53,5	11,9	1,03
PALERMO	MARSALA	10,0	11,7	2,14
CALTANISSETTA	ENNA	43,0	10,8	2,73
CAGLIARI	ORISTANO	35,0	9,9	1,21
FIRENZE	SIENA	34,0	8,7	2,13
PALERMO	SCIACCA	39,5	8,4	2,12
CATANZARO	CATANZARO	58,5	7,8	0,85
ANCONA	PESARO	25,5	6,3	1,48
CATANZARO	PAOLA	35,5	6,1	2,41
BARI	TRANI	32,0	6,1	2,15
MILANO	COMO	33,0	5,3	1,21
ANCONA	URBINO	31,0	4,6	2,48
POTENZA	LAGONEGRO	61,5	4,5	1,70
VENEZIA	VICENZA	19,5	1,8	1,93
FIRENZE	PRATO	9,0	-1,2	1,84
CATANZARO	CASTROVILLARI	25,0	-1,7	3,22
CAGLIARI	CAGLIARI	17,0	-4,9	2,42
NAPOLI	SANTA MARIA CAPUA VETERE	39,5	-6,4	2,23
GENOVA	IMPERIA	12,5	-6,8	1,91
VENEZIA	PADOVA	22,5	-7,1	1,90
BARI	FOGGIA	20,5	-7,1	3,25
CATANIA	CALTAGIRONE	14,5	-7,2	2,26
MILANO	VARESE	-5,5	-8,5	2,27
L'AQUILA	SULMONA	26,0	-11,1	3,56
NAPOLI	NAPOLI	23,0	-11,8	1,67
MILANO	LODI	14,5	-12,5	0,95
NAPOLI	AVELLINO	14,0	-14,0	2,49
NAPOLI	NOLA	6,0	-14,0	2,18
TORINO	CUNEO	6,0	-15,7	1,29
CATANIA	CATANIA	4,0	-16,7	2,80
NAPOLI	BENEVENTO	38,5	-17,2	1,42
PALERMO	PALERMO	-0,5	-17,4	2,86
BOLOGNA	RAVENNA	10,0	-17,7	1,16
ROMA	RIETI	3,5	-18,0	2,10
CALTANISSETTA	CALTANISSETTA	14,0	-18,9	2,80
REGGIO CALABRIA	PALMI	6,0	-19,8	2,41
PALERMO	AGRIGENTO	0,5	-21,4	2,20
FIRENZE	FIRENZE	-6,5	-21,5	1,63
TORINO	ASTI	7,5	-22,5	1,14
MILANO	PAVIA	-1,5	-23,8	1,67
GENOVA	GENOVA	-7,0	-24,2	1,10
TRIESTE	UDINE	3,0	-25,3	0,98
PERUGIA	TERNI	-3,5	-26,7	1,84
TRENTO	TRENTO	2,0	-27,6	1,29
MILANO	MILANO	0,0	-28,6	2,09
TORINO	ALESSANDRIA	3,0	-29,0	1,59
GENOVA	SAVONA	-4,0	-29,4	1,11
ROMA	ROMA	5,0	-30,8	1,54
ANCONA	MACERATA	0,0	-35,0	1,72
TORINO	NOVARA	-11,5	-35,3	1,44
BOLOGNA	FERRARA	14,0	-35,8	0,82
CATANIA	SIRACUSA	-23,5	-37,2	2,31
TRIESTE	GORIZIA	1,5	-41,2	0,82
TRIESTE	TRIESTE	-11,5	-45,1	0,58
ANCONA	FERMO	-17,5	-46,3	2,17
LECCE	LECCE	-20,5	-46,3	1,86
BRESCIA	MANTOVA	-6,5	-47,3	1,24
PERUGIA	PERUGIA	-39,5	-47,6	3,17
MILANO	MONZA	-28,5	-48,4	1,72
SASSARI	SASSARI	-25,5	-50,8	2,22
VENEZIA	VERONA	-43,5	-53,4	1,34
NAPOLI	TORRE ANNUNZIATA	-2,5	-53,5	1,76
CATANZARO	COSENZA	-43,0	-55,2	2,02
ROMA	LATINA	-48,0	-57,2	2,81
CALTANISSETTA	GELA	-37,0	-60,6	3,26
LECCE	BRINDISI	-42,5	-66,0	2,57
FIRENZE	AREZZO	-36,5	-72,7	1,77
BOLOGNA	RIMINI	-39,5	-74,0	0,91
FIRENZE	PISA	-55,5	-74,7	1,32
VENEZIA	ROVIGO	-42,5	-76,0	1,41
SALERNO	SALERNO	-35,5	-76,7	1,43
BOLOGNA	BOLOGNA	-55,0	-79,7	1,50
ROMA	CASSINO	-69,0	-84,4	2,54
TORINO	TORINO	-61,5	-84,6	1,64
BRESCIA	BERGAMO	-52,5	-85,6	3,09
CAMPOBASSO	LARINO	-52,0	-89,3	1,74
ROMA	VELLETRI	-62,0	-90,3	2,79
TARANTO	TARANTO	-78,5	-103,0	2,54
BARI	BARI	-79,5	-108,9	2,70
GENOVA	LA SPEZIA	-76,5	-113,6	1,27
TORINO	AOSTA	-70,0	-118,4	0,81
FIRENZE	LIVORNO	-92,5	-129,6	1,07

Source: Own re-elaboration of data from the Italian Ministry of Justice

As can be seen, the courts were placed in descending order of outcome according to the predetermined order resulting from the penalizing score system. Significant variations in value and position between the two models adopted can also be seen, as in the case of the Modena or Catanzaro courts. Further analysis confirms what was previously stated; duration does not represent current best performance of the courts. Just look at the very last two positions characterized by Aosta and Livorno where average durations are very good while the performance of administrative and judicial personnel (in terms of input and output load) is very bad.

With both the data analysis (shown in the Table 3A and Table 4A in the Appendix) and the descriptive analysis proposed earlier; behaviours that court presidents can take to improve their work environment are identifiable. Currently with the two models used, it is possible for all interested courts, possibly using size as an additional selection parameter, to compare themselves with the best in certain aspects in terms of performance (using the latter as a benchmark) to understand any problems where they reside. These systems can be useful in that by analysing each individual item that makes up the final judgment, a court president can see where to take action to improve his or her statistics. For example, should a court fall in the lowest cluster with regard to the variable "Enrolled by staff" then considering the context of a high load of new cases per administrative unit it may be very useful to hire new units to decrease this load. Conversely, those who fall in the first cluster do not make sense for them to proceed with new hires. Finally, these staff evaluation models provide an opportunity to compare, again from the point of view of the court president, the relative performance of competitors of similar size.

Here again, it is important to grasp the degree of productivity of their actual judges (and other professional figures) by looking at the variable "Defined x actual judges". This analysis shows how for each size category it is possible to achieve high quality standards for staff, resulting (for the best) in a kind of inspirational model (while still having room for manoeuvre to further improve certain aspects). The potential of this model is considerable given the degree of depth but, as has been pointed out above, it is still possible to make modifications/improvements.

Previously, it was mentioned the possibility of varying the specific weight of each of the sixty variables by highlighting possible characteristics that one wishes to emphasise.

Now, however, it will be shown an adopted structural modification consisting in the removal of the 'general' components, i.e., those relating to the performance of judges and civil GOTs. In this modification, in fact, only the component that actually comes into contact with executive (real estate and movable) and bankruptcy procedures was considered.

In Table 3 are reported the values that characterise this second version. As can be seen by analysing the table, the order of the previous model has been maintained, and the differences are slight but exist. This is a sign of the existence of courts that are unfairly penalised/penalised by features exogenous to the structure that directly interfaces with this type of proceedings. In fact, to exclude the 'general' component a priori is not entirely correct since, as stated above, there are contexts in which judges do not have an unambiguous/well-defined task; there are situations in which these civil legal figures are not officially assigned to the unit but actually collaborate with it, even if in a minor way. It is left to the discretion of future tests to determine which version can best balance the advantages and disadvantages of the issues of these categories.

Table 3: Results for the Efficiency of the staff (with only effective employees)

COURT OF APPEAL	LOCATION	BALANCED SCORE SYSTEM	PENALIZED SCORE SYSTEM	DURATION (YEARS)
BOLZANO/BOZEN	BOLZANO/BOZEN	73,5	44,5	0,81
L'AQUILA	LANCIANO	65,0	40,3	1,36
TRIESTE	PORDENONE	61,0	39,8	1,63
CAMPOBASSO	CAMPOBASSO	66,5	37,9	1,77
ANCONA	ANCONA	57,0	34,8	2,67
CATANZARO	LAMEZIA TERME	58,5	34,0	2,27
L'AQUILA	L'AQUILA	58,5	34,0	2,01
L'AQUILA	PESCARA	51,5	32,3	1,79
SASSARI	NUORO	38,0	32,0	1,70
ROMA	VITERBO	50,0	31,4	1,95
BOLOGNA	PIACENZA	51,5	30,6	2,06
FIRENZE	LUCCA	48,5	30,6	1,46
PALERMO	TERMINI IMERESE	47,5	30,2	1,96
REGGIO CALABRIA	LOCRI	48,5	29,1	3,46
SALERNO	VALLO DELLA LUCANIA	48,5	29,1	2,52
FIRENZE	PISTOIA	43,0	28,1	2,30
PALERMO	TRAPANI	47,5	27,3	1,42
MILANO	LECCO	27,5	27,0	2,31
MILANO	BUSTO ARSIZIO	51,0	26,2	1,71
ROMA	CIVITAVECCHIA	49,5	25,3	2,50
CATANZARO	CROTONE	49,0	25,0	1,21
ROMA	FROSINONE	39,0	24,7	3,25
ANCONA	ASCOLI PICENO	38,0	24,2	2,30
L'AQUILA	CHIETI	25,0	24,1	1,51
L'AQUILA	AVEZZANO	42,0	23,0	2,81
BRESCIA	BRESCIA	50,5	22,9	2,15
L'AQUILA	VASTO	43,0	20,8	1,61
TORINO	VERCELLI	37,5	20,7	1,53
PERUGIA	SPOLETO	37,5	20,6	1,77
TORINO	IVREA	40,0	20,6	1,14
SALERNO	NOCERA INFERIORE	38,0	20,2	2,29
POTENZA	POTENZA	33,5	19,4	4,12
NAPOLI	NAPOLI NORD	42,0	18,4	1,56
FIRENZE	GROSSETO	32,5	18,3	1,63
TRENTO	ROVERETO	41,0	17,8	1,28
CAMPOBASSO	ISERNIA	37,5	17,8	2,11
VENEZIA	BELLUNO	40,5	17,8	1,98
BOLOGNA	MODENA	17,5	17,7	1,47
BRESCIA	CREMONA	43,5	16,6	2,09
REGGIO CALABRIA	REGGIO CALABRIA	41,5	16,0	2,01
MESSINA	PATTI	32,5	15,1	2,76
CATANZARO	VIBO VALENTIA	36,5	15,0	1,29
VENEZIA	TREVISO	32,0	13,5	2,61
CATANIA	RAGUSA	29,5	13,5	2,81
SASSARI	TEMPIO PAUSANIA	30,5	13,2	3,56
ROMA	TIVOLI	28,5	13,1	2,77
VENEZIA	VENEZIA	24,5	13,0	1,59
TORINO	BIELLA	36,0	12,6	2,14
FIRENZE	PRATO	10,5	12,5	1,84
TORINO	VERBANIA	12,0	12,0	1,85
CAGLIARI	ORISTANO	18,0	11,5	1,21
MESSINA	BARCELLONA POZZO DI GOTTO	27,5	11,4	3,56
BOLOGNA	PARMA	38,0	11,1	1,34
POTENZA	MATERA	23,0	11,1	3,47
ANCONA	PESARO	20,5	9,6	1,48
MESSINA	MESSINA	20,0	9,1	2,55
GENOVA	MASSA	25,0	8,9	1,22
CAGLIARI	LANUSEI	44,0	8,8	1,66
BOLOGNA	FORLI'	33,0	7,1	1,03
BOLOGNA	REGGIO EMILIA	34,5	6,7	1,65
FIRENZE	SIENA	20,5	5,6	2,13
CATANZARO	CATANZARO	35,0	5,5	0,85
POTENZA	LAGONEGRO	39,5	5,4	1,70
CATANZARO	PAOLA	22,0	5,3	2,41
MILANO	COMO	21,5	3,8	1,21
CALTANISSETTA	ENNA	23,5	3,7	2,73
PALERMO	MARSALA	6,0	2,5	2,14
GENOVA	IMPERIA	13,0	1,5	1,91
L'AQUILA	TERAMO	19,0	1,2	2,26
BARI	TRANI	17,0	0,7	2,15
MILANO	VARESE	-5,0	0,3	2,27
VENEZIA	VICENZA	10,5	-0,1	1,93
ANCONA	URBINO	15,5	-0,3	2,48
NAPOLI	SANTA MARIA CAPUA VETERE	26,0	-0,6	2,23
MILANO	SONDRIO	21,5	-1,3	1,64
PALERMO	SCIACCA	16,5	-1,9	2,12
NAPOLI	AVELLINO	11,0	-2,0	2,49
BARI	FOGGIA	14,0	-3,2	3,25
CATANZARO	CASTROVILLARI	15,0	-4,1	3,22
CAGLIARI	CAGLIARI	8,0	-5,5	2,42
L'AQUILA	SULMONA	14,5	-7,5	3,56
MILANO	LODI	7,5	-7,5	0,95
NAPOLI	NAPOLI	14,5	-7,8	1,67
TORINO	CUNEO	5,5	-8,2	1,29
BOLOGNA	RAVENNA	8,5	-8,5	1,16
NAPOLI	BENEVENTO	2,5	-8,7	1,42
CATANIA	CALTAGIRONE	2,5	-9,6	2,26
CATANIA	CATANIA	1,0	-11,7	2,80
NAPOLI	NOLA	-0,5	-12,3	2,18
TORINO	ASTI	5,0	-12,7	1,14
ROMA	RIETI	0,0	-14,1	2,10
TRIESTE	UDINE	4,5	-14,2	0,98
VENEZIA	PADOVA	6,0	-14,7	1,90
PALERMO	PALERMO	-5,0	-14,8	2,86
PERUGIA	TERNI	-2,0	-15,1	1,84
TORINO	NOVARA	-4,5	-15,1	1,44
REGGIO CALABRIA	PALMI	0,5	-15,7	2,41
MILANO	PAVIA	-1,5	-15,7	1,67
CALTANISSETTA	CALTANISSETTA	3,5	-17,1	2,80
FIRENZE	FIRENZE	-9,5	-17,7	1,63
ANCONA	MACERATA	4,5	-19,0	1,72
GENOVA	GENOVA	-9,5	-19,0	1,10
PALERMO	AGRIGENTO	-6,0	-19,6	2,20
TORINO	ALESSANDRIA	2,0	-19,7	1,59
GENOVA	SAVONA	-5,0	-22,1	1,11
TRIESTE	GORIZIA	1,5	-23,6	0,82
BOLOGNA	FERRARA	6,0	-24,2	0,82
CATANIA	SIRACUSA	-14,5	-24,2	2,31
TRENTO	TRENTO	-5,5	-26,6	1,29
TRIESTE	TRIESTE	-7,0	-26,6	0,58
ANCONA	FERMO	-11,0	-27,4	2,17
MILANO	MILANO	-8,5	-27,7	2,09
BRESCIA	MANTOVA	-2,0	-28,0	1,24
MILANO	MONZA	-16,0	-29,2	1,72
PERUGIA	PERUGIA	-24,5	-29,6	3,17
ROMA	ROMA	-6,5	-29,9	1,54
ROMA	LATINA	-25,5	-30,0	2,81
CATANZARO	COSENZA	-23,0	-31,4	2,02
NAPOLI	TORRE ANNUNZIATA	0,0	-31,5	1,76
VENEZIA	VERONA	-25,5	-31,8	1,34
LECCE	LECCE	-13,5	-32,9	1,86
SASSARI	SASSARI	-19,5	-36,3	2,22
CALTANISSETTA	GELA	-27,5	-40,7	3,26
SALERNO	SALERNO	-16,0	-40,8	1,43
FIRENZE	AREZZO	-21,5	-41,2	1,77
FIRENZE	PISA	-29,0	-41,4	1,32
LECCE	BRINDISI	-27,5	-42,9	2,57
VENEZIA	ROVIGO	-25,5	-44,5	1,41
BOLOGNA	BOLOGNA	-30,0	-44,5	1,50
BOLOGNA	RIMINI	-28,0	-47,7	0,91
TORINO	TORINO	-36,5	-50,4	1,64
CAMPOBASSO	LARINO	-30,0	-50,8	1,74
ROMA	CASSINO	-42,5	-53,5	2,54
BRESCIA	BERGAMO	-32,5	-53,6	3,09
ROMA	VELLETRI	-34,0	-54,6	2,79
BARI	BARI	-45,5	-62,9	2,70
TARANTO	TARANTO	-49,5	-64,0	2,54
GENOVA	LA SPEZIA	-46,0	-67,1	1,27
TORINO	AOSTA	-44,0	-71,5	0,81
FIRENZE	LIVORNO	-57,5	-81,1	1,07

Source: Own re-elaboration of data from the Italian Ministry of Justice

3.8 Efficiency of the Court

It will now proceed to the description of the second component characterising the score system created: the efficiency, understood as structural productivity, of the courts. As regards the efficiency of the court itself, two scoring systems were created (one always balanced and the other penalising) identical in terms of scores to the first component with respect to the ratings obtained from the parameters constituting the model. In this case, thirteen variables (all of which have already been extensively described in this and previous chapters) representing both efficiency and court volumes were involved. This group of variables considered in block is intended to represent the court not only in terms of its employees but itself in its entirety.

Unlike the previous part, however, not all variables are directly comparable, as in many cases they are not ratios between different parameters but pure measurements of a specific phenomenon. In order not to contradict what has been said above, the volumetric variables have been considerably downgraded with respect to the others (as has already been said, it is pointless to excessively penalise a court such as Rome only for the enormous volume of pending cases with respect to Aosta, given the different sizes and expectations of the two). It is important to emphasise that the weights were not given on a statistical basis, given the lack of a supporting variable on which to construct, by means of linear regression or other types of identification of any form of correlation, specific weights for each parameter used.

As a result, the Formula 7 was applied (where CLE stands for clearing ratio):

$$Structure_{x,2021}$$

$$= 0{,}1 * Totale_{x,2021} + 0{,}1 * Defined_{x,2021} + 0{,}1 * Registered_{x,2021}$$

$$+ 0{,}1 * Difference_{x,2021} + 0{.}3 * \frac{Def}{Pen}_{x,2021} + 0.3 * \frac{Dif}{Pen}_{x,2021} + 0{,}3$$

$$* \frac{Defined}{Registered}_{x,2021} + 1{,}2 * EV\ PSO_{x,2021} + 1{,}2 * PSO_{x,2021} + 1$$

$$* RID_{x,2021} + 1{,}1 * DEP_{x,2021} + 1 * DIP_{x,2021} + 1{,}1 * EV\ CLE_{x,2021} \quad (7)$$

Once again, Bolzano is confirmed as the best Italian court also according to this classification adopted, while La Spezia comes last (climbing two positions compared to the previous ranking). Unlike the previous tables, which showed the results of the courts

in terms of the sum of the evaluations of the various variables related to the performance of the organisational units, this time, as can be seen in Table 4 with the detailed and extended version attached in the Appendix in the Table 5A, the exact order in which these courts were placed in these examples has been included.

An interesting cue is provided by the analysis of the agglomerations; if the reader looks at the last positions, they are well or poorly confirmed (with small variations between the two rankings). This is not the case for the frontrunners (there is considerable variation between the two models). Analysing this difference in construction, it can be seen that there are considerable distinctions in some cases; they range from a loss of seventy-four positions to a gain of ninety (the average is obviously zero). This increase/decrease in positions, notwithstanding the different weights assigned to the variables that make up this second part of the score system, indicate that there are courts that perform better/worse due to their implicit structure. This is a key feature to be grasped as it demonstrates the centrality of human resources within the performance dynamics and especially for those that lag behind their benchmark, a recovery is possible.

Table 4: Results for the Efficiency of the Court

COURT OF APPEAL	LOCATION	BALANCED SCORE SYSTEM	PENALIZED SCORE SYSTEM	STRUCTURE ORDER	PRO CAPITA ORDER	DIFFERENCE
BOLZANO/BOZEN	BOLZANO/BOZEN	20,7	12,3	1	1	0
CATANZARO	CROTONE	18,6	11,1	2	21	-19
BRESCIA	BRESCIA	18,1	10,5	3	26	-23
BOLOGNA	REGGIO EMILIA	17,0	10,4	4	60	-56
CAMPOBASSO	CAMPOBASSO	16,5	10,1	5	4	1
ROMA	CIVITAVECCHIA	16,2	10,1	6	20	-14
BOLOGNA	FORLI'	17,0	10,1	7	59	-52
MILANO	LECCO	15,0	9,6	8	18	-10
L'AQUILA	PESCARA	15,3	9,6	9	8	1
BRESCIA	CREMONA	14,8	9,4	10	39	-29
VENEZIA	TREVISO	15,4	9,4	11	43	-32
CAGLIARI	LANUSEI	15,4	9,2	12	58	-46
L'AQUILA	L'AQUILA	14,7	9,2	13	7	6
MILANO	BUSTO ARSIZIO	14,7	9,2	14	19	-5
BOLOGNA	PARMA	14,3	9,1	15	53	-38
TORINO	BIELLA	14,5	9,1	16	48	-32
PALERMO	TRAPANI	14,5	9,1	17	17	0
BOLOGNA	PIACENZA	13,6	8,9	18	11	7
L'AQUILA	CHIETI	13,4	8,7	19	24	-5
TRIESTE	PORDENONE	13,3	8,6	20	3	17
SASSARI	NUORO	14,0	8,6	21	9	12
NAPOLI	SANTA MARIA CAPUA VETERE	14,0	8,5	22	74	-52
BOLOGNA	MODENA	12,8	8,3	23	38	-15
GENOVA	MASSA	12,3	8,1	24	57	-33
FIRENZE	LUCCA	13,2	8,1	25	12	13
ROMA	ROMA	13,0	8,0	26	116	-90
ROMA	VITERBO	11,8	7,9	27	10	17
NAPOLI	NAPOLI	12,6	7,9	28	83	-55
FIRENZE	PRATO	11,3	7,8	29	49	-20
L'AQUILA	LANCIANO	11,6	7,6	30	2	28
VENEZIA	BELLUNO	11,5	7,5	31	37	-6
FIRENZE	PISTOIA	10,5	7,4	32	16	16
TORINO	IVREA	12,2	7,1	33	30	3
VENEZIA	PADOVA	10,6	7,1	34	93	-59
L'AQUILA	VASTO	10,2	6,9	35	27	8
REGGIO CALABRIA	REGGIO CALABRIA	12,9	6,7	36	40	-4
SALERNO	NOCERA INFERIORE	9,9	6,6	37	31	6
PERUGIA	SPOLETO	9,6	6,5	38	29	9
VENEZIA	VENEZIA	8,4	6,1	39	47	-8
TORINO	VERCELLI	10,7	5,9	40	28	12
SASSARI	TEMPIO PAUSANIA	10,4	5,9	41	45	-4
ANCONA	PESARO	8,5	5,8	42	55	-13
ANCONA	ANCONA	11,7	5,7	43	5	38
BOLOGNA	FERRARA	9,4	5,3	44	107	-63
TRENTO	ROVERETO	9,5	4,7	45	35	10
REGGIO CALABRIA	LOCRI	8,7	4,6	46	14	32
NAPOLI	NAPOLI NORD	8,7	4,2	47	33	14
TORINO	ASTI	7,8	4,0	48	90	-42
CATANIA	RAGUSA	7,7	3,9	49	44	5
L'AQUILA	TERAMO	7,7	3,7	50	69	-19
PALERMO	TERMINI IMERESE	7,0	3,7	51	13	38
ROMA	TIVOLI	6,7	3,6	52	46	6
MILANO	SONDRIO	7,3	3,5	53	75	-22
CATANIA	CATANIA	8,4	3,4	54	88	-34
CATANZARO	CATANZARO	10,4	3,4	55	62	-7
BARI	TRANI	6,3	3,4	56	70	-14
L'AQUILA	AVEZZANO	6,3	3,3	57	25	32
MILANO	MILANO	6,7	3,1	58	112	-54
CAMPOBASSO	ISERNIA	6,6	2,7	59	36	23
CATANZARO	VIBO VALENTIA	7,6	2,2	60	42	18
PALERMO	PALERMO	4,7	2,2	61	94	-33
BOLOGNA	RAVENNA	5,7	1,8	62	85	-23
MESSINA	BARCELLONA POZZO DI GOTTO	5,5	1,5	63	52	11
CAGLIARI	ORISTANO	4,8	1,4	64	51	13
MILANO	COMO	4,9	1,3	65	65	0
TORINO	NOVARA	4,4	1,1	66	96	-30
PALERMO	MARSALA	4,5	0,9	67	67	0
TORINO	VERBANIA	2,3	0,7	68	50	18
POTENZA	LAGONEGRO	7,4	0,6	69	63	6
MILANO	PAVIA	3,8	0,5	70	98	-28
NAPOLI	AVELLINO	4,0	0,4	71	77	-6
TRENTO	TRENTO	3,3	0,4	72	109	-37
ANCONA	ASCOLI PICENO	2,1	0,2	73	23	50
VENEZIA	VICENZA	3,2	0,2	74	72	2
TRIESTE	UDINE	5,6	-0,1	75	92	-17
ANCONA	URBINO	2,0	-0,2	76	73	3
SALERNO	VALLO DELLA LUCANIA	4,4	-0,2	77	15	62
MILANO	LODI	2,6	-0,3	78	82	-4
LECCE	LECCE	2,2	-0,3	79	121	-42
CATANZARO	LAMEZIA TERME	3,5	-0,4	80	6	74
CATANZARO	CASTROVILLARI	1,7	-0,5	81	79	2
GENOVA	GENOVA	1,7	-0,5	82	102	-20
MESSINA	PATTI	3,1	-0,7	83	41	42
BARI	FOGGIA	3,1	-1,0	84	78	6
CATANZARO	PAOLA	1,2	-1,1	85	64	21
PERUGIA	TERNI	3,1	-1,1	86	95	-9
L'AQUILA	SULMONA	1,5	-1,6	87	81	6
FIRENZE	FIRENZE	-0,4	-1,9	88	100	-12
TRIESTE	GORIZIA	4,4	-2,0	89	106	-17
GENOVA	IMPERIA	-0,4	-2,5	90	68	22
TORINO	ALESSANDRIA	0,3	-2,7	91	104	-13
NAPOLI	NOLA	-1,4	-3,4	92	89	3
FIRENZE	SIENA	-0,2	-3,6	93	61	32
GENOVA	SAVONA	-1,0	-3,9	94	105	-11
ROMA	FROSINONE	-1,8	-4,0	95	22	73
CAGLIARI	CAGLIARI	-1,5	-4,5	96	80	16
POTENZA	POTENZA	-1,6	-4,5	97	32	65
BRESCIA	BERGAMO	-0,2	-4,6	98	134	-36
NAPOLI	BENEVENTO	0,0	-4,7	99	86	13
MILANO	VARESE	-3,2	-4,8	100	71	29
FIRENZE	GROSSETO	-2,8	-4,9	101	34	67
CALTANISSETTA	ENNA	0,6	-4,9	102	66	36
MESSINA	MESSINA	-3,2	-5,0	103	56	47
SASSARI	SASSARI	-2,2	-5,2	104	122	-18
TORINO	CUNEO	-3,4	-5,3	105	84	21
MILANO	MONZA	-4,2	-6,2	106	114	-8
CALTANISSETTA	CALTANISSETTA	-1,9	-6,2	107	99	8
PALERMO	SCIACCA	-1,4	-6,5	108	76	32
NAPOLI	TORRE ANNUNZIATA	-0,9	-7,0	109	119	-10
PALERMO	AGRIGENTO	-4,6	-7,3	110	103	7
BRESCIA	MANTOVA	-3,0	-8,0	111	113	-2
REGGIO CALABRIA	PALMI	-5,9	-8,1	112	97	15
SALERNO	SALERNO	-5,0	-9,2	113	124	-11
TRIESTE	TRIESTE	-4,5	-9,3	114	110	4
ROMA	RIETI	-8,7	-9,4	115	91	24
ANCONA	MACERATA	-7,4	-9,5	116	101	15
POTENZA	MATERA	-6,9	-9,5	117	54	63
VENEZIA	VERONA	-7,4	-10,5	118	120	-2
CATANIA	SIRACUSA	-10,0	-10,9	119	108	11
BOLOGNA	BOLOGNA	-5,9	-11,9	120	129	-9
BOLOGNA	RIMINI	-8,2	-13,0	121	130	-9
VENEZIA	ROVIGO	-6,3	-13,4	122	128	-6
CAMPOBASSO	LARINO	-9,6	-13,9	123	132	-9
ROMA	LATINA	-13,8	-14,5	124	117	7
LECCE	BRINDISI	-11,6	-14,9	125	127	-2
CATANIA	CALTAGIRONE	-11,2	-14,9	126	87	39
FIRENZE	AREZZO	-9,2	-15,1	127	125	2
PERUGIA	PERUGIA	-14,6	-15,2	128	115	13
CATANZARO	COSENZA	-12,5	-15,4	129	118	11
FIRENZE	LIVORNO	-9,6	-16,3	130	140	-10
FIRENZE	PISA	-14,3	-16,3	131	126	5
ROMA	VELLETRI	-15,5	-17,3	132	135	-3
ANCONA	FERMO	-12,7	-19,1	133	111	22
TARANTO	TARANTO	-16,0	-20,1	134	137	-3
TORINO	TORINO	-14,3	-20,2	135	131	4
ROMA	CASSINO	-19,5	-21,7	136	133	3
TORINO	AOSTA	-13,9	-22,0	137	139	-2
BARI	BARI	-17,1	-22,5	138	136	2
CALTANISSETTA	GELA	-20,3	-23,6	139	123	16
GENOVA	LA SPEZIA	-17,8	-24,2	140	138	2

Source: Own re-elaboration of data from the Italian Ministry of Justice

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3.9 Completed Score System

Integrating the two items just analysed with the duration judgement results in a final overall judgement for each individual court. Here too, duration is divided into six clusters and categorised as in the previous two cases, with a scale of judgements ranging from "Ottimo" to "Grave" and with a score depending on the system chosen, whether penalising or balanced.

With this Score system it is now possible to integrate the formula used by Cerved in its report (Formula 1 in Chapter I with RRs correlated to duration), in order to offer a more complete and realistic assessment of NPLs and NPEs in general (especially in the model characterised by the recovery rate correlated to duration).In the first graph, shown below, the basic system is shown, i.e. the one that includes all court personnel, while the second graph shows the judgments on courts based exclusively on the court personnel actually involved in this type of proceedings.

Formula 8 and Formula 9 are used for obtaining the overall judgement (where B stands for balanced and P for penalised):

$$Score\ System_B \tag{8}$$
$$= 1,5 * Pro\ Capita_P + 1 * Structure_B + 4,49 * Duration\ Rating$$
$$Score\ System_P \tag{9}$$
$$= 1,5 * Pro\ Capita_P + 1 * Structure_P + 0,99 * Duration\ Rating$$

For the two models with effective jurists, the weights attributed to the duration assessment change to 2.86 for the balanced and 0.74 for the penalising model. The weight was calculated as: the average of the two systems (per capita and structure) divided by 3 (the maximum value that duration can reach in its evaluation) or 1.75 in the case of the penalising model. The same reasoning was applied for the system with actual personnel. With this methodology, an attempt was made to assign the right weight to the duration in such a way that it was neither too relevant (effectively rendering the work done so far useless) nor excessively irrelevant (effectively nullifying part of the court's past and present) for the purposes of determining the rating. It was therefore thought that a potential weighted duration assessment that could reflect the average value assumed by the per capita and structural components might be the right compromise.

Obviously, several variants arise from this structuring in which different weights will be attributed based on the performance that will best replicate the future performance of the courts and/or objectives and focus. Taking a close look at the 'base' graph (Table 5) showing the evaluations on the all-inclusive judicial personnel, in the penalised system, the average evaluation is -8.66, a sign that many courts in Italy need to take action to improve primarily the management of their human resources. It should also be noted that the lowest evaluation of -207.61 was obtained by the court of Livorno, characterised, as mentioned above, by an excellent duration, a factor that further demonstrates how relying solely on duration for an assessment of courts is extremely misleading.

The best, quite predictably given the results listed above, turns out to be the court of Bolzano with an incredible inclusive rating of 117.13. It should be used as a benchmark by the entire justice system, in particular by those courts of equal size. In the context of the evaluation offered by the "effective" penalised model (Table 6), based only on the personnel actually involved in civil executions and bankruptcies, an average of -6.37 results, with a minimum always achieved by the court of Livorno equal to -135.69 and a maximum obviously reached by the court of Bolzano with a comprehensive evaluation of 81.28.

These ranking systems, given the variables involved should be updated every year. It is acknowledged that it is difficult to keep track of internal human resources management issues (given also the difficulties encountered in retrieving information on the personnel of each court) without the support of a central system of the Ministry of Justice to track these items. With the strong push towards digitisation undertaken by the Italian justice system in recent years, this difficulty should disappear.

Table 5: Results for the completed Score System

COURT OF APPEAL	LOCATION	PRO CAPITA		STRUCTURE				
		BALANCED SCORE SYSTEM	PENALIZED SCORE SYSTEM	BALANCED SCORE SYSTEM	BALANCED SCORE SYSTEM	DURATION	BALANCED MODEL	PENALIZED MODEL
BOLZANO/BOZEN	BOLZANO/BOZEN	116,5	67,9	20,65	12,305	OTTIMO	208,9	117,1
L'AQUILA	LANCIANO	107	65,85	11,6	7,585	DISTINTO	181,1	108,5
TRIESTE	PORDENONE	61	62,6	13,3	8,63	BENE	111,5	104,2
CAMPOBASSO	CAMPOBASSO	105,5	57,7	16,45	10,115	BENE	181,4	98,4
L'AQUILA	PESCARA	70	54,6	15,25	9,575	BENE	127,0	93,2
SASSARI	NUORO	78,5	54,25	14	8,605	BENE	138,5	91,7
MILANO	BUSTO ARSIZIO	92	52,9	14,65	9,155	BENE	159,4	90,2
L'AQUILA	L'AQUILA	92	52,35	14,7	9,235	SUFFICIENTE	157,2	89,1
PALERMO	TRAPANI	84,5	48,9	14,45	9,055	DISTINTO	150,2	84,5
ANCONA	ANCONA	93	54,65	11,7	5,725	INSUFFICIENTE	140,0	83,4
BOLOGNA	PIACENZA	82,5	47,85	13,6	8,945	SUFFICIENTE	141,8	82,1
CATANZARO	LAMEZIA TERME	94	53,75	3,5	-0,42	SUFFICIENTE	149,0	81,6
FIRENZE	LUCCA	77	45,2	13,15	8,125	DISTINTO	137,6	78,1
CATANZARO	CROTONE	81,5	43	18,55	11,105	DISTINTO	149,8	77,7
L'AQUILA	CHIETI	63	43,45	13,35	8,67	DISTINTO	116,8	76,0
FIRENZE	PISTOIA	73	47,95	10,5	7,36	INSUFFICIENTE	108,8	75,0
PALERMO	TERMINI IMERESE	75	45,65	7	3,68	SUFFICIENTE	124,0	73,5
ROMA	VITERBO	79,5	42,2	11,75	7,93	SUFFICIENTE	135,5	72,6
MILANO	LECCO	58,5	44,2	15	9,605	INSUFFICIENTE	91,5	71,7
BRESCIA	CREMONA	82	40,45	14,75	9,415	SUFFICIENTE	142,2	71,5
BOLOGNA	MODENA	17,5	40,5	12,75	8,31	DISTINTO	48,0	71,2
BRESCIA	BRESCIA	80,5	38,05	18,05	10,45	SUFFICIENTE	143,3	68,9
PERUGIA	SPOLETO	67	40,2	9,6	6,535	BENE	116,8	68,5
L'AQUILA	VASTO	77	39,75	10,15	6,86	BENE	132,4	68,2
REGGIO CALABRIA	LOCRI	77	45,05	8,7	4,59	GRAVE	110,7	65,4
TORINO	BIELLA	74,5	34,95	14,5	9,08	SUFFICIENTE	130,7	62,9
TORINO	VERCELLI	65	36,15	10,7	5,935	DISTINTO	117,2	62,3
TORINO	IVREA	64,5	34	12,2	7,14	OTTIMO	122,4	61,1
ANCONA	ASCOLI PICENO	66,5	43,3	2,1	0,205	INSUFFICIENTE	90,6	60,9
BOLOGNA	PARMA	72,5	33	14,25	9,105	DISTINTO	132,0	60,7
ROMA	CIVITAVECCHIA	73,5	35,95	16,2	10,085	INSUFFICIENTE	115,2	59,8
SALERNO	VALLO DELLA LUCANIA	79,5	42,1	4,35	-0,17	INSUFFICIENTE	112,4	58,7
L'AQUILA	AVEZZANO	72	39,75	6,3	3,295	INSUFFICIENTE	103,1	58,7
BOLOGNA	REGGIO EMILIA	34,5	29,45	17	10,395	BENE	75,5	56,3
TRENTO	ROVERETO	69	28,6	9,5	4,715	DISTINTO	122,0	49,7
VENEZIA	BELLUNO	64	26,7	11,5	7,545	SUFFICIENTE	112,0	49,0
CAMPOBASSO	ISERNIA	60,5	27,7	6,55	2,7	SUFFICIENTE	101,8	45,6
CAGLIARI	LANUSEI	79	22,95	15,35	9,235	SUFFICIENTE	140,6	45,4
NAPOLI	NAPOLI NORD	62,5	24,6	8,65	4,15	DISTINTO	109,1	42,8
SALERNO	NOCERA INFERIORE	59	26,95	9,9	6,57	INSUFFICIENTE	87,2	42,7
ROMA	FROSINONE	58	34,55	-1,8	-3,95	GRAVE	71,7	41,1
GENOVA	MASSA	49	20,15	12,3	8,135	DISTINTO	94,8	40,5
FIRENZE	GROSSETO	52,5	28,65	-2,75	-4,865	BENE	82,7	39,8
CATANZARO	VIBO VALENTIA	57,5	22,4	7,6	2,205	DISTINTO	102,8	37,9
TORINO	VERBANIA	33	23,4	2,3	0,67	BENE	58,5	37,5
POTENZA	POTENZA	57	32,25	-1,55	-4,49	GRAVE	70,5	37,1
VENEZIA	VENEZIA	36,5	17,4	8,35	6,145	BENE	69,8	33,9
REGGIO CALABRIA	REGGIO CALABRIA	57,5	17	12,85	6,66	SUFFICIENTE	103,6	33,5
SASSARI	TEMPIO PAUSANIA	53	21,8	10,4	5,88	GRAVE	76,4	31,8
BOLOGNA	FORLI'	53,5	11,85	17	10,08	OTTIMO	110,7	30,8
VENEZIA	TREVISO	49,5	16,9	15,4	9,375	INSUFFICIENTE	78,4	30,5
ROMA	TIVOLI	45,5	18,75	6,7	3,6	INSUFFICIENTE	63,7	27,5
MESSINA	PATTI	50,5	21,2	3,1	-0,655	INSUFFICIENTE	67,6	26,9
MILANO	SONDRIO	52	14,45	7,3	3,465	BENE	92,0	26,8
CATANIA	RAGUSA	52	16,75	7,65	3,93	INSUFFICIENTE	74,4	24,8
L'AQUILA	TERAMO	43,5	12,4	7,65	3,685	SUFFICIENTE	77,4	23,6
PALERMO	MARSALA	10	11,7	4,5	0,93	SUFFICIENTE	24,0	19,8
CAGLIARI	ORISTANO	35	9,9	4,75	1,355	SUFFICIENTE	66,2	18,3
CATANZARO	CATANZARO	58,5	7,75	10,35	3,44	OTTIMO	111,6	18,0
MESSINA	BARCELLONA POZZO DI GOTTO	43	15,5	5,5	1,46	GRAVE	56,5	17,9
ANCONA	PESARO	25,5	6,3	8,45	5,78	DISTINTO	55,7	17,4
BARI	TRANI	32	6,1	6,25	3,385	SUFFICIENTE	58,7	13,9
MILANO	COMO	33	5,25	4,85	1,26	DISTINTO	63,3	11,3
POTENZA	MATERA	39	18,35	-6,85	-9,505	GRAVE	38,2	11,2
FIRENZE	SIENA	34	8,65	-0,2	-3,595	SUFFICIENTE	55,3	10,7
MESSINA	MESSINA	32	12,8	-3,2	-4,955	INSUFFICIENTE	33,6	10,0
POTENZA	LAGONEGRO	61,5	4,5	7,35	0,57	BENE	106,3	9,0
FIRENZE	PRATO	9	-1,15	11,3	7,79	BENE	31,5	7,8
PALERMO	SCIACCA	39,5	8,35	-1,35	-6,535	SUFFICIENTE	62,4	7,4
CALTANISSETTA	ENNA	43	10,8	0,55	-4,93	INSUFFICIENTE	53,8	7,0
VENEZIA	VICENZA	19,5	1,75	3,15	0,17	SUFFICIENTE	36,9	4,2
CATANZARO	PAOLA	35,5	6,1	1,2	-1,05	INSUFFICIENTE	43,2	3,8
ANCONA	URBINO	31	4,55	1,95	-0,17	INSUFFICIENTE	37,2	2,4
NAPOLI	SANTA MARIA CAPUA VETERE	39,5	-6,35	13,95	8,475	SUFFICIENTE	77,7	0,3
VENEZIA	PADOVA	22,5	-7,05	10,55	7,11	SUFFICIENTE	48,8	-2,1
NAPOLI	NAPOLI	23	-11,8	12,6	7,85	BENE	53,8	-8,1
CATANZARO	CASTROVILLARI	25	-1,7	1,65	-0,49	GRAVE	25,7	-9,8
GENOVA	IMPERIA	12,5	-6,75	-0,4	-2,5	SUFFICIENTE	22,8	-11,3
MILANO	LODI	14,5	-12,45	2,55	-0,275	OTTIMO	37,8	-16,0
CAGLIARI	CAGLIARI	17	-4,85	-1,45	-4,48	INSUFFICIENTE	12,8	-16,0
BARI	FOGGIA	20,5	-7,1	3,05	-0,99	GRAVE	20,3	-18,4
MILANO	VARESE	-5,5	-8,5	-3,15	-4,75	INSUFFICIENTE	-22,6	-21,8
BOLOGNA	RAVENNA	10	-17,7	5,7	1,755	DISTINTO	29,7	-22,7
NAPOLI	NOLA	6	-14	-1,35	-3,395	SUFFICIENTE	12,1	-23,0
CATANIA	CALTAGIRONE	14,5	-7,2	-11,2	-14,885	SUFFICIENTE	15,0	-24,3
NAPOLI	AVELLINO	14	-13,95	4	0,415	INSUFFICIENTE	13,8	-24,8
L'AQUILA	SULMONA	26	-11,05	1,5	-1,585	GRAVE	27,0	-25,0
CATANIA	CATANIA	4	-16,7	8,4	3,445	INSUFFICIENTE	3,2	-25,9
TORINO	CUNEO	6	-15,7	-3,35	-5,34	DISTINTO	14,6	-26,8
TORINO	ASTI	7,5	-22,45	7,75	4,03	DISTINTO	28,0	-27,5
NAPOLI	BENEVENTO	38,5	-17,15	4,44089E-16	-4,66	DISTINTO	66,7	-28,3
PALERMO	PALERMO	-0,5	-17,35	4,65	2,19	GRAVE	-9,6	-30,6
FIRENZE	FIRENZE	-6,5	-21,45	-0,4	-1,93	BENE	-3,4	-32,4
MILANO	PAVIA	-1,5	-23,8	3,75	0,47	BENE	8,2	-33,5
GENOVA	GENOVA	-7	-24,15	1,7	-0,505	OTTIMO	4,7	-33,8
ROMA	RIETI	3,5	-17,95	-8,7	-9,43	SUFFICIENTE	1,0	-35,0
TRIESTE	UDINE	3	-25,25	5,6	-0,135	OTTIMO	23,6	-35,0
ROMA	ROMA	5	-30,8	13	7,985	DISTINTO	29,5	-36,1
PALERMO	AGRIGENTO	0,5	-21,35	-4,55	-7,25	SUFFICIENTE	0,7	-37,9
MILANO	MILANO	0	-28,6	6,65	3,055	SUFFICIENTE	11,1	-38,5
CALTANISSETTA	CALTANISSETTA	14	-18,85	-1,85	-6,185	INSUFFICIENTE	7,9	-38,7
TRENTO	TRENTO	2	-27,55	3,25	0,405	DISTINTO	15,2	-38,8
PERUGIA	TERNI	-3,5	-26,7	3,05	-1,115	BENE	4,5	-39,5
REGGIO CALABRIA	PALMI	6	-19,8	-5,85	-8,075	INSUFFICIENTE	-8,1	-42,0
TORINO	ALESSANDRIA	3	-29	0,3	-2,665	BENE	11,5	-44,5
GENOVA	SAVONA	-4	-29,4	-1	-3,92	OTTIMO	6,5	-45,0
BOLOGNA	FERRARA	14	-35,75	9,35	5,285	OTTIMO	43,8	-45,9
TORINO	NOVARA	-11,5	-35,25	4,4	1,08	DISTINTO	-3,9	-49,7
ANCONA	MACERATA	0	-35	-7,4	-9,46	BENE	-0,7	-60,3
TRIESTE	GORIZIA	1,5	-41,2	4,4	-1,995	OTTIMO	20,1	-60,8
LECCE	LECCE	-20,5	-46,25	2,2	-0,32	BENE	-21,8	-68,0
CATANIA	SIRACUSA	-23,5	-37,2	-10	-10,91	INSUFFICIENTE	-56,5	-71,0
TRIESTE	TRIESTE	-11,5	-45,05	-4,45	-9,34	OTTIMO	-8,2	-73,9
BRESCIA	MANTOVA	-6,5	-47,25	-3	-7,995	DISTINTO	-3,8	-76,7
MILANO	MONZA	-28,5	-48,4	-4,15	-6,16	BENE	-40,2	-77,1
SASSARI	SASSARI	-25,5	-50,8	-2,15	-5,16	SUFFICIENTE	-35,9	-80,0
NAPOLI	TORRE ANNUNZIATA	-2,5	-53,5	-0,85	-7,025	BENE	2,1	-85,6
ANCONA	FERMO	-17,5	-46,25	-12,65	-19,12	SUFFICIENTE	-34,4	-87,1
VENEZIA	VERONA	-43,5	-53,35	-7,4	-10,475	SUFFICIENTE	-63,7	-88,4
PERUGIA	PERUGIA	-39,5	-47,55	-14,6	-15,23	GRAVE	-87,3	-93,4
CATANZARO	COSENZA	-43	-55,2	-12,5	-15,41	SUFFICIENTE	-72,5	-96,8
ROMA	LATINA	-48	-57,2	-13,8	-14,525	GRAVE	-99,3	-107,1
LECCE	BRINDISI	-42,5	-66	-11,6	-14,86	INSUFFICIENTE	-86,6	-118,1
BOLOGNA	RIMINI	-39,5	-74	-8,2	-13,025	OTTIMO	-54,0	-121,0
CALTANISSETTA	GELA	-37	-60,6	-20,3	-23,6	GRAVE	-89,3	-121,3
SALERNO	SALERNO	-35,5	-76,7	-5	-9,23	DISTINTO	-49,3	-122,2
FIRENZE	AREZZO	-36,5	-72,65	-9,15	-15,14	BENE	-57,2	-122,4
VENEZIA	ROVIGO	-42,5	-75,95	-6,3	-13,38	DISTINTO	-61,1	-125,2
FIRENZE	PISA	-55,5	-74,7	-14,25	-16,34	DISTINTO	-88,5	-126,3
BOLOGNA	BOLOGNA	-55	-79,65	-5,9	-11,935	DISTINTO	-79,4	-129,3
BRESCIA	BERGAMO	-52,5	-85,6	-0,2	-4,6	GRAVE	-92,4	-139,8
TORINO	TORINO	-61,5	-84,55	-14,3	-20,225	BENE	-99,8	-145,3
CAMPOBASSO	LARINO	-52	-89,25	-9,55	-13,91	BENE	-80,8	-146,1
ROMA	CASSINO	-69	-84,4	-19,45	-21,73	INSUFFICIENTE	-134,2	-152,6
ROMA	VELLETRI	-62	-90,25	-15,45	-17,315	INSUFFICIENTE	-119,7	-156,9
TARANTO	TARANTO	-78,5	-102,95	-15,95	-20,125	INSUFFICIENTE	-144,9	-178,8
BARI	BARI	-79,5	-108,9	-17,1	-22,515	INSUFFICIENTE	-147,6	-190,1
GENOVA	LA SPEZIA	-76,5	-113,6	-17,75	-24,215	DISTINTO	-123,5	-192,5
TORINO	AOSTA	-70	-118,35	-13,9	-22,025	OTTIMO	-105,4	-196,6
FIRENZE	LIVORNO	-92,5	-129,55	-9,55	-16,265	OTTIMO	-134,8	-207,6

Source: Own re-elaboration of data from the Italian Ministry of Justice

COURT OF APPEAL	LOCATION	PRO CAPITA		STRUCTURE		DURATION	BALANCED MODEL	PENALIZED MODEL
		BALANCED SCORE SYSTEM	PENALIZED SCORE SYSTEM	BALANCED SCORE SYSTEM	PENALIZED SCORE SYSTEM			
BOLZANO/BOZEN	BOLZANO/BOZEN	73,5	44,5	20,65	12,305	OTTIMO	139,5	81,3
TRIESTE	PORDENONE	61	39,8	13,3	8,63	BENE	109,1	69,6
L'AQUILA	LANCIANO	65	40,25	11,6	7,585	DISTINTO	114,8	69,6
CAMPOBASSO	CAMPOBASSO	66,5	37,9	16,45	10,115	BENE	120,5	68,2
L'AQUILA	L'AQUILA	58,5	33,95	14,7	9,235	SUFFICIENTE	105,3	61,2
L'AQUILA	PESCARA	51,5	32,25	15,25	9,575	BENE	96,8	59,2
SASSARI	NUORO	38	32	14	8,605	BENE	75,3	57,9
ROMA	VITERBO	50	31,35	11,75	7,93	SUFFICIENTE	89,6	56,0
BOLOGNA	PIACENZA	51,5	30,6	13,6	8,945	SUFFICIENTE	93,7	55,9
FIRENZE	LUCCA	48,5	30,6	13,15	8,125	DISTINTO	91,6	55,6
ANCONA	ANCONA	57	34,75	11,7	5,725	INSUFFICIENTE	90,1	54,7
PALERMO	TRAPANI	47,5	27,3	14,45	9,055	DISTINTO	91,4	51,6
CATANZARO	LAMEZIA TERME	58,5	33,95	3,5	-0,42	SUFFICIENTE	94,1	51,5
CATANZARO	CROTONE	49	25	18,55	11,105	DISTINTO	97,8	50,2
PALERMO	TERMINI IMERESE	47,5	30,2	7	3,68	SUFFICIENTE	81,1	50,0
MILANO	BUSTO ARSIZIO	51	26,2	14,65	9,155	BENE	95,4	49,7
MILANO	LECCO	27,5	26,95	15	9,605	INSUFFICIENTE	49,1	46,8
L'AQUILA	CHIETI	25	24,1	13,35	8,67	DISTINTO	56,6	46,4
FIRENZE	PISTOIA	43	28,1	10,5	7,36	INSUFFICIENTE	67,9	46,3
BRESCIA	BRESCIA	50,5	22,85	18,05	10,45	SUFFICIENTE	96,7	45,7
ROMA	CIVITAVECCHIA	49,5	25,3	16,2	10,085	INSUFFICIENTE	83,3	44,9
REGGIO CALABRIA	LOCRI	48,5	29,1	8,7	4,59	GRAVE	72,9	43,1
SALERNO	VALLO DELLA LUCANIA	48,5	29,1	4,35	-0,17	INSUFFICIENTE	70,0	40,3
TORINO	IVREA	40	20,55	12,2	7,14	OTTIMO	80,8	40,2
L'AQUILA	VASTO	43	20,8	10,15	6,86	BENE	78,9	39,3
PERUGIA	SPOLETO	37,5	20,55	9,6	6,535	BENE	70,1	38,6
TORINO	VERCELLI	37,5	20,65	10,7	5,935	DISTINTO	72,7	38,5
BOLOGNA	MODENA	17,5	17,7	12,75	8,31	DISTINTO	44,7	36,5
BRESCIA	CREMONA	43,5	16,55	14,75	9,415	SUFFICIENTE	82,9	35,3
VENEZIA	BELLUNO	40,5	17,75	11,5	7,545	SUFFICIENTE	75,1	35,2
L'AQUILA	AVEZZANO	42	22,95	6,3	3,295	INSUFFICIENTE	62,1	34,5
SALERNO	NOCERA INFERIORE	38	20,2	9,9	6,57	INSUFFICIENTE	59,8	33,7
ANCONA	ASCOLI PICENO	38	24,15	2,1	0,205	INSUFFICIENTE	52,0	33,2
TRENTO	ROVERETO	41	17,8	9,5	4,715	DISTINTO	76,7	33,0
NAPOLI	NAPOLI NORD	42	18,35	8,65	4,15	BENE	75,9	32,9
REGGIO CALABRIA	REGGIO CALABRIA	41,5	15,95	12,85	6,66	SUFFICIENTE	78,0	31,6
CAMPOBASSO	ISERNIA	37,5	17,8	6,55	2,7	SUFFICIENTE	65,7	30,4
TORINO	BIELLA	36	12,55	14,5	9,08	SUFFICIENTE	71,4	28,9
ROMA	FROSINONE	39	24,65	-1,8	-3,95	GRAVE	48,1	27,9
FIRENZE	PRATO	10,5	12,45	11,3	7,79	BENE	31,3	27,7
BOLOGNA	PARMA	38	11,1	14,25	9,105	DISTINTO	77,0	27,3
VENEZIA	VENEZIA	24,5	12,95	8,35	6,145	BENE	49,4	26,8
VENEZIA	TREVISO	32	13,5	15,4	9,375	INSUFFICIENTE	56,3	26,4
CATANZARO	VIBO VALENTIA	36,5	15	7,6	2,205	DISTINTO	68,1	26,3
FIRENZE	GROSSETO	32,5	18,3	-2,75	-4,865	BENE	50,3	23,9
CAGLIARI	LANUSEI	44	8,75	15,35	9,235	BENE	85,6	23,6
GENOVA	MASSA	25	8,85	12,3	8,135	BENE	55,5	23,0
BOLOGNA	FORLI'	33	7,1	17	10,08	OTTIMO	75,1	23,0
ANCONA	PESARO	20,5	9,55	8,45	5,78	DISTINTO	44,9	21,7
BOLOGNA	REGGIO EMILIA	34,5	6,65	17	10,395	BENE	73,0	21,6
CATANIA	RAGUSA	29,5	13,5	7,65	3,93	INSUFFICIENTE	44,8	21,0
SASSARI	TEMPIO PAUSANIA	30,5	13,15	10,4	5,88	GRAVE	57,5	20,5
CAGLIARI	ORISTANO	18	11,5	4,75	1,355	DISTINTO	37,5	20,2
ROMA	TIVOLI	28,5	13,1	6,7	3,6	INSUFFICIENTE	42,3	20,1
TORINO	VERBANIA	12	11,95	2,3	0,67	BENE	24,6	19,9
POTENZA	POTENZA	33,5	19,4	-1,55	-4,49	GRAVE	40,1	19,5
MESSINA	PATTI	32,5	15,05	3,1	-0,655	INSUFFICIENTE	44,7	18,7
CATANZARO	CATANZARO	35	5,5	10,35	3,44	OTTIMO	71,4	13,9
MESSINA	BARCELLONA POZZO DI GOTTO	27,5	11,4	5,5	1,46	GRAVE	38,2	13,5
POTENZA	LAGONEGRO	39,5	5,4	7,35	0,57	BENE	70,9	9,9
MILANO	COMO	21,5	3,8	4,85	1,26	DISTINTO	42,8	8,6
NAPOLI	SANTA MARIA CAPUA VETERE	26	-0,65	13,95	8,475	SUFFICIENTE	55,8	8,5
L'AQUILA	TERAMO	19	1,2	7,65	3,685	SUFFICIENTE	39,0	6,5
FIRENZE	SIENA	20,5	5,55	-0,2	-3,595	SUFFICIENTE	33,4	5,7
PALERMO	MARSALA	6	2,45	4,5	0,93	SUFFICIENTE	16,4	5,6
MESSINA	MESSINA	20	9,1	-3,2	-4,955	INSUFFICIENTE	19,7	5,5
BARI	TRANI	17	0,7	6,25	3,385	SUFFICIENTE	34,6	5,5
CATANZARO	PAOLA	22	5,25	1,2	-1,05	INSUFFICIENTE	27,1	3,6
MILANO	SONDRIO	21,5	-1,3	7,3	3,465	BENE	43,8	2,8
POTENZA	MATERA	23	11,1	-6,85	-9,505	GRAVE	19,1	2,1
VENEZIA	VICENZA	10,5	-0,15	3,15	0,17	SUFFICIENTE	21,8	1,0
GENOVA	IMPERIA	13	1,5	-0,4	-2,5	SUFFICIENTE	22,0	0,8
NAPOLI	NAPOLI	14,5	-7,75	12,6	7,85	BENE	38,6	-2,5
CALTANISSETTA	ENNA	23,5	3,65	0,55	-4,93	INSUFFICIENTE	28,7	-2,6
ANCONA	URBINO	15,5	-0,3	1,95	-0,17	INSUFFICIENTE	18,1	-3,8
NAPOLI	AVELLINO	11	-2	4	0,415	INSUFFICIENTE	13,4	-5,8
MILANO	VARESE	-5	0,3	-3,15	-4,75	INSUFFICIENTE	-17,8	-7,5
PALERMO	SCIACCA	16,5	-1,85	-1,35	-6,535	SUFFICIENTE	26,3	-8,3
MILANO	LODI	7,5	-7,5	2,55	-0,275	OTTIMO	22,4	-9,3
BOLOGNA	RAVENNA	8,5	-8,5	5,7	1,755	DISTINTO	24,2	-9,4
BARI	FOGGIA	14	-3,15	3,05	-0,99	GRAVE	15,6	-10,8
CATANZARO	CASTROVILLARI	15	-4,1	1,65	-0,49	GRAVE	15,6	-11,7
TORINO	ASTI	5	-12,65	7,75	4,03	DISTINTO	21,0	-13,4
VENEZIA	PADOVA	6	-14,65	10,55	7,11	SUFFICIENTE	22,4	-13,8
CAGLIARI	CAGLIARI	8	-5,5	-1,45	-4,48	INSUFFICIENTE	3,4	-15,9
TORINO	CUNEO	5,5	-8,15	-3,35	-5,34	DISTINTO	10,6	-16,0
NAPOLI	BENEVENTO	23	-8,65	4,44089E-16	-4,66	DISTINTO	40,2	-16,0
CATANIA	CATANIA	1	-11,65	8,4	3,445	INSUFFICIENTE	2,8	-17,2
L'AQUILA	SULMONA	14,5	-7,45	1,5	-1,585	GRAVE	14,7	-17,9
TRIESTE	UDINE	4,5	-14,15	5,6	-0,135	OTTIMO	20,9	-19,1
TORINO	NOVARA	-4,5	-15,05	4,4	1,08	DISTINTO	3,4	-19,9
NAPOLI	NOLA	-0,5	-12,3	-1,35	-3,395	SUFFICIENTE	0,8	-20,8
MILANO	PAVIA	-1,5	-15,7	3,75	0,47	BENE	5,8	-21,8
PERUGIA	TERNI	-2	-15,05	3,05	-1,115	BENE	4,3	-22,4
PALERMO	PALERMO	-5	-14,75	4,65	2,19	GRAVE	-11,4	-25,0
GENOVA	GENOVA	-9,5	-19	1,7	-0,505	OTTIMO	-4,0	-26,8
FIRENZE	FIRENZE	-9,5	-17,7	-0,4	-1,93	BENE	-10,4	-27,2
CATANIA	CALTAGIRONE	2,5	-9,6	-11,2	-14,885	SUFFICIENTE	-4,6	-28,3
BOLOGNA	FERRARA	6	-24,2	9,35	5,285	OTTIMO	26,9	-28,8
ROMA	RIETI	0	-14,05	-8,7	-9,43	SUFFICIENTE	-5,8	-29,5
TORINO	ALESSANDRIA	2	-19,65	0,3	-2,665	BENE	7,6	-30,9
REGGIO CALABRIA	PALMI	0,5	-15,7	-5,85	-8,075	INSUFFICIENTE	-12,2	-34,8
GENOVA	SAVONA	-5	-22,1	-1	-3,92	OTTIMO	0,1	-34,8
CALTANISSETTA	CALTANISSETTA	3,5	-17,1	-1,85	-6,185	INSUFFICIENTE	-3,7	-35,0
TRIESTE	GORIZIA	1,5	-23,55	4,4	-1,995	OTTIMO	15,2	-35,1
ROMA	ROMA	-6,5	-29,9	13	7,985	DISTINTO	9,0	-35,3
PALERMO	AGRIGENTO	-6	-19,55	-4,55	-7,25	SUFFICIENTE	-10,7	-35,6
ANCONA	MACERATA	4,5	-18,95	-7,4	-9,46	BENE	3,6	-36,6
MILANO	MILANO	-8,5	-27,65	6,65	3,055	SUFFICIENTE	-3,2	-37,4
TRENTO	TRENTO	-5,5	-26,55	3,25	0,405	DISTINTO	0,7	-37,8
TRIESTE	TRIESTE	-7	-26,6	-4,45	-9,34	OTTIMO	-6,4	-47,0
LECCE	LECCE	-13,5	-32,85	2,2	-0,32	BENE	-13,8	-48,3
BRESCIA	MANTOVA	-2	-28	-3	-7,995	DISTINTO	-0,3	-48,4
MILANO	MONZA	-16	-29,15	-4,15	-6,16	BENE	-23,9	-48,6
CATANIA	SIRACUSA	-14,5	-24,2	-10	-10,91	INSUFFICIENTE	-38,9	-50,4
NAPOLI	TORRE ANNUNZIATA	0	-31,5	-0,85	-7,025	BENE	3,4	-53,0
VENEZIA	VERONA	-25,5	-31,75	-7,4	-10,475	DISTINTO	-39,9	-56,5
SASSARI	SASSARI	-19,5	-36,25	-2,15	-5,16	SUFFICIENTE	-28,5	-58,1
ANCONA	FERMO	-11	-27,35	-12,65	-19,12	SUFFICIENTE	-26,3	-59,1
CATANZARO	COSENZA	-23	-31,4	-12,5	-15,41	SUFFICIENTE	-44,1	-61,5
ROMA	LATINA	-25,5	-30	-13,8	-14,525	GRAVE	-60,6	-64,6
PERUGIA	PERUGIA	-24,5	-29,55	-14,6	-15,23	GRAVE	-59,9	-64,6
SALERNO	SALERNO	-16	-40,8	-5	-9,23	DISTINTO	-23,3	-68,8
FIRENZE	AREZZO	-21,5	-41,2	-9,15	-15,14	BENE	-37,1	-75,7
FIRENZE	PISA	-29	-41,4	-14,25	-16,34	DISTINTO	-52,0	-76,8
BOLOGNA	BOLOGNA	-30	-44,45	-5,9	-11,935	DISTINTO	-45,2	-77,0
VENEZIA	ROVIGO	-25,5	-44,45	-6,3	-13,38	DISTINTO	-38,8	-78,5
LECCE	BRINDISI	-27,5	-42,85	-11,6	-14,86	INSUFFICIENTE	-60,0	-82,3
BOLOGNA	RIMINI	-28	-47,7	-8,2	-13,025	OTTIMO	-41,6	-82,3
CAMPOBASSO	LARINO	-30	-50,75	-9,55	-13,91	BENE	-44,0	-88,8
CALTANISSETTA	GELA	-27,5	-40,7	-20,3	-23,6	GRAVE	-70,1	-89,7
BRESCIA	BERGAMO	-32,5	-53,55	-0,2	-4,6	GRAVE	-57,5	-90,0
TORINO	TORINO	-36,5	-50,4	-14,3	-20,225	BENE	-64,8	-94,6
ROMA	VELLETRI	-34	-54,6	-15,45	-17,315	INSUFFICIENTE	-73,6	-102,4
ROMA	CASSINO	-42,5	-53,45	-19,45	-21,73	INSUFFICIENTE	-90,3	-105,1
TARANTO	TARANTO	-49,5	-63,95	-15,95	-20,125	INSUFFICIENTE	-97,3	-119,2
BARI	BARI	-45,5	-62,85	-17,1	-22,515	INSUFFICIENTE	-92,5	-120,0
GENOVA	LA SPEZIA	-46	-67,05	-17,75	-24,215	DISTINTO	-81,0	-123,2
TORINO	AOSTA	-44	-71,45	-13,9	-22,025	OTTIMO	-71,3	-127,0
FIRENZE	LIVORNO	-57,5	-81,1	-9,55	-16,265	OTTIMO	-87,2	-135,7

Source: Own re-elaboration of data from the Italian Ministry of Justice

Conclusion

The performance of the courts, both on the human and structural side, and thus not only in terms of timing, of bankruptcy proceedings and civil executions, has important repercussions on the value of impaired loans in the balance sheets of Italian banks and in the portfolios of the funds that have purchased them, because it affects the timing and recovery rates of those loans. The wide variability observed in the timing of courts therefore has an impact on the value of NPLs: a portfolio of non-performing loans will produce very different cash flows depending on the different efficiency of the courts handling the procedures. For these reasons in the final part of chapter three, a score system was created in the attempts to provide a broad and a comprehensive view as possible of a court's current, past, and future situation. Many per capita metrics, structure variables and duration were evaluated and included in the overall judgement. This overall judgement will theoretically complement the different valuation models already used by banks and investors specialised in distressed securities. In the aforementioned models, citing for example Cerved's partially disclosed one, the estimated recovery rate will have to interact with this overall judgement (the relationship between these two variables, in addition to being highly specific according to the model constructed, is beyond the scope of this thesis) in such a way as to raise the value of the credit should a court be in the upper echelons of the ranking or vice versa. Recalling what was said earlier in Chapter 1, by simply adopting recovery rates correlated only with duration, the values of NPLs change significantly in the most efficient courts. The value of 100 euro of NPLs would rise to around 27 euro in these contexts, while in the opposite situation (in slower courts) it would fall to 5 euro. With the Score System, the variability of results is expected to increase even further, making the actual valuations as real as possible, thus greatly increasing the territorial gap (discussed in detail in Chapter 2).

By means of the specific items that make up the overall score system, it is possible to analyse a court from various perspectives, in particular the focus was placed on the effect of the personnel on the court. The presidents of the various courts will thus be able to objectively analyse how their staff is performing by making comparisons to other courts similar in structure/size. It will be possible to see where to intervene, whether

new staff is needed or whether, as suggested above, a more efficient reallocation of resources is required.

It is important to emphasise that, in addition to the specific and internal dynamics of each court, improvements to the justice system as a whole are necessary. Indeed, it must be remembered that these classification systems, given the variables involved, should be updated every year. It is acknowledged that it is difficult to keep track of internal human resources management issues (given also the difficulties encountered in finding information on the personnel of each court) especially without the support of a central system of the Ministry of Justice to keep track of these items. It is therefore necessary to proceed with (as suggested by Cerved[51] itself):

- Structured collection of data and information;

- Automated execution of repetitive low-value actions;

- Use of guided, suggested and software-powered formats for the creation of the same document types;

- Simplified accounting management of procedures;

- Automatic scheduling of hearings and auctions based on the availability of Judges and Auxiliaries;

- Reward system for Auxiliaries and GOTs based on performance rather than presences;

- Redefinition of court staffing based on clear, measurable and objective performance indicators (potentially through this new score system or subsequent reworking);

- Rationalisation and reduction of those involved in the process, in particular the executions process;

- Using artificial intelligence-assisted predictive justice wherever possible.

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Appendix

Table A1: Summary of the personnel (juridical and administrative) structure of every court in Italy

of Appeal	Tribunal	Total Administrative Staff	Duplicates	Effective Administrative Staff	Ordinary Judes	GOT	Bankruptcy Judes	Real Estate Executions Judges	Movable Assets Executions Judges	GOT Civil Executions
ANCONA	ANCONA	18	4	14	10	14	2	3	0	2
ANCONA	ASCOLI PICENO	11	5	6	7	5	1	1	1	2
ANCONA	FERMO	9	1	8	4	4	0	2	2	1
ANCONA	MACERATA	13	2	11	11	6	2	2	0	1
ANCONA	PESARO	8	1	7	9	3	4	1	1	1
ANCONA	URBINO	16	9	7	3	3	1	1	0	1
BARI	BARI	53	12	41	27	15	5	3	2	2
BARI	FOGGIA	17	1	16	26	14	3	4	1	2
BARI	TRANI	13	1	12	11	10	2	2	2	1
BOLOGNA	BOLOGNA	15	1	14	27	29	8	8	8	10
BOLOGNA	FERRARA	9	2	7	6	5	1	1	1	1
BOLOGNA	FORLI'	9	3	6	10	6	1	2	0	1
BOLOGNA	MODENA	0	0	0	0	0	3	2	0	2
BOLOGNA	PARMA	11	4	7	13	10	1	0	0	2
BOLOGNA	PIACENZA	8	3	5	6	8	1	3	0	1
BOLOGNA	RAVENNA	11	4	7	8	5	1	1	0	1
BOLOGNA	REGGIO EMILIA	13	2	11	0	0	2	2	0	2
BOLOGNA	RIMINI	10	2	8	9	10	2	1	0	2
BOLZANO/BOZEN	BOLZANO/BOZEN	7	1	6	16	7	2	3	0	5
BRESCIA	BERGAMO	12	0	12	21	18	5	5	0	5
BRESCIA	BRESCIA	8	1	7	21	18	4	6	0	3
BRESCIA	CREMONA	7	3	4	10	10	2	2	2	8
BRESCIA	MANTOVA	6	0	6	8	6	2	2	1	1
CAGLIARI	CAGLIARI	27	1	26	25	13	2	2	1	3
CAGLIARI	LANUSEI	6	1	5	4	3	2	2	0	1
CAGLIARI	ORISTANO	0	0	0	7	5	1	1	1	1
CALTANISSETTA	CALTANISSETTA	8	0	8	8	9	2	3	2	2
CALTANISSETTA	ENNA	7	1	6	8	6	2	1	1	2
CALTANISSETTA	GELA	4	0	4	10	6	1	0	0	2
CAMPOBASSO	CAMPOBASSO	4	0	4	7	4	2	1	0	1
CAMPOBASSO	ISERNIA	10	4	6	6	5	1	1	0	1
CAMPOBASSO	LARINO	9	5	4	6	5	1	1	1	1
CATANIA	CALTAGIRONE	10	5	5	4	4	2	0	0	2
CATANIA	CATANIA	20	1	19	37	23	5	3	2	5
CATANIA	RAGUSA	16	1	15	8	4	1	2	0	2
CATANIA	SIRACUSA	18	8	10	13	11	1	1	0	2
CATANZARO	CASTROVILLARI	22	9	13	12	7	2	2	0	1
CATANZARO	CATANZARO	11	2	9	15	3	2	2	0	2
CATANZARO	COSENZA	10	0	10	15	15	2	2	0	2
CATANZARO	CROTONE	7	3	4	9	6	2	2	2	3
CATANZARO	LAMEZIA TERME	9	6	3	6	7	2	2	0	1
CATANZARO	PAOLA	17	11	6	6	6	2	1	0	1
CATANZARO	VIBO VALENTIA	15	10	5	6	6	2	1	1	1
FIRENZE	AREZZO	12	5	7	11	2	2	2	1	1
FIRENZE	FIRENZE	16	1	15	32	17	3	3	1	3
FIRENZE	GROSSETO	8	2	6	6	5	1	1	1	1
FIRENZE	LIVORNO	6	2	4	10	4	2	2	2	1
FIRENZE	LUCCA	7	0	7	12	5	1	1	1	2
FIRENZE	PISA	10	1	9	9	7	1	1	1	1
FIRENZE	PISTOIA	9	3	6	9	7	2	2	1	3
FIRENZE	PRATO	0	0	0	7	3	3	2	0	1
FIRENZE	SIENA	14	7	7	10	5	1	1	1	2
GENOVA	GENOVA	31	12	19	37	23	6	6	6	5
GENOVA	IMPERIA	8	4	4	10	6	3	1	0	1
GENOVA	LA SPEZIA	9	3	6	6	3	1	2	0	1
GENOVA	MASSA	10	2	8	6	6	4	1	1	2
GENOVA	SAVONA	10	4	6	8	11	2	2	2	2
L'AQUILA	AVEZZANO	3	0	3	4	4	1	1	0	1
L'AQUILA	CHIETI	9	1	8	6	3	2	2	2	0
L'AQUILA	LANCIANO	5	2	3	4	4	1	1	1	1
L'AQUILA	L'AQUILA	7	3	4	6	6	1	1	1	1
L'AQUILA	PESCARA	20	8	12	11	0	2	2	2	2
L'AQUILA	SULMONA	5	2	3	4	6	2	2	2	2
L'AQUILA	TERAMO	33	22	11	9	8	2	2	0	3
L'AQUILA	VASTO	9	6	3	4	3	1	1	0	2
LECCE	BRINDISI	11	3	8	10	10	2	2	0	1
LECCE	LECCE	3	2	1	20	27	7	7	7	5
MESSINA	BARCELLONA POZZO DI GOTTO	12	8	4	9	4	1	2	0	1
MESSINA	MESSINA	12	1	11	13	15	2	3	4	3
MESSINA	PATTI	6	1	5	9	4	1	2	0	1
MILANO	BUSTO ARSIZIO	9	4	5	15	10	5	5	5	2
MILANO	COMO	8	0	8	10	9	2	1	0	2
MILANO	LECCO	5	0	5	6	3	2	2	1	0
MILANO	LODI	5	0	5	6	5	2	2	0	1
MILANO	MILANO	27	0	27	86	58	9	6	1	8
MILANO	MONZA	11	0	11	20	17	5	4	0	5
MILANO	PAVIA	11	1	10	16	10	3	3	3	4
MILANO	SONDRIO	11	7	4	9	2	4	3	0	2
MILANO	VARESE	0	0	0	11	6	3	2	0	3
NAPOLI	AVELLINO	11	0	11	19	3	2	2	1	2
NAPOLI	BENEVENTO	19	2	17	14	2	3	3	3	1
NAPOLI	NAPOLI	77	32	45	86	69	9	12	1	10
NAPOLI	NAPOLI NORD	13	2	11	30	4	6	5	5	1
NAPOLI	NOLA	12	1	11	19	7	2	3	3	1
NAPOLI	SANTA MARIA CAPUA VETERE	41	15	26	34	13	5	4	4	1
NAPOLI	TORRE ANNUNZIATA	4	0	4	20	14	4	2	0	3
PALERMO	AGRIGENTO	11	2	9	10	8	3	1	0	4
PALERMO	MARSALA	21	9	12	17	0	2	5	3	0
PALERMO	PALERMO	25	0	25	41	29	7	4	2	4
PALERMO	SCIACCA	8	4	4	3	3	1	1	1	1
PALERMO	TERMINI IMERESE	22	11	11	7	4	1	3	0	1
PALERMO	TRAPANI	10	1	9	6	8	1	1	0	2
PERUGIA	PERUGIA	22	10	12	13	16	2	2	0	2
PERUGIA	SPOLETO	4	0	4	8	5	1	1	0	2
PERUGIA	TERNI	10	1	9	9	8	2	1	0	3
POTENZA	LAGONEGRO	5	2	3	8	4	1	2	0	2
POTENZA	MATERA	7	1	6	5	4	1	1	0	1
POTENZA	POTENZA	7	0	7	8	4	3	3	0	1
REGGIO CALABRIA	LOCRI	6	1	5	9	9	2	3	0	1
REGGIO CALABRIA	PALMI	12	5	7	9	9	1	1	0	1
REGGIO CALABRIA	REGGIO CALABRIA	9	1	8	15	16	3	3	0	5
ROMA	CASSINO	10	2	8	9	8	2	2	0	2
ROMA	CIVITAVECCHIA	4	0	4	9	8	1	2	1	2
ROMA	FROSINONE	8	1	7	8	11	2	2	0	2
ROMA	LATINA	11	0	11	17	6	3	2	0	2
ROMA	RIETI	9	5	4	6	4	2	2	0	1
ROMA	ROMA	68	0	68	122	90	12	7	5	8
ROMA	TIVOLI	10	2	8	12	6	2	2	1	2
ROMA	VELLETRI	9	4	5	12	10	2	2	0	1
ROMA	VITERBO	8	2	6	7	2	1	1	0	2
SALERNO	NOCERA INFERIORE	13	6	7	10	5	2	2	1	2
SALERNO	SALERNO	18	1	17	20	12	2	3	0	2
SALERNO	VALLO DELLA LUCANIA	9	6	3	4	1	1	2	1	0
SASSARI	NUORO	0	0	0	6	5	1	1	0	1
SASSARI	SASSARI	11	2	9	10	8	2	2	0	1
SASSARI	TEMPIO PAUSANIA	8	4	4	4	6	2	2	1	2
TARANTO	TARANTO	10	0	10	21	15	2	2	1	3
TORINO	ALESSANDRIA	5	1	4	14	7	4	2	0	2
TORINO	AOSTA	6	3	3	6	3	1	1	0	1
TORINO	ASTI	9	4	5	8	6	3	1	0	1
TORINO	BIELLA	7	0	7	4	5	2	2	0	2
TORINO	CUNEO	7	1	6	10	4	2	2	0	1
TORINO	IVREA	8	3	5	11	8	2	2	0	3
TORINO	NOVARA	11	5	6	7	6	3	2	0	3
TORINO	TORINO	35	0	35	51	31	5	7	2	14
TORINO	VERBANIA	14	9	5	7	3	2	3	2	0
TORINO	VERCELLI	6	1	5	5	5	2	3	0	1
TRENTO	ROVERETO	6	4	2	8	3	1	1	1	1
TRENTO	TRENTO	5	2	3	8	11	1	1	0	5
TRIESTE	GORIZIA	6	4	2	5	6	1	2	1	3
TRIESTE	PORDENONE	8	3	5	0	0	2	1	1	2
TRIESTE	TRIESTE	6	2	4	10	12	2	2	0	2
TRIESTE	UDINE	14	2	12	15	11	2	1	2	1
VENEZIA	BELLUNO	6	4	2	8	9	2	1	0	2
VENEZIA	PADOVA	5	0	5	17	12	4	4	3	2
VENEZIA	ROVIGO	6	0	6	8	5	2	2	0	1
VENEZIA	TREVISO	10	0	10	17	11	3	3	2	4
VENEZIA	VENEZIA	14	3	11	24	23	4	3	0	3
VENEZIA	VERONA	14	0	14	21	21	4	3	0	3
VENEZIA	VICENZA	17	7	10	22	19	4	2	0	5

Source: Own re-elaboration of data from the Italian Ministry of Justice

Table A2: Detail of the personnel (juridical and administrative) structure of every court in Italy

Source: Own re-elaboration of data from the Italian Ministry of Justice

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Table A3: Detail of the valuations obtained in the Efficiency of the Staff

Source: Own re-elaboration of data from the Italian Ministry of Justice

Table A4: Detail of the valuations obtained in the Efficiency of the Staff (with only Effective personnel)

Source: Own re-elaboration of data from the Italian Ministry of Justice

Table A5: Detail of the valuations obtained in the Efficiency of the Court and Duration

Source: Own re-elaboration of data from the Italian Ministry of Justice