

Kasinger, Johannes et al.

**Working Paper**

## Non-performing loans - new risks and policies? NPL resolution after COVID-19: Main differences to previous crises

SAFE White Paper, No. 84

**Provided in Cooperation with:**

Leibniz Institute for Financial Research SAFE

*Suggested Citation:* Kasinger, Johannes et al. (2021) : Non-performing loans - new risks and policies? NPL resolution after COVID-19: Main differences to previous crises, SAFE White Paper, No. 84, Leibniz Institute for Financial Research SAFE, Frankfurt a. M.

This Version is available at:

<https://hdl.handle.net/10419/232027>

**Standard-Nutzungsbedingungen:**

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

**Terms of use:**

*Documents in EconStor may be saved and copied for your personal and scholarly purposes.*

*You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.*

*If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.*

Johannes Kasinger  
Jan Pieter Krahnen  
Steven Ongena  
Loriana Pelizzon  
Maik Schmeling  
Mark Wahrenburg

# Non-performing Loans - New risks and policies?

SAFE White Paper No. 84 | March 2021

**Leibniz Institute for Financial Research SAFE**  
Sustainable Architecture for Finance in Europe

[policy\\_center@safe-frankfurt.de](mailto:policy_center@safe-frankfurt.de) | [www.safe-frankfurt.de](http://www.safe-frankfurt.de)

# Non-performing Loans - New risks and policies?

---

NPL resolution after COVID-19: Main  
differences to previous crises



External authors:

Johannes KASINGER

Jan Pieter KRAHNEN

Steven ONGENA

Loriana PELIZZON

Maik SCHMELING

Mark WAHRENBURG





# Non-performing Loans - New risks and policies?

---

## NPL resolution after COVID-19: Main differences to previous crises

---

### **Abstract**

This paper discusses policy implications of a potential surge in NPLs due to COVID-19. The study provides an empirical assessment of potential scenarios and draws lessons from previous crises for effective NPL treatment. The paper highlights the importance of early and realistic assessment of loan losses to avoid adverse incentives for banks. Secondary loan markets would help in this process and further facilitate bank resolution as laid down in the BRRD, which should be upheld even in extreme scenarios.

This paper was prepared by the Economic Governance Support Unit (EGOV) at the request of the Committee on Economic and Monetary Affairs (ECON).

This document was requested by the European Parliament's Committee on Economic and Monetary Affairs.

## **AUTHORS**

Johannes KASINGER, Leibniz Institute for Financial Research SAFE and Goethe University  
Jan Pieter KRAHNEN, Leibniz Institute for Financial Research SAFE, Goethe University and CEPR  
Steven ONGENA, University of Zurich, Swiss Finance Institute, KU Leuven and CEPR  
Loriana PELIZZON, Leibniz Institute for Financial Research SAFE, Goethe University and Ca' Foscari University of Venice  
Maik SCHMELING, Goethe University, CEPR and Leibniz Institute for Financial Research SAFE  
Mark WAHRENBURG, Goethe University<sup>1</sup>

## **ADMINISTRATOR RESPONSIBLE**

Cristina DIAS  
Kristina GRIGAITÈ

## **EDITORIAL ASSISTANT**

Donella BOLDI

## **LINGUISTIC VERSIONS**

Original: EN

## **ABOUT THE EDITOR**

The Economic Governance Support Unit provides in-house and external expertise to support EP committees and other parliamentary bodies in shaping legislation and exercising democratic scrutiny over EU internal policies.

To contact Economic Governance Support Unit or to subscribe to its newsletter please write to:  
Economic Governance Support Unit  
European Parliament  
B-1047 Brussels  
E-mail: [egov@ep.europa.eu](mailto:egov@ep.europa.eu)

Manuscript completed in March 2021  
© European Union, 2021

This document and other supporting analyses are available on the internet at:  
<http://www.europarl.europa.eu/supporting-analyses>

## **DISCLAIMER AND COPYRIGHT**

The opinions expressed in this document are the sole responsibility of the authors and do not necessarily represent the official position of the European Parliament.  
Reproduction and translation for non-commercial purposes are authorised, provided the source is acknowledged and the European Parliament is given prior notice and sent a copy.

---

<sup>1</sup> Mark Wahrenburg is Member of the Advisory Board of Debitos. The opinions expressed in this paper are entirely his own and do not reflect a position taken by Debitos.

## CONTENTS

<b>LIST OF ABBREVIATIONS</b>	<b>6</b>
<b>LIST OF FIGURES</b>	<b>8</b>
<b>EXECUTIVE SUMMARY</b>	<b>9</b>
<b>1. INTRODUCTION</b>	<b>11</b>
<b>2. COVID-RELATED NON-PERFORMING LOANS: WHAT DO WE KNOW?</b>	<b>12</b>
2.1 Unique characteristics of the COVID-19 crisis	12
2.2 Status quo and potential scenarios	13
<b>3. NPL RECOGNITION AND RESOLUTION MEASURES: LESSONS FROM PREVIOUS CRISES</b>	<b>16</b>
3.1 NPL identification	17
3.2 NPL handling: recognition and resolution	19
<b>4. SECONDARY LOAN MARKETS AND ASSET MANAGEMENT COMPANIES – DISCUSSING THE EC ACTION PLAN</b>	<b>21</b>
4.1. Development of secondary markets for distressed assets	22
4.1.1. Enhancing transparency	22
4.1.2. Discussing the role of government subsidies	24
4.2. Bank resolution and secondary NPL markets	25
<b>5. CONCLUSION</b>	<b>27</b>
<b>REFERENCES</b>	<b>29</b>
<b>ANNEX</b>	<b>33</b>

## LIST OF ABBREVIATIONS

<b>AMC</b>	Asset Management Company
<b>APS</b>	Asset Protection Scheme
<b>AQR</b>	Asset Quality Review
<b>AT</b>	Austria
<b>bn</b>	billion
<b>BE</b>	Belgium
<b>BRRD</b>	Banking Recovery and Resolution Directive
<b>CA</b>	Comprehensive Assessment
<b>CRR II</b>	Capital Requirements Regulation II
<b>CY</b>	Cyprus
<b>DE</b>	Germany
<b>EBA</b>	European Banking Authority
<b>EC</b>	European Commission
<b>ECB</b>	European Central Bank
<b>e.g.</b>	exempli gratia
<b>ES</b>	Spain
<b>ESRB</b>	European Systemic Risk Board
<b>EUR</b>	Euro
<b>FI</b>	Finland
<b>FR</b>	France
<b>GACS</b>	Garanzia sulla Cartolarizzazione delle Sofferenze
<b>GBP</b>	Great Britain Pound



---

<b>GDP</b>	Gross Domestic Product
<b>GFC</b>	Global financial crisis
<b>GR</b>	Greece
<b>i.e.</b>	id est
<b>IFRS 9</b>	International Financial Reporting Standard 9
<b>IT</b>	Italy
<b>NL</b>	The Netherlands
<b>NPL</b>	Non-performing loan
<b>OECD</b>	Organisation for Economic Co-operation and Development
<b>PL</b>	Poland
<b>PT</b>	Portugal
<b>RO</b>	Romania
<b>SE</b>	Sweden
<b>SEC</b>	Securities and Exchange Commission
<b>SK</b>	Slovakia
<b>SME</b>	Small- and medium-sized enterprise
<b>SRB</b>	Single Resolution Board
<b>SRM</b>	Single Resolution Mechanism
<b>SSM</b>	Single Supervisory Mechanism
<b>TRACE</b>	Trade Reporting and Compliance Engine
<b>UK</b>	United Kingdom
<b>US</b>	United States of America

## LIST OF FIGURES

Figure 1: NPL projection for different scenarios	15
Figure 2: NPL resolution measures	20

### (ANNEX)

Figure A.1: Current state of NPLs and projections	36
Figure A.2: NPL projection for different scenarios	36
Figure A.3: NPLs and default of loans on moratorium	38
Figure A.4: Relationship of NPLs as share of equity and GDP per capita	38
Figure A.5: Loan composition by sector 2020Q2	38
Figure A.6: Share of sector in percent of total NPLs	39
Figure A.7: Fraction of loans on payment holidays	40

## EXECUTIVE SUMMARY

The current pandemic crisis challenges the banking system along known and unknown tracks. While the accumulation of non-performing loans (NPLs) on banks' balance sheets is typical for country-wide macroeconomic crises, there are several other characteristics of the pandemic that are not: first, the extraordinary cross-sector differences in the crisis' impact; second, the significant fiscal support addressing firms and households, and lastly, the high degree of uncertainty concerning the economic consequences of serial lockdowns. The high degree of uncertainty is also the reason why policy proposals on NPL resolution should take a scenario-based approach, i.e. be designed as conditional on the events unfolding.

In our empirical analysis, based on the most recent available 2020Q2 data, we find that aggregated bank capital seems to be large enough to absorb potential NPL losses, even in an adverse scenario. However, relevant buffers above and beyond minimum required capital, may not always be sufficiently high. Together with the high uncertainty about the future path of the pandemic and the heterogeneity in estimated capital shortfalls across countries, this implies that scenarios of excessive systemic risk, in which government interventions may be justified, rendering preparatory measures necessary.

To find an effective and efficient strategy dealing with potentially high NPL levels in the future, we examine previous crises and establish five main lessons about NPL identification, recognition and resolution that are all also likely to be of importance during the COVID-19 pandemic:

1. If NPLs are not identified and recognised efficiently, both in terms of speed and scope, NPL resolution effectiveness is undermined, which in turn will have negative effects on GDP growth because of amplified zombie lending and bank zombification.
2. Banks did not have the right incentives to implement early and effective NPL identification and recognition measures in the past decades, which lead to continued financing of zombie firms.
3. Regulators and supervisors should ensure that banks assess current loan values realistically, which can be achieved by effective Asset Quality Reviews (AQRs), stress tests, adequate accounting rules and specific inspections that impede banks masking their risk. Realistic loan value assessment will incentivize banks to recognize NPLs early and to handle them efficiently, i.e. either by internal workouts or by selling them on secondary markets.
4. Forbearance or public bank recapitalisation (and other state aid) are not well suited to solve the NPL resolution problem efficiently, as they provide adverse incentives to banks.
5. A European secondary market for NPLs has the potential to be an important component of successful NPL resolution. Policy makers are well advised to overcome existing obstacles hindering the development of these markets, such as information asymmetries between the seller and buyer and banks' lacking incentives to sell loans at market prices.

Regarding the European Commission (EC) Action Plan, we agree that a vitalization of the secondary loan market may be a promising step towards a more resilient banking system. A liquid and transparent secondary loan market would allow banks to achieve higher prices when forced to sell NPLs, thereby lowering their loss of capital even in critical times. By the same argument, bank resolution processes, as laid down in the BRRD, are facilitated. Information production in the secondary market, would further help to benchmark NPL recognition in their balance sheets.

A useful way forward to stimulate markets builds on a high level of transparency for loans with marketable collateral assets, in particular by creating accessible data repositories. We stress the role of loan-level data as opposed to portfolio-level data, supporting pricing transparency and benchmarking for the market at large. Other support measures relate to carrying out stress tests or AQRs to enhance early recognition on bank balance sheets.

In an extreme scenario of systemic risk (i.e. financial externalities), a market-driven, BRRD-tailored restructuring processes is probably not feasible and direct government intervention to stabilise the banking system, for instance through an Asset Protection Schemes (APS) or an Asset Management Company (AMC), can be justified. However, even in this case, we commend not to channel rescue money to banks, but rather to firms and borrowers, thereby upholding the working of the BRRD. Therefore, any plan to deal with NPLs should consider bank restructuring and resolution as the alternative, probably the preferred alternative, to recapitalisation or any other rescue measure.

# 1. INTRODUCTION

Crises that cause widespread economic damage include wars, oil crises, financial crises and pandemics – all of which could be observed over the past 70 years. While each crisis had its own set of causes, triggers, dynamics and policy responses, a number of common themes arise. All crises have financial consequences that may become visible at different levels – the state, the corporates, the households – and eventually the financial sector itself. Focusing on post-World War II financial crises around the world, Claessens et al. (2014) summarise a vast literature that finds financial crises to originate either from some sort of asset price bubble built on financial leverage, e.g. house price inflation coupled with credit booms, or from some sort of financial sector interconnection large enough to cause systemic risk. Financial crises may originate directly in the financial sector, as in the 2008/2009 financial crisis, but not necessarily: financial crises may also follow from a real sector disruption, like an oil price shock or a pandemic that jeopardizes the network of debt contracts that interconnects individuals and firms over time.<sup>2</sup>

As a consequence, some loans become non-performing in the aftermath of a crisis, and banks have to deal with an increased level of NPLs in a way that preserves their own viability, and the stability of the financial system at large. If NPLs are mounting in the balance sheet of many or all banks simultaneously, supervisors, governments and central banks all may feel the necessity to intervene in order to safeguard financial stability.

Despite a challenging environment in the current COVID-19 crisis, banks have continued to provide funding to the real economy and losses in banking books have been quite limited. According to the ESRB (2021), *“the fiscal response has stabilised both lending and the financial system”*. However, *“risks still lie ahead”* as 35% of bank new loans has been subject to fiscal support measures to corporates (ESRB 2021). This suggests that once moratoria and other support measures will be unwound, the real economy and banks may be heavily affected and NPL levels will eventually rise.

Against this background, we analyse the new risks of and the effectiveness of potential policy responses, concerning the build-up of NPLs on banks' balance sheets. After defining the unique characteristics of the current crisis, we empirically assess the status quo of NPL levels in Europe and sketch potential scenarios of their development in the future. In Section 3 of this study, we will draw lessons from previous crisis to answer the question: What are the lessons from previous crises, and to what extent are they applicable nowadays?

Along the characteristics of the current crisis and lessons learned from the past, identified in the first two sections, we take a closer look at the European Commission's *“Action plan to tackle non-performing loans in the aftermath of the COVID-19 pandemic”* in Section 4. Thereby, we focus on the potential role of and conditions for a well-functioning secondary NPL market as well as on the necessity of government subsidies, for instance in form of government guarantee, AMCs, in the process of resolving high NPL levels and the potential inter-relations between bank resolution and secondary NPL markets.

Moreno et al. (2020) provide one of many examples that demonstrates the importance of getting the crisis response right, because past crises have a carry-over effect on present crises, in particular if the economic losses have not yet been fully regained. They find that the leftovers of the 2008-2009 financial crisis, may have exacerbated the COVID-19 pandemic severity with respect to infection and death

---

<sup>2</sup> As in the run-up to the latest financial crisis, the main ingredients that have played a role in the explosive growth of credit in the past were prices of real estate and the boom in mortgage lending, the lack of information about prospective borrowers, the financial innovations by financial institutions, in particular loan securitisation, and the high leverage (and corresponding low capital ratios) of financial institutions. It is important to note that less than a half of such credit booms result in a financial crisis, but when they do, the ensuing economic recessions are deeper and longer.

rates. At the same time, it has complicated designing and implementing economic support policies. Hence, the handling of the pandemic will likely set the stage for future crises, not only in terms of the reliability and effectiveness of policy-making but also in terms of the resultant resiliency of the economies and financial systems to future economic, financial, and/or public health shocks that will come inevitably.

## 2. COVID-RELATED NON-PERFORMING LOANS: WHAT DO WE KNOW?

In this section, we compare the characteristics of the current crisis to past financial crises, highlighting the unique features of today's crisis. We further provide an empirical assessment of the current state of NPL levels in Europe and try to sketch potential scenarios how these levels may develop in the future in order to build a basis to discuss suitable policy responses in the subsequent sections.

### 2.1 Unique characteristics of the COVID-19 crisis

Real sector disruptions hit the banking sector indirectly, notably by weakening or damaging firms' business models, and by reducing household wealth. Both effects will ultimately weaken a bank's loan book. As a result, a disproportionate share of the loan book will become non-performing, lowering the bank's economic capital. The current pandemic is no exception to this regime. However, we see three characteristics that are unique to the current crisis. First, **extraordinary differences in the crisis impact across industry sectors**. Second, an **unprecedented level of government intervention and fiscal support** at the industry level. Third, a **high level of expectation ambiguity** as to the longer-term real sector consequences, due to serial lockdowns.<sup>3</sup>

In line with the first characteristic just mentioned, bankruptcies have fallen in OECD countries in the past months due to fiscal actions (Djankov and Zhang 2021), and so did NPLs on bank balance sheets. It is widely feared that these trends will be reversed once governments unwind support measures<sup>4</sup>. This implies that banks and policy makers should plan ahead, preparing for a quick loss provisioning and designing effective remedial actions in case of bank capital shortfalls.

The first identifying characteristic, the disparate effects on different industries is caused by a policy of lockdowns that are rather destructive in some industries, such as tourism, restaurants and culture, while propelling the business model in other industries. Examples of industries that benefit from the crisis include e-commerce, communication, information technology in general and pharmaceuticals. However, the crisis is not only increasing a risk of financing non-viable firms (zombie-financing), it also triggers more opportunities for innovation and growth financing than in previous crises. This may happen

---

<sup>3</sup> Of course, in the long run, if the pandemic lasts longer, starts altering business and/or household behaviour with respect to location and lifestyle, real estate prices in city centres could further irretrievably decline, creating a similar real estate "overhang" as in a financial crisis impeding a swift recovery. The same is true for the absence of a credit boom. If a financial crisis is induced by a credit boom, dealing with consequences is difficult as lenders may not know, or even worse would be willing to confront it, which in turn leads to "kicking-the-can-down-the-road" zombie lending. Initially, the pandemic did not have this issue per se, a favourable situation also further modulated by government lending guarantees and assistance programs that kept the economies in suspension. Of course, over time as these programs run out and business have "burned through their cash", zombie lending may start occurring as financiers take increasingly more desperate bets on "the past to return in the future".

<sup>4</sup> This brings up the question about strategies to unwind support measures without triggering a new banking crisis (see Haselmann and Tröger 2021) – an aspect that is also quite unique in the current crisis.

in one and the same firm simultaneously due to business model restructuring, or across industrial sectors.<sup>5</sup>

The uncertainty about who will default and who will not is greatly exacerbated by the large amounts of fiscal support that are currently transferred to firms and households. Since these transfers may change size and direction every month the precision with which default projections can be made is probably much lower than it were under non-COVID conditions.

One of the most noteworthy characteristics of the current crisis situation is the high degree of uncertainty about the economic recovery, its speed and its shape. V-shape, U-shape, L-shape and K-shape are all paths that seemed possible a year ago. Now, after the crisis has unfolded, a V seems best to describe the path in China and the US, a U may fit for Germany, and an L is expected for Italy (Moreno et al. 2020). A closer look may indicate a K-shape in some of these countries, meaning that in several industries/regions economic growth is in decay while on the rise in others.

The high degree of uncertainty does not only make government response difficult to target, it also explains, to some part, the growth of NPLs on bank balance sheets. Banks take a wait-and-see attitude, and are not writing down their loans as fast as they otherwise would – for a good reason: there is a non-negligible probability that even weak firms can avoid insolvency and re-surface subsequently.

## 2.2 Status quo and potential scenarios

In this section we establish some stylised facts about NPLs in Europe and provide a benchmark scenario analysis based on recent academic research and assessments by regulators and policy institutions. To do so, we rely on data from the ECB Statistical Data Warehouse for a set of European countries (based on data availability) as well as data on loans under moratorium from the EBA. All data on total loans and NPLs reflect the most recent available data which end in 2020Q2. We combine these data to assess the current level of NPLs for different European countries, potential scenarios for the future level of NPLs, the relative share of NPLs across economic sectors, and the cross-country variation in NPLs. Moreover, we examine the size of NPLs in relation to the capital of the banking system in a given country to determine cross-country heterogeneity in the vulnerability of banks. It should already be noted here that our analysis is only indicative, as there is considerable uncertainty associated with our projections. Data availability is very limited, and the future development of bank balance sheets is subject to several interdependencies, which, in a very severe scenario, make it difficult to project not only future NPL levels, reflected by the large ranges employed in our scenarios, but also recapitalisation conditions of banks and potential contagion effects.<sup>6</sup>

Starting from loans that are under moratorium as of 2020Q2, we apply scenarios assuming that a range of 0-50% of these loans becoming non-performing (“Approach A”)<sup>7</sup>. For example, in an intermediate case, in which about 25% of all loans under moratorium become non-performing, aggregate NPLs would increase by about EUR 216bn. A severe scenario, in which 50% of all loans under moratorium

<sup>5</sup> Preliminary evidence from Chapter 11 bankruptcy in the US: restaurants, healthcare, retail oil and gas. Gourinchas et al. (2020) for Europe and Carletti et al. (2020) for Italy: largely SME in accommodation and food services, arts, entertainment and recreation.

<sup>6</sup> Note that we further do not project recovery rates of NPLs on bank balance sheets as this would require further strong assumptions that vary across countries.

<sup>7</sup> The range of up to 50% in “Approach A” is motivated by Gourinchas et al. (2020), who analyse the impact of COVID on bankruptcy rates by SMEs. We extend their range of potential NPLs up to 50% for several reasons. First, Gourinchas et al. (2020) applies to total loans to SMEs and not just loans under moratorium as mentioned above. Hence, the overall percentage of NPLs is likely higher. Second, the authors assume one relatively short lockdown period in their projection, which does not correspond to current developments. Overall, we thus opt for a large range from 0-50%, reflecting the considerable uncertainty (see more details in Appendix).

turn out to become non-performing would then take this increase in NPLs to EUR 433bn. These numbers can be compared to the total sum of bank equity capital (and provisions) in 2020Q2 in our sample of countries<sup>8</sup> which equals EUR 2,021bn. Hence, on average, equity capital exceeds by far the amount of NPLs and the aggregate banking sector seems comparably well capitalized in the current situation, even in a severe scenario.<sup>9</sup> It is important to note though that these numbers remain quiet about the capital buffers of banks on top of minimum capital requirements. If NPL levels exceed these buffers, banks are forced to recapitalise, which may not be feasible for all banks at the same time, and may effectively lead to an undercapitalised banking system, which in turn implies a reduced lending capacity by banks.

In contrast to these aggregate numbers, a key insight from our results is that there is **substantial heterogeneity across countries, both in terms of the size of NPLs as well as in the relation of NPLs to bank capital**. For instance, the most recent data show about the same level of NPLs for France (EUR 126bn) and Italy (EUR 119bn) (see Figure A.1 in the appendix). However, loans currently under moratorium differ considerably in size, EUR 254 bn in France but only EUR 156 bn in Italy. Similar differences can be observed for other countries in the Eurozone or if we look at the fraction of loans on payment holiday, that are particularly worrying for Portugal (see Figure A.7 in the appendix<sup>10</sup>).

Moreover, putting the size of NPLs as well as potential NPLs based on the above scenarios in relation to the equity capital (and provisions) of the banking system in different countries further exacerbates these cross-country differences. Figure 1 illustrates our projected NPL ranges as a percentage of domestic banks' equity capital and provisions (as reported to the ECB in 2020Q2). The size and range of the bars in Figure 1 thus indicate the range of potential NPLs as a percent of bank capital. For example, we find that **NPLs in some countries (e.g., Greece, Cyprus and Slovakia) exceed the amount of equity capital and provisions even in the most optimistic scenario** in which there are no additional NPLs at all, whereas NPLs in other countries (such as France, the Netherlands and Austria) only make up for about 30-45% of equity capital in a severe scenario, in which 50% of all loans currently under moratorium would end up as non-performing (see Figure 1 here and Figure A.3 in the appendix). Importantly, **NPLs make up for a larger share of bank equity capital in countries with lower GDP per capita** (see Figure A.4 in the appendix), i.e., the poorer countries are the most vulnerable to additional NPLs due to insufficient equity cushions in their banking system<sup>11</sup>.

<sup>8</sup> Our sample includes following countries: Austria, Belgium, Bulgaria, Cyprus, Finland, France, Germany, Greece, Hungary, Italy, Netherlands, Poland, Portugal, Romania, Slovakia, Spain, Sweden, (see more details in the Appendix)

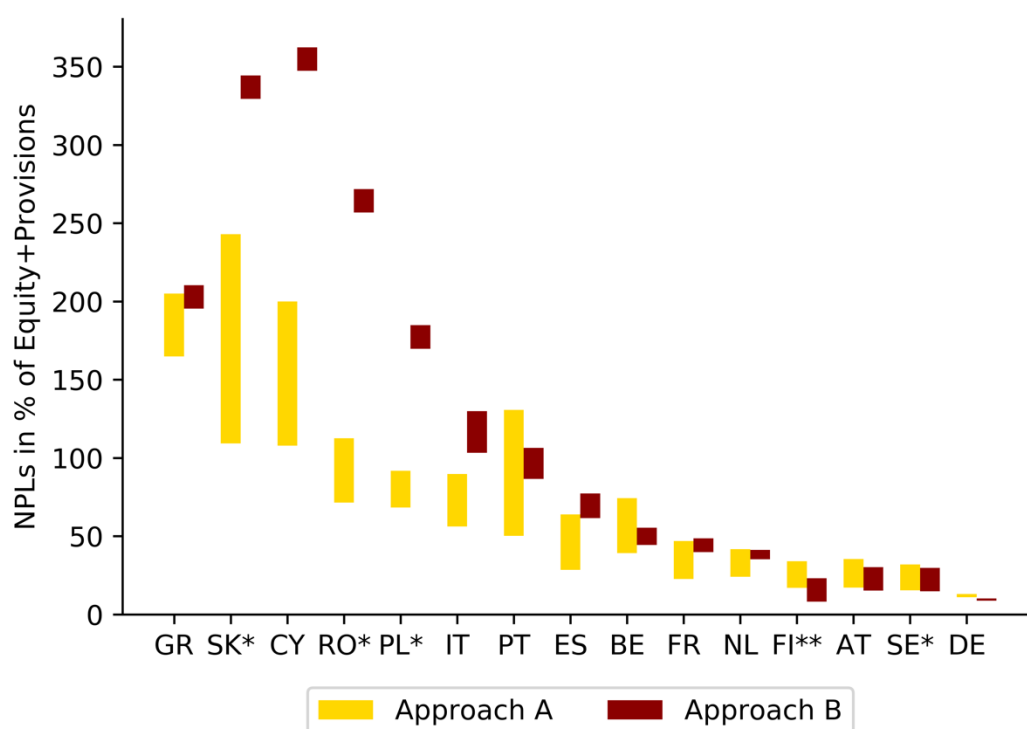
<sup>9</sup> Qualitatively similar results emerge if we look at the total volume of outstanding loans and employ estimates of NPL ratios from previous crisis episodes and/or projections for the current crisis episodes. The right bar (Approach B) for each country in Figure 1 thus reports a lower and upper bound of additional NPLs, respectively. The implied increases in NPLs roughly match the range from Approach A on average across countries, with some countries, such as Italy or Poland, being clear exceptions, having much higher NPLs under this approach. However, even these more severe scenarios do not materially affect our general conclusion that the banking sector, on aggregate, seems sufficiently capitalized.

<sup>10</sup> We thank Virginia Gianinazzi for providing us with this graph.

<sup>11</sup> This finding is in line with Ari et al. (2020) who find that the surge in NPL levels is usually higher in countries with lower GDP per capita, with a less profitable domestic banking sector and more fragile corporate balance sheets.



Figure 1: NPL projection for different scenarios



Source: ECB, EBA, EulerHermes, own calculations. \* Projections under Approach B for these countries have been approximated by data for similar economies. \*\* Data on provisions for Finland is not available for 2020Q2, only equity is used as an estimate.

Another dimension of heterogeneity is the sectoral allocation of loans and NPLs in different countries.<sup>12</sup> Figures A.5 and A.6 in the appendix show the sectoral composition of total outstanding loans across countries as well as the relative shares of different sectors in total NPLs for each country. **While the relative shares of NPLs in different sectors within countries have not changed much since the onset of the pandemic, there exists strong heterogeneity across countries. For example, households account for a relatively low share (about 20-30%) of NPLs in Italy, Germany, Portugal and the Netherlands but for more than 50% of all NPLs in Poland, Spain, Sweden, and Cyprus.** The opposite pattern can be naturally observed for the share of NPLs of the non-financial corporate sector. These results seem important as they speak to the sectors that are relatively more affected if, e.g., NPLs were to be dealt with by executing the collateral backing these loans.

In sum, while equity capital in the banking system may, on aggregate, be sufficient to deal with future NPLs, our finding of strong cross-country heterogeneity suggests two key problems, even in the absence of outright bank failures. First, **especially the less capitalised national banking systems** (see Figure A.2 and A.3 in the appendix) **are vulnerable to credit crunch situations**, potentially creating systemic risk, if a significant share of loans ends up as non-performing. Second, there is a **considerable risk of zombie lending by banks to deal with the large share of NPLs and insufficient equity capital**. Any measure taken to address future NPLs should take these considerations into account.

<sup>12</sup> Unfortunately, there are no data on NPLs by industry. We thus rely on sectoral breakdowns to be able to address the relative size of NPLs for, e.g., households versus corporations.

Finally, we stress that these projections and results should be taken with a grain of salt since there are severe data limitations that do not allow for a precise assessment of the path of future NPLs. For example, data availability ends in 2020Q2 so that the effects of the second round of lockdowns across Europe cannot be yet assessed. Moreover, a precise breakdown of NPLs and loans in different industries that would allow for a more detailed modelling of individual industries is unavailable. The latter would be important, though, since there are some industries (e.g., travel, services) that are affected much more strongly than others (e.g., information technology and e-commerce).

Concluding the first part, we find that the **European banking sector seems, on aggregate, comparably well capitalised**. Consequently, measures taken to address a potential NPL problem should start from within the banking system. Unique characteristics of the current crisis, such as the slow increase of NPL levels, the unprecedented support measures for the corporate sector as well as an absence of a credit boom or real estate bubble preceding the pandemic, provide further arguments for this assessment. Generally, it is **too early to rule out very severe scenarios and estimated capital shortfalls are unevenly distributed among countries**. Therefore, policy makers are still well advised to plan ahead and prepare for the worst in order to prevent a systemic banking crisis early on and with minimal public resources.

### 3. NPL RECOGNITION AND RESOLUTION MEASURES: LESSONS FROM PREVIOUS CRISES

As discussed above, the future development of NPL levels is characterised by a high degree of uncertainty and an uneven distribution across European countries. As a consequence, an adverse scenario, in which emergency measures become inevitable, cannot be ruled out. To identify an effective and efficient strategy dealing with high NPL levels in the future, this section derives lessons for NPL identification, NPL recognition and NPL resolution measures from the past and discuss their applicability to the COVID-crisis. We refer to the 'lifecycle' of NPLs within a bank by the initial phase of early warning systems and NPLs identification, then to the NPL recognition of expected loss as a value depreciation on the balance sheet through forbearance, impairment and write-offs and, finally, to NPL resolution measures that ranges from internal to external work-outs.

Before we analyse the economic consequences of adopting different mixtures of NPL identification, recognition and resolution measures in the past, it is important to stress that the design of sustainable policy measures aiming to cope with the consequences of COVID-19 for bank balance sheets should respect the following objectives:

1. **Avoid financial instability and a banking crisis.**
2. **Minimize zombie lending:** NPLs resolution policies should not only reduce inefficient liquidation but should, at the same time, foster a reallocation of resources from non-viable businesses to more efficient uses, i.e., the moral hazard incentive to finance zombie firms must be prevented.
3. **Preserve the ability of the banking system** to fulfill its important role in society: finance growth opportunities.
4. **Minimize zombie banking:** In addition to objectives 1 and 2, implemented measures should be consistent with consolidating and reforming Europe's banking system to address the over-banking issue in Europe (Langfield and Pagano 2016).

In line with the four objectives, we analyse the lessons learned from previous crises regarding:

- NPL identification (3.1) and

- NPL handling – recognition and resolution (3.2).

As we will discuss in next subsections, NPL identification methods and NPL resolution measures are strictly linked. If NPL identification is inadequate, in terms of speed and scope, NPL resolution measures tend to become ineffective and there would be the proliferation of zombie firms and zombie banking.

### 3.1 NPL identification

Laeven and Valencia (2018), among others, document that more than half of the banking crises in the past 47 years in high-income countries lasted five years or longer, which implies that they were not handled timely, generating a median output loss of 7% per year (in terms of a one year-GDP). Moreover, Caballero et al. (2008) and Laeven and Valencia (2018) show that zombie firms (i.e. non-viable firms) and the zombification of the banking sector would not only generate negative effects on output growth but also on employment and competitive fairness, which could be potentially accompanied by deflationary effects, according to Acharya et al. (2020). These findings lead to our first lesson:

**Lesson 1: If NPLs are not identified and recognised efficiently, both in terms of speed and scope, NPL resolution effectiveness is undermined, which in turn will have negative effects on GDP growth because of amplified zombie lending and bank zombification.**

The question on how to deal with NPLs efficiently has been around for a while and several studies have investigated the issue in detail.<sup>13</sup> One key takeaway of these studies (e.g. Ari et al. 2020) is that a timely NPLs identification is imperative. The main problem behind the lack of early NPL recognition in the past was that banks did generally not have the right incentives to do so – an assessment that likely carries over to the current crisis.

Laeven and Valencia (2018) show that the negative effects on GDP growth is driven by banks that continue lending to non-viable firms (“zombie firms”) in the hope for recovering previously granted loans. Such behavior is particularly strong in a low interest rate environment. Moreover, Bonfim et al. (2020) stress that banks may avoid recognizing NPLs early to delay sending negative messages to shareholders. These findings lead to our second lesson:

**Lesson 2: Banks did not have the right incentives to implement early and effective NPL identification and recognition measures in the past, which lead to continued financing of zombie firms.**

Furthermore, Ari et al. (2020) further point out that the resolution of high NPL levels is easier if a proper asset quality review (AQR) has been undertaken that allows for an early NPL identification.

The effort by policy makers to identify NPLs early focused mainly on four policy areas<sup>14</sup>:

- a) Guidance and methodological support<sup>15</sup>;
- b) Bank regulation (CRR II) and accounting standards (IFRS 9);
- c) Event-driven AQR and stress tests;
- d) Banks inspection by supervisors.

<sup>13</sup> Laeven and Valencia (2013, 2018), Balgova et al. (2016), Beck (2017), Brei et al. (2020), and in the ECB Financial Stability Reviews Grodzicki et al. (2015) and Fell et al. (2016 and 2017), among others.

<sup>14</sup> For an analysis of the stock of the progress made so far on tackling NPLs in Europe see EBA (2019).

<sup>15</sup> See for example EBA (2018) Guidelines on management of non-performing and forborne exposures.

In the last decade, there have been different efforts by EBA and ECB<sup>16</sup> and others in guiding banks on NPLs identification and recognition, including guidance on how to implement early warning systems or policies for timely impairments and write-offs.

Similarly, changes in bank regulation (CRR II) and accounting standards (IFRS 9) are supposed to force banks to identify and recognize their NPLs early. According to Baudino and Yun (2017), both CRR II and IFRS 9 incentivise banks to recognize their NPLs timely and to build sufficient capital buffers during good times to absorb losses. A consequence of following these regulations is that the respective loans are written off from the bank balance-sheet, constituting a bank-focused instrument to resolve NPLs. Of course, capital buffers at the bank level need to be large enough to accommodate these depreciations of the loan book. However, if this condition is given, this regime imposes the right incentives on private players, laying the foundation for a desirable structural shift at the bank level.<sup>17</sup>

AQRs and stress tests are important tools for early NPL identification (Ari et al 2020). However, AQRs and stress tests are no panaceas and NPL identification via AQRs (and/or stress tests) is difficult. According to Abbassi et al. (2020), banks dress up for their regulators and mask their risk on their balance sheets as response to the announcement of the ECB's AQR in 2013. Abbassi et al. (2020) document that banks tend to temporarily shift their portfolio structure, for the period of the AQR assessment, towards less risky investments, only to reverse that shift once the ECB review was completed, i.e. regulated entities try to circumvent regulations and this has significant real effects in terms of risk taking. Similarly, Lazzari et al. (2017) highlight that the 2014 Comprehensive Assessment (CA) did not help to sort good from troubled banks.

Bonfim et al. (2020) investigate whether and how the enforcement of regulation remedies the problem of banks' zombie-lending. They find that an inspected bank becomes 20% less likely to refinance zombie firms, immediately spurring their default. These findings suggest that banks reduce zombie lending if they are forced to recognise losses because the incentives to hold these loans disappear.

An indirect effect of the second lesson is that it also impairs the incentive to sell NPL loans, which prevents a working secondary market for NPLs. According to Bonfim et al. (2020) this problem can be addressed if current loan values are assessed realistically. This can be achieved by forcing banks to write down NPLs as response to AQR, stress tests, adequate accounting rules and specific inspections that move banks to uncover their risk.<sup>18</sup> We share this view that ultimately leads to our third lesson:

**Lesson 3: Regulators and supervisors should ensure that banks assess current loan values realistically, which can be achieved by effective AQR, stress tests, adequate accounting rules and specific inspections that impede banks masking their risk. Realistic loan value assessment will incentivize banks to recognize NPLs early and to handle them efficiently, i.e. either by internal workouts or by selling them on secondary markets.**

Having said this, we add the caveat that in times like today's, the very high level of uncertainty, both at the individual firm and at the macroeconomic level, render cash flow projections notoriously volatile.

<sup>16</sup> See ECB (2017), ECB (2018), EBA (2016), EBA (2020a) and EBA (2020b), among others.

<sup>17</sup> However, as stressed in Boot et al. (2021a), these requirements would be not feasible and might be an issue if NPL generated by the COVID-19 pandemic would be too high that banks do not have enough capital buffer and might generate a banking crisis or might induce banks to reduce their lending, with potential perverse effects on the ability of the banking system to fulfill its important role in society (see objective 3).

<sup>18</sup> The effectiveness of these measures largely depends on the role that a supranational supervision would play in relationship with local supervisors, and ultimately, the way they will affect the behaviour of the financial institutions under their jurisdiction as highlighted by Carletti et al. (2021).

The fine line between solvent and insolvent firms becomes more blurred than usual. This means that the effort should be even stronger.

### 3.2 NPL handling: recognition and resolution

After identifying the actual level of NPLs on banks' balance-sheet, banks and policy makers need to decide on adequate NPL recognition and resolution strategies. In this section, we review studies that investigated the effectiveness of different NPL resolution measures adopted after past crises<sup>19</sup>. We provide an overview of different NPL resolution measures and assess these measures regarding their ability to pursue the four objectives outlined above: maintain financial stability, avoid zombie firms, provide credit for growth opportunities, and prevent bankzombification.

In the past, the two most common measures were **forbearance, i.e. the relaxation of provisioning requirements<sup>20</sup> and public bank recapitalisation<sup>21</sup>**. The aim of these measures is typically to stop an otherwise hard-to-avoid crisis spiral to unfold, triggered by significant loan losses not foreseen by investors, and ultimately leading to loan calls by banks and a possible run of depositors on those institutions. However, in the long-run these measures **do not help to increase lending and tend to slow down GDP growth<sup>22</sup>**.

Forbearance gives banks some leeway to maneuver and buys time – time in which the economy might jump back to a sufficiently high level of activity, resurrecting the solvency of borrowers and lenders. However, there are two major caveats. First, the quick recovery may be illusory and investors' confidence may be challenged because of a lack of transparency. In this case the initial borrower solvency issue may worsen as necessary actions are delayed. And second, there may be moral hazard on the side of banks or firms to exaggerate the positive outlook. Investigating the long-run consequences of forbearance in the eurozone, Acharya et al. (2021) find that *“forbearance caused undercapitalized banks to shift their assets from loans to risky sovereign debt and engage in zombie lending, resulting in weaker credit supply, elevated risk in the banking sector, and, eventually, greater reliance on liquidity support from the European Central Bank”*.

**Recapitalisation by governments** refers to precautionary and mandatory recapitalisations. While actively preventing a banking crisis, they **do not address zombie lending and banks zombification, and may even perpetuate both**. Accordingly, Duchin and Sosyura (2014) show that during the Global Financial Crisis, in the US, *“bailed-out banks initiate riskier loans and shift assets toward riskier securities after receiving government support. However, this shift in risk occurs mostly within the same asset class and, therefore, remains undetected by regulatory capital ratios, which indicate improved capitalization at bailed-out banks”*. This might explain why Adamczyk and Windisch (2015) find for Europe that *“supported and restructured banks are showing significant improvement in operational and risk indicators, and in funding and solvency positions”* since the beginning of the European financial crisis. This leads us to our fourth lesson:

**Lesson 4: Forbearance or public bank recapitalisation (and other state aid) are not well suited to solve the NPL resolution problem efficiently, as they provide adverse incentives to banks.**

<sup>19</sup> See Segall et al. (2020) for an overview of regulatory and supervisory NPL responses.

<sup>20</sup> Modified provisioning requirements (provisioning stringency) are proxied by the sum of the minimum required provisioning percentages as loans become substandard, doubtful and lost. If range is provided, the minimum percentage is used. Higher values indicate greater stringency (survey data of 127 central banks from 1999, 2003, 2007 and 2011, with extrapolated values in between).

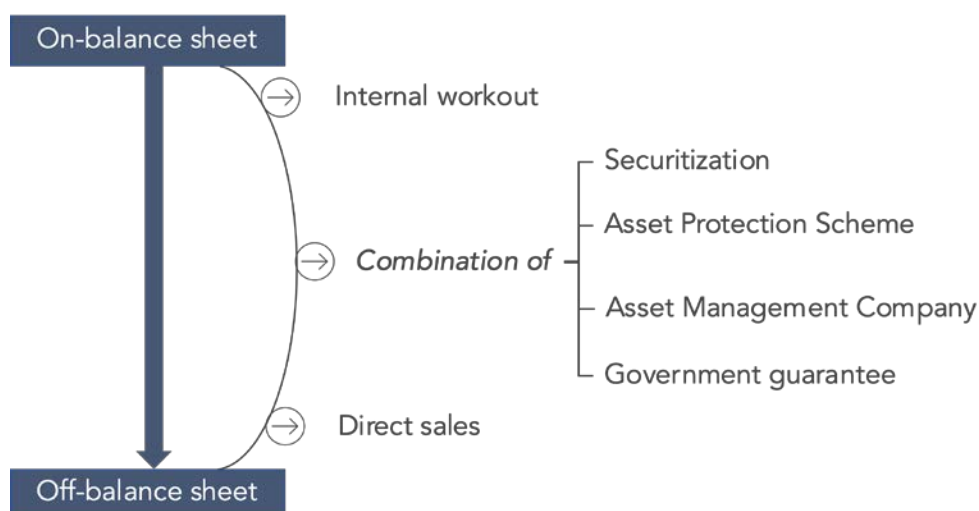
<sup>21</sup> See Balgova et al. (2017), among others.

<sup>22</sup> For a detailed description see Option 1 in Boot et al. (2021a and 2021b).

In fact, **forbearance and bank recapitalisation may exaggerate zombie lending and prevent more desirable measures** discussed below, such as internal workouts or the transition to more market-based solutions including direct sales and the development of a secondary market of NPLs (see Acharya et al. 2021, Duchin and Sosyura 2014).

Other measures for NPLs resolution range from internal workouts by banks to the direct sale of NPLs to an outside investor, as depicted in Figure 2. The middle group illustrates four different measures that have been typically used in the past in different combinations: Securitisation, APS, AMC and implicit or explicit Government Guarantee. The reported list is not exhaustive, but should give an idea of the spectrum and the trade-offs the regulators face in pursuing the four objectives outlined above.

Figure 2: NPL resolution measures



Source: Authors' compilation

The evidence provided by Baudino and Yun (2017) and Cerutti et al. (2017) suggests that internal workouts (including various restructuring options) are effective if initiated by banks and if it is not just a simple form of forbearance that generates zombie firms (and zombie loans). However, if NPLs generated by the COVID-19 pandemic exceed banks' liquidity and capital buffers, this option may become unfeasible. Furthermore, effective internal workouts require efficient judiciaries and well-designed insolvency resolution frameworks. This last aspect has also been stressed in the latest EC Action plan (European Commission 2020), which is perfectly in line with the lesson we learn from previous crises.

Figure 2 includes combinations of securitisation, APS, AMC and Government guarantee. Securitisation of NPLs has the purpose to provide a mechanism to transfer part of the risk related to the NPL portfolios to private investors. In Europe, securitisation markets have still difficulties to develop, in contrast to the US markets that reached the pre-2008 crisis level in 2014 already (see Pinto and Alves 2016). Usually, securitisation of NPLs are adopted jointly within an APS. This measure assists banks in securitising and moving non-performing loans off their balance sheets. Under the scheme, an individually managed, private securitisation vehicle will buy non-performing loans from the bank and sell notes to investors.



The state generally provides a public guarantee for the senior, less risky notes of the securitisation vehicle. Example of APS are the intervention of UK Treasury for the RBS bank.<sup>23</sup> Recently, both Greece (with “Hercules”) and Italy (with GACS) have started the adoption of a similar scheme.

Combined with an APS, government-sponsored AMCs have often played a role in resolving acute, systemic banking crises largely caused by credit booms. They have been widely adopted in combination with recapitalisation through bailouts with impaired asset segregation (Brei et al. 2020). They differ from entities in the asset management industry that manage capital market investments on behalf of their customers.

Direct sales or external workouts, as opposed to internal workouts, constitute another instrument to resolve NPLs. If there is a liquid secondary markets, the **direct sales and external workouts measure have the potential to be the most rapid option** for banks. However, secondary markets for NPLs have not been very active in Europe (see Fell et al. 2016 and Baudino and Yun 2017 among others). This is due to several impediments that range from (i) information asymmetries between the seller and the buyer of troubled credits and (ii) the fact that the suppliers, i.e. banks generally do not have the incentive to sell their loans at market prices for the same reason they avoid to write off NPLs. Furthermore, efficient judiciaries and well-designed insolvency resolution frameworks are important for this option, affecting the bid-ask spread of the secondary market. These findings lead to our fifth lesson:

**Lesson 5: A European secondary market for NPLs has the potential to be an important component of successful NPL resolution. Policy makers are well advised to overcome existing obstacles hindering the development of these markets, such as information asymmetries between the seller and buyer and banks’ lacking incentives to sell loans at market prices.**

From the experience of the TARP II measures adopted in the US, that are a combination of the measures described above, Bebchuk (2009 and 2012) provide three suggestions on how government funds could be used to restart the market for troubled assets. First, introduce a competitive mechanism that ensures that the government’s transfer to involved private parties is kept at a minimum. Second, design the plan such that the incentives of private parties such as government-sponsored AMCs, are aligned with those of taxpayers. Finally, precluding banks that hold significant amounts of troubled assets from participating in the scheme. It seems that these three suggestions fit well with the Hercules and GACS schemes adopted in Greece and Italy, respectively.

The NPLs resolution measures we described above are also explicitly and implicitly suggested in the EC Action plan. In Section 4 we discuss under which conditions these measures should be used for the resolution of NPLs that arise because of the COVID-19 crisis.

## 4. SECONDARY LOAN MARKETS AND AMCS – DISCUSSING THE EC ACTION PLAN

The EC action plan provides a variety of reforms in order to make the secondary NPL market more efficient and to remove existing impediments for banks to sell their NPLs to third parties and thus to focus their limited resources on new lending. By creating an attractive option to reduce NPLs on the bank’s balance sheet, the action plan can benefit the economy by contributing to enhanced growth and reducing financial fragmentation. As argued in the previous sections, a reduced stock of NPLs on bank’s

<sup>23</sup> According to the National Audit Office this scheme has, via savings and other efficiency gains, high worth: £890 million in 2009. It is, however, not clear if savings and efficiency gains include also opportunity costs such as unemployment compensation payments and tax revenue losses.

balance sheets decreases the economic costs of zombie lending and stimulates lending growth, particularly for small and medium-sized enterprises.

The action plan has four broad areas. First, the action plan intends to make the NPL market more liquid and more efficient by improving the transparency of the market. Second, the action plan discusses how national or possible supranational AMCs can become strong investors in NPLs and thus further support the NPL market. By making use of public guarantee schemes, AMCs can mobilize substantial financial resources and take over even large NPL portfolios from banks. Third, the action plan highlights the importance of reforming insolvency laws and other laws relating to collateral enforcement and NPL transactions. Fourth, the action plan proposes using public funds to support AMCs and to recapitalise banks. While legal reforms are important accompanying measures to create a well-functioning NPL market, we will not discuss these within this paper and focus on the economic issues.

## 4.1. Development of secondary markets for distressed assets

Today's markets for distressed assets suffer from low transparency, information asymmetries, illiquidity and high bid-ask-spreads. Investors find it difficult to value distressed assets because they have a high degree of heterogeneity and because information on transaction prices of comparable assets is not publicly available. This makes NPL sales unattractive for banks as loans tend to achieve sell prices significantly below their fair or true values. **A policy proposal suggesting a positive role for loan sales must thus reduce the bid-ask spread**, i.e. the value a bank loses when selling a loan to outsiders.

Large bid-ask-spreads on an illiquid loan market may imply a welfare loss because specialised and experienced investors are better able to manage, restructure, and work-out non-performing assets and because banks may provide more growth financing after being relieved from NPLs. While this line of argumentation is valid for some NPL market segments, there are limitations that make the transfer of NPLs to third parties very costly for a reason: in many cases, banks possess superior "soft" information from their long-standing relationship with the customer. This information may be needed for efficient workout decisions and cannot be easily transferred to third parties.<sup>24</sup>

It follows that NPL sales and the build-up **of secondary markets are a valid policy option** mainly in those market segments **where this "soft information" plays a minor role and where specialised investors have the ability to become effective workout institutions** by building up the necessary scale, scope, and expertise. This, in turn, emphasizes the important role collateral assets play when the loan becomes non-performing. As a general rule, secondary loan markets will develop better when collateral assets are tangible, tradeable and asset quality is transparent, i.e. can easily be verified.

### 4.1.1. Enhancing transparency

Many factors affect the bid-ask-spreads in the NPL market and policy makers have a variety of policy options to make the NPL market more efficient and attractive. Two elements are commonly thought to be of utmost importance: transparency and competition. **Increased transparency improves the information basis of both sellers and buyers, decreases the bid-ask-spread** and enables trading partners to make better informed trade decisions. **A competitive trading landscape** allows the free entry of intermediaries such as trading platforms or market makers and **helps to promote market efficiency by stipulating the use of innovative technology and trading models**.<sup>25</sup>

<sup>24</sup> In an empirical study of SME workouts, Krahnen and Elsass (2003) find that banks with a direct and steady relationship ("Hausbank") tend to invest more often than other banks in workouts if borrowers face financial distress.

<sup>25</sup> Some authors have argued in favor of a centralized trading platform or an organized central exchange market for NPLs. This idea has not been taken up in the EC action plan. In our view, a centralized trading platform would create a monopoly for NPL trading, which may



The EC action plan proposes a central data hub that shall publicly disclose NPL market transactions on an anonymous basis. The central hub thus acts as a repository of NPL transaction data and allows market participants to gain insights into the actual market values of NPLs and into the liquidity of the market. **Academic theory and empirical research provide strong arguments in favor of such a central data hub.** 20 years ago, the SEC mandated a similar data hub for the US bond market: the Trade Reporting and Compliance Engine (TRACE). Similar to the proposed NPL data hub, TRACE also had the intention to make the bond market more efficient and reduce the bid-ask spreads. Numerous academic studies show that TRACE was indeed highly successful in making the bond market more attractive for buyers, sellers and bond issuers.<sup>26</sup>

Unfortunately, the action plan proposal is silent about one important detail of NPL transactions. NPL transactions may be used to transfer either single loans or portfolios of loans. When portfolios of (possibly heterogeneous) NPLs are traded and only one transaction price for the overall portfolio should be disclosed, the benefit and learning for other market participants is severely limited. The data hub could fail to reach its intended objectives, if only one aggregate loan portfolio price should be disclosed and if market participants primarily engage in portfolio transactions. **The data hub proposal should thus be amended and include a requirement to disclose the purchase price allocation (i.e. the assigned prices to every individual loan in the portfolio).**<sup>27</sup>

The central data hub imposes substantial reporting burdens on market participants. Great caution should be exercised in order to prevent excessive reporting burdens. The action plan proposes to take the existing NPL data template developed by EBA in 2017 “as a starting point” but concedes that this template failed to reach acceptance by market participants due to its excessive complexity. Existing NPL trading platforms have all successfully developed NPL data templates and tailored them towards the needs of buyers and sellers.<sup>28</sup> Policy makers are well advised to focus on the informational needs of market participants and design the data hub with the needs of NPL buyers and sellers in mind.

Increased NPL market transparency has one additional important side effect: it also allows a more precise valuation of those NPLs that remain on the bank’s balance sheets. As argued in the previous section, delayed recognition of loan losses has many negative consequences such as zombie lending and delayed restructurings of distressed industries. The European NPL regime<sup>29</sup> tries to address this problem by limiting the possibility to apply overly optimistic valuations. But the effectiveness of this regime is restricted when non-transparency makes NPL valuation notoriously difficult. **The proposed data hub will allow banks and supervisors to improve the accuracy of NPL valuation and thus reduce the negative effects of delayed loan loss recognition.** If the data hub ultimately makes book values more consistent with market prices, it also helps to eliminate another big impediment of NPL sales: accounting losses from NPL sales that arise when the book value of NPLs exceeds market prices. This data hub may additionally improve incentives in the bank’s choice between an internal workout and selling NPLs in the secondary market.

---

increase participation costs for NPL traders and hinder innovative dynamics in this market. The provision of trading facilities is a highly dynamic and innovative industry. Competition in this industry should be considered a prerequisite for the evolution of innovative and efficient trading models and trading technologies. See for example Enria et al. (2017) and Fell et al. (2017).

<sup>26</sup> For example, see Bessembinder et al. (2008).

<sup>27</sup> The specification of a purchase price allocation is a legal requirement within the financial accounting frameworks in most jurisdictions. Its disclosure should thus not imply an extra burden for the market participants.

<sup>28</sup> See Dilba (2020).

<sup>29</sup> See EBA (2019) and ECB (2019).

#### 4.1.2. Discussing the role of government subsidies

An integral part of the action plan proposals is the use of government subsidies that aim to increase NPL supply and demand and thus increase the prices obtained in NPL sales. While these public subsidies constitute a kind of “carrot” to selling banks, the EC action plan also calls for a “stick” in the form of stress tests and AQRs which have the effect of stimulating NPL sales. Precautionary recapitalisations are proposed as a mean to maintain the capital adequacy of banks and thus prevent possible negative effects stemming from weak bank capitalisation. In this section, we discuss the interplay of the different policy elements in this context.

As previously explained, the current accounting regime allows banks to assign book values for NPLs that generally exceed NPL market values. NPL sales then lead to accounting losses and reduce the equity capital of banks, thus deteriorating capital adequacy figures and possibly leading to a reduction of lending capacity. Stress tests and AQRs require banks to demonstrate adequate capital even under “stressed conditions” – i.e. when NPLs are valued at lower and more market consistent prices. Banks which do not pass stress tests or AQRs are required to increase their equity capital. Since stress test results are usually widely discussed in the press, banks suffer heavy reputational losses if they reveal capital shortages.<sup>30</sup> The stress tests (and equivalently the AQRs) thus create a strong incentive for banks to prevent this “bad press coverage” and thus contribute to a more conservative valuation of NPLs on the balance sheet in the first place. According to this line of argument, **stress tests and AQRs are not only means to assure that banks are adequately capitalized under stressed conditions, but also incentivize banks to recognize loan losses earlier and thus to increase capital earlier.**

The possibility to inject public money in the form of precautionary recapitalisations serves to further alleviate its potential negative effects on the lending capacity of the banking sector. Within the legal framework of the BRRD, public recapitalisations of banks are only in exceptional situations possible and, in particular, must not be provided when a bank is failing or likely to fail. In order to be compliant with this framework, the action plan recommends to apply stress tests and AQRs. These instruments necessitate recapitalisations in an early stage when the use of public funds for precautionary recapitalisations is possible within the state aid framework.

Besides stimulating NPL supply as explained above, the action plan also proposes to use public subsidies as an instrument to stimulate demand for NPLs. This effect is intended to reinforce the demand-enhancing effect of the NPL transparency initiative. In particular, the action plan advocates the use of AMCs and the use of public subsidies in order to endow AMCs with “*a substantial financial envelope*” (European Commission 2020). The action plan is silent about the size of these subsidies. We reckon that public subsidies can easily become the most important element in the plan, outweighing the effect of increased transparency. According to the action plan, AMCs can be private or (partly) publicly funded and require substantial public guarantees in order to obtain the “*sufficient financial firepower*”. AMCs are important entities in the resolution of NPLs and are corporations outside the banking sector that stand ready to buy large amounts of NPLs from banks and to manage them afterwards (“servicing”). Some AMCs in Europe were created by carving-out a bank’s work-out unit into a separate legal entity. In essence, AMCs specialize in bad loan workouts and can be viewed as a surrogate or substitute to bank internal workout units. In the special case of NPL securitisation schemes (such as the Italian GACS scheme and the Hercules scheme in Greece), a special purpose vehicle buys the NPLs and another company (usually an AMC) takes over the task of managing the NPLs. The action plan suggests that GACS

<sup>30</sup> In 2016, supervisors stopped using thresholds or hurdle rates in stress tests. This reduced the public discussion and reputational damages strongly.

and Hercules may serve as a role model for other countries. The beauty of the GACS and Hercules models is their ability to combine two elements, that on first sight seem to preclude each other: on one side, there is no violation of state aid rules (because the state supposedly acts in a “similar way to a market economy operator”) and, on the other side, it incorporates a substantial subsidy as banks can achieve much higher NPL prices as compared to a solution without government support.<sup>31</sup> This subsidy results in higher NPL prices and higher demand for NPLs as compared to a free market situation.

**It is a priori questionable why public funding of AMC is truly needed.** Numerous private investors stand ready to invest into NPLs and a growing number of NPL servicing companies (including AMCs) stand ready to assist by offering the necessary management capacities for NPLs. Thus, one could argue that free markets should be sufficient to take over even large amounts of NPLs. The action plan argues that public funding may be needed in most cases without providing convincing arguments why public support is required. Today’s capital markets do not seem to be characterised by a shortage of capital supply. If anything, current capital markets show phenomena such as the well-known “savings glut”, caused by a significant increase in the global supply of saving over the last years.

**Public support of AMCs involves a substantial volume of public subsidies and thus is likely to distort market prices.** The subsidy may lead to a situation where NPLs are sold even in circumstances in which the bank has superior information and/or better ability to take over the workout of NPLs – situations in which NPLs better stay on the banks’ balance sheet. The next section will argue that the use of the bank resolution mechanism (instead of using AMCs) is also better able to achieve the desired objective of increased market transparency.

## 4.2. Bank resolution and secondary NPL markets

The EC action plan to create liquid secondary NPL markets comes at the costs of substantial public funds for guarantees and for bank recapitalisations and might generate the perverse effects that previous crises teach us.

In this section **we suggest to use the restructuring and resolution options as implied by the banking union legislation (BRRD) as an alternative way to stimulate the NPL market.** We argue that this does not only reduce taxpayer risks but also leads to a further stimulation of secondary NPL market liquidity and addresses another policy objective that has become more important in the post-COVID economy: the necessary restructuring and consolidation of the European banking industry. The post-COVID banking market is likely to be much more digital than before and requires a substantial amount of restructuring of the industry.

By focusing on stress tests and AQRs in conjunction with precautionary recapitalisations, the EC action plan is very much geared towards the protection and rescue of endangered banks as compared to the alternative use of the resolution mechanism as suggested by the BRRD. The BRRD provides policy makers with an alternative tool to achieve the desired objective of a more liquid and efficient NPL market, but presumably with less need to use public money for bank recapitalisations. The proposal also fails to address concerns that these precautionary measures undermine capital market discipline, which contributes to creating moral hazard.<sup>32</sup>

<sup>31</sup> One example is the following quote from the leading Italian AMC doValue (former doBank): “So what we have seen is high prices compared to the historical average, and some of especially the GACS transactions are coming with a very high level of both advance rate and prices” (doBank 2018, p.32). A paper by Oliver Wyman notes: “The public guarantee meant sale prices have been higher than in unprotected NPL sales, for which private investors usually require higher rates of return and relatively short payback times” (Campos et al. 2018, p.13).

<sup>32</sup> See for example Philippon and Salord (2017) and Götz et al. (2017).

The banking union was the policy response to the financial crisis of 2007 and introduced two important pillars that shall protect the banking industry in future crises without the need to inject taxpayer money: the Single Supervisory Mechanism (SSM) and the Single Resolution Mechanism (SRM). The EC action plan seems to focus almost completely on the SSM, and grossly neglects the other pillar of the banking union: the SRM. Banking supervisors within the SSM make sure that banks have enough own funds (equity capital). Precautionary recapitalisations and high NPL prices obtained in the secondary NPL market clearly serve this objective. But both involve large risks of losses from government guarantees and public money injections.

**Instead of taxpayers money, the SRM should be used to restore a distressed bank**, which may then lead to a much needed activity: the takeover of failing banks by strong banks. It is often claimed that the European banking markets has too many players and needs consolidation. The SRM is an important tool to achieve this objective. In the present form, the EC action plan undermines the SRM mechanism and is likely to slow down the consolidation process in the banking sector.

**Bank resolution is also a powerful instrument to stimulate the secondary NPL market:** resolution authorities will often merge the profitable and performing part of the resolved banks with another bank and sell the NPL portfolio in the secondary market. In terms of the aimed developing the NPL market, the sale of NPLs by a resolution authority also compares favorably with the alternative use of the AMC scheme as suggested by the action plan. The action plan's objective to develop a liquid market for NPLs which provides valuable pricing information from many NPL transactions requires that many sellers apply what the action plan calls a *"best practice sales process"*. In short, NPLs shall be sold in an environment with many competing bidders in an open and competitive environment. The proposed GACS and Hercules model however do not apply this *"best practice sales process"*. On the contrary: GACS and Hercules only lead to few large transactions where a small group of large players structure complex transactions in a rather non-transparent environment. The use of the bank resolution regime would enable authorities to use a sales process that is much closer to the *advocated "best practice sales process"* and thus further contribute to a liquid and well-functioning NPL market.

Summing up, the **EC action plan should be supplemented with a stronger focus on, and integration in, the bank resolution regime.** The bank resolution regime offers the potential to contribute to three objectives at the same time: to strengthen liquid and well-functioning NPL markets, to foster the needed restructuring of the European banking industry, and to minimize the costs for the taxpayer.

These conclusions are valid in most of the potential scenarios. As outlined in section 2.2 and in the Appendix, a high level of uncertainty relating to the future development of the pandemic and its impact on consumer and producer behaviour, gives room for a wide range of scenarios. As we argued before, it is thus wise to look beyond expected, i.e. most likely outcomes and to also think about extreme events. In this case, the forbearance in credit matters that has been allowed during the first months of the crisis, will probably lead eventually to high levels of corporate bankruptcies, followed by equally high levels of bank loan defaults. If these extreme loss experiences happen economy-wide, we are experiencing a moment of systemic risk.

With systemic risk unfolding, all or many banks lose capital simultaneously, and all banks are on the same side of the secondary loan market, the sell side and would lead to fire-sales. The resulting market imbalance invalidates the supportive role of the secondary loan market to banks with NPLs. In fact, a one-sided secondary loan market will pull banks down further, as the resulting loan pricing will feed into a downward spiral, infecting loan valuation on banks' balance sheets even for otherwise healthy banks. Thus, a self-enforcing process of falling secondary prices, lower loan asset values and loss of capital may develop that is destabilizing the financial system at large.

This is summarised by the term systemic risk, a situation in which the self-healing properties of the market cannot operate. In fact, **a systemic risk event is an externality, which requires a government bailout**. Government support for banks may then be justified, because a market-driven restructuring process tailored along BRRD rules might not be feasible anymore. However, government support can come in different forms. For reason of sustainability, **channelling rescue money directly to banks may not be the optimal solution. Direct subsidies to viable firms and borrowers seem more reasonable** in our opinion as adverse incentives in the banking sector are prevented and the working of the BRRD is upheld.

## 5. CONCLUSION

This section takes stock of the argumentation in the preceding sections, carving out the lessons for policymakers.

The paper started by looking into the experience from previous crises and by analysing available NPL data to sketch potential scenarios. We find commonalities in previous economic crises as far as the formation of NPLs is concerned. And we find differences, notably the strong cross-country and cross-industry heterogeneity of COVID-19 consequences for (potential) loan losses, paired with an exceptional level of uncertainty as to the medium-term implications of the lockdown measures. In our opinion, both the heterogeneity and the uncertainty render preparatory measures necessary, as severe scenarios in which financial stability is endangered cannot be ruled out. However, there are good reasons why measures taken to address a potential NPL problem should start from within the banking system.

In times of financial and economic crisis, weaker firms struggle to survive, spurring a rise of NPLs on banks' balance sheets. In these times, NPL identification tends to be prolonged by banks in an effort to delay recognition in the profit and loss statement, and to conceal the loss of capital. This behaviour may lead to continued financing of non-viable firms, so-called zombie lending, and delay much needed restructuring efforts at the firm level with negative consequences for economic growth (Laeven and Valencia 2018). If forbearance measures are kept in place for too long, this issue is further exacerbated and more desirable measures, such as internal workouts or the transition to more market-based solutions are prevented.

These costs to society justify the general recommendation to foster a pro-active NPL management, aiming at setting the right incentives for the necessary restructuring at the firm but also at the bank level. To avoid zombie lending and bank zombification, regulators and policy makers need to ensure that banks realistically assess current loan values, which can be achieved, among others, by effective AQRs, stress tests and adequate accounting rules, such as the new IFRS 9 standard. Importantly, this will also foster the early identification and recognition of NPLs on bank balance sheets.

Pushing banks towards recognising NPLs early also promotes the development of secondary loan markets. The higher the sale price for NPLs, be it via outright market sale, or via a bank merger, the lower will be the eventual capital loss incurred by the originating bank. A strong and well-developed secondary loan market, therefore, contributes to the stability of the banking sector in an economy. Moreover, it improves the loan quality information that is available for investors and originators alike.

Because a secondary loan market would raise the value of outside options, and increase information at the market level, we see a positive feedback effect between the secondary loan market and the working of the BRRD resolution regime. Thus, if the surge of NPLs on bank balance sheet is concurrent and significant, then some banks will lose their capital and may have to exit the market, directed by the Euro-

pean recovery and resolution authority (SRB). The more developed, liquid and transparent the secondary loan market, the easier it will be to achieve relatively high prices for loans, and the lower will be the ultimate capital loss of banks for NPL. Therefore, whatever is needed to facilitate the functioning of a secondary loan market should be done, including transparency and data access relating to loan books and trading prices.

Assuming an extremely severe pandemic scenario, when all banks are facing mounting NPL levels, then a market-driven, BRRD-tailored restructuring processes is unlikely to be feasible; it is the case of systemic risk (i.e. financial externalities) which justifies government intervention. In that extreme case, we recommend to think about direct government support to stabilize the banking system. However, even in this case we commend not to channel rescue money to banks, but rather to viable firms and borrowers, thereby upholding the working of the BRRD. Therefore, any plan to deal with NPLs should consider bank restructuring and resolution as the alternative, probably the preferred alternative, to recapitalisation or any other rescue measure.

The broader policy picture therefore, puts NPLs and NPL resolution in the broader context of banking supervision and bank resolution. Policy action, in our view, should be directed towards strengthening the transferability of individual loans from one bank to another, or to specialised asset managers. Many policy measures can help to strengthen transferability, of which transparency and the stability of legal rights in collateral asset sales figure prominently. As these measures may differ greatly across jurisdictions, even with the European Union, there is ample room for an institution building effort.



## REFERENCES

- Abbassi, P., J.-L. Peydró, R. Iyer, and P. E. Soto (2020): *Stressed banks? Evidence from the largest-ever supervisory review*, Deutsche Bundesbank Discussion Paper No. 26/2020.
- Acharya, V. V., S. T. Bharath, and A. Srinivasan (2007): “Does industry-wide distress affect defaulted firms? Evidence from creditor recoveries”, *Journal of Financial Economics* **85**(3), 787-821.
- Acharya, V. V., M. Crosignani, T. Eisert, and C. Eufinger (2020): “Zombie credit and (dis)inflation: Evidence from Europe”, NBER Working Paper No. 27158.
- Archarya, V. V., L. Borchert, M. Jager, and S. Steffen (2021): “Kicking the can down the road: government interventions in the European banking sector”, *Review of Financial Studies*, forthcoming.
- Ari, A., S. Chen, and L. Ratnovski (2020): *The dynamics of non-performing loans during banking crises: a new database*, ECB Working Paper No. 2395.
- Balgova, M., M. Nies, and A. Plekhanov (2016): *The economic impact of reducing non-performing loans*, EBRD Working Paper No. 193.
- Balgova, M., A. Plekhanov, and M. Skrzypinska (2017): *Reducing non-performing loans: stylized facts and economic impact*. Available at: <https://www.ebrd.com/documents/admin/reducing-nonperforming-loans-stylized-facts-and-economic-impact.pdf&hl=de&sa=X&ei=RqwzYl2bJsnDmAH-fvLrQBw&scisig=AAGBfm3yPZnVuW2EKbGNR6COWDMOvIqH5w&nossl=1&oi=scholar> (Accessed 20 February 2021).
- Baudino, P. and H. Yun (2017): *Resolution of non-performing loans – policy options*, FSI Insights on policy implementation No. 3.
- Bebchuk, L. A. (2009): “Buying troubled assets”, *Yale Journal on Regulation* **26**(2), 343-358.
- Bebchuk, L. A. (2012): *How to make TARP II work*, Harvard Law and Economics Discussion Paper No. 626.
- Beck, T. (2017): *An asset management company for the eurozone: time to revive an old idea*, 24 April (VoxEU). Available at: <https://voxeu.org/article/asset-management-company-eurozone> (Accessed: 15 February 2021).
- Bessembinder, H. and W. Maxwell (2008): “Transparency and the corporate bond market”, *Journal of Economic Perspectives* **22**(2), 217-234.
- Bonfim, D., G. Cerqueiro, H. Degryse and S. Ongena (2020): *On-site inspecting zombie lending*, CEPR Discussion Paper No. 14754.
- Boot, A., E. Carletti, H.-H. Kotz, J. P. Krahnen, L. Pelizzon, and M. Subrahmanyam (2021a): *Corona and banking – a financial crisis in slow motion? An evaluation of the policy options*, SAFE White Paper No. 79.
- Boot, A., E. Carletti, H.-H. Kotz, J. P. Krahnen, L. Pelizzon, and M. Subrahmanyam (2021b): *Coronavirus and banking: evaluating policy options for avoiding a financial crisis*, 25 January (VoxEU). Available at: <https://voxeu.org/article/coronavirus-and-banking-evaluating-policy-options-avoiding-financial-crisis>
- Brei, M., L. Gambacorta, M. Lucchetta, and B. M. Parigi (2020): *Bad bank resolutions and bank lending*, BIS Working Papers No. 837.

Campos, P., R. P. Ribeiro, and M. J. Fernandes (2018): *The non-performing loans jigsaw: pieces starting to fit? The road ahead for the NPL ecosystem* (Oliver Wyman). Available at: <https://www.oliverwyman.com/content/dam/oliver-wyman/v2/publications/2018/march/the-non-performing-loans-jigsaw.pdf> (Accessed: 18 February 2021)

Carletti, E., T. Oliviero, M. Pagano, L. Pelizzon, and M. G. Subrahmanyam (2020): "The COVID-19 shock and equity shortfall: firm-level evidence from Italy", *The Review of Corporate Finance Studies* **9**(3), 534-568.

Carletti, E., G. Dell'Ariccia, and R. Marquez (2021): "Supervisory incentives in a banking union", *Management Science* **67**(1), 455-470.

Caballero, R. J., T. Hoshi, and A. K. Kashyap (2008): "Zombie lending and depressed restructuring in Japan", *American Economic Review* **98**(5), 1943-1977.

Cerutti, E., S. Claessens, and L. Laeven (2017): "The use and effectiveness of macroprudential policies: New evidence", *Journal of Financial Stability* (28), 203-224.

Claessens, S., A. Kose, L. Laeven and F. Valencia (2014): *Financial crises: causes consequences, and policy responses*, Washington D.C.: International Monetary Fund.

Dilba, Denis (2020): "NPL trading in transition", *EOS explore* 2/2020, 34-35.

Djankov, S. and E. Zhang (2021): *As COVID rages, bankruptcy cases fall*, 4 February (VoxEU). Available at: <https://voxeu.org/article/covid-rages-bankruptcy-cases-fall> (Accessed: 15 February 2021).

doBank (2018): Business plan 2018-2020. Available at: [https://www.dovalue.it/sites/default/files/assets/files/Transcript%20doBank%20Business%20Plan%202018-2020%2019.06.2018\\_1.pdf](https://www.dovalue.it/sites/default/files/assets/files/Transcript%20doBank%20Business%20Plan%202018-2020%2019.06.2018_1.pdf)

Duchin, R., and Sosyura, D. (2014): "Safer ratios, riskier portfolios: banks' response to government aid", *Journal of Financial Economics* **113**(1), 1-28.

EBA (2016): EBA Report on the dynamics and drivers of non-performing exposures in the EU banking sector, 22 July. Available at: <https://www.eba.europa.eu/sites/default/documents/files/documents/10180/1360107/c6ad9c6f-e85d-4a1e-a20a-45911fcc2ff9/EBA%20Report%20on%20NPLs.pdf?retry=1> (Accessed: 26 February 2021).

EBA (2019): *EBA Report on NPLs: Progress made and challenges ahead*. Available at: [https://www.eba.europa.eu/sites/default/documents/files/document\\_library/Risk%20Analysis%20and%20Data/Risk%20Assessment%20Reports/2019/Final%20EBA%20Report%20on%20NPLs-for%20publication\\_final.pdf](https://www.eba.europa.eu/sites/default/documents/files/document_library/Risk%20Analysis%20and%20Data/Risk%20Assessment%20Reports/2019/Final%20EBA%20Report%20on%20NPLs-for%20publication_final.pdf) (Accessed: 15 February 2021).

EBA (2020a): *Guidelines on loan origination and monitoring*, 29 May. Available at: [https://www.eba.europa.eu/sites/default/documents/files/document\\_library/Publications/Guidelines/2020/Guidelines%20on%20loan%20origination%20and%20monitoring/884283/EBA%20GL%202020%2006%20Final%20Report%20on%20GL%20on%20loan%20origination%20and%20monitoring.pdf](https://www.eba.europa.eu/sites/default/documents/files/document_library/Publications/Guidelines/2020/Guidelines%20on%20loan%20origination%20and%20monitoring/884283/EBA%20GL%202020%2006%20Final%20Report%20on%20GL%20on%20loan%20origination%20and%20monitoring.pdf) (Accessed: 22 February 2021).

EBA (2020b): *Report on the benchmarking of national loan enforcement frameworks*. Available at: [https://www.eba.europa.eu/sites/default/documents/files/document\\_library/About%20Us/Missions%20and%20tasks/Call%20for%20Advice/2020/Report%20on%20the%20benchmarking%20of%20national%20loan%20enforcement%20frameworks/962022/Report%20on%20the%20benchmarking%20of%20national%20loan%20enforcement%20frameworks.pdf](https://www.eba.europa.eu/sites/default/documents/files/document_library/About%20Us/Missions%20and%20tasks/Call%20for%20Advice/2020/Report%20on%20the%20benchmarking%20of%20national%20loan%20enforcement%20frameworks/962022/Report%20on%20the%20benchmarking%20of%20national%20loan%20enforcement%20frameworks.pdf) (Accessed: 22 February 2021).



- ECB (2017): *Guidance to banks on non-performing loans*. Available at: [https://www.bankingsupervision.europa.eu/ecb/pub/pdf/guidance\\_on\\_npl.en.pdf](https://www.bankingsupervision.europa.eu/ecb/pub/pdf/guidance_on_npl.en.pdf) (Accessed: 22 February 2021).
- ECB (2018): Addendum to the ECB Guidance to banks on nonperforming loans: supervisory expectations for prudential provisioning of non-performing exposures. Available at: [https://www.bankingsupervision.europa.eu/ecb/pub/pdf/ssm.npl\\_addendum\\_201803.en.pdf?81e79e706d0c3c817ea11d094a678ea8](https://www.bankingsupervision.europa.eu/ecb/pub/pdf/ssm.npl_addendum_201803.en.pdf?81e79e706d0c3c817ea11d094a678ea8) (Accessed: 27 February 2021).
- Enria, A., P. Haben, and M. Quagliariello (2017): "Completing the repair of the EU banking sector: a critical review of an EU asset management company", *European Economy* **1**, 59-70.
- ESRB (2021): *Financial stability implications of support measures to protect the real economy from the COVID-19 pandemic*. Available at: [https://www.esrb.europa.eu/pub/pdf/reports/esrb.reports210216\\_FSI\\_covid19~cf3d32ae66.en.pdf](https://www.esrb.europa.eu/pub/pdf/reports/esrb.reports210216_FSI_covid19~cf3d32ae66.en.pdf) (Accessed 22 February 2021).
- Fell, J., M. Grodzicki, R. Martin and E. O'Brien (2016): "Addressing market failures in the resolution of non-performing loans in the euro area", *ECB Financial Stability Review November 2016*, 1-13.
- Fell, J., M. Grodzicki, D. Krusec, R. Martin and E. O'Brien (2017): "Overcoming non-performing loan market failures with transaction platforms", *ECB Financial Stability Review November 2017 – Special Features*, 130-144.
- Götz, M., J. P. Krahnen, and T. Tröger (2017): *Taking bail-in seriously – the looming risks for banking policy in the rescue of Monte dei Paschi di Siena*, SAFE Policy Letter No. 54.
- Gourinchas, P.-O., S. Kalemli-Özcan, V. Penciakova and N. Sander (2020): *COVID-19 and SME Failures*, NBER Working Paper No. 27877.
- Grodzicki, M., D. Laliotis, M. Leber, R. Martin, E. O'Brien, and P. Zboromirski (2015): "Resolving the legacy of non-performing exposures in euro area banks", *ECB Financial Stability Review May 2015*, 146-154.
- Haselmann, R., and T. Tröger (2021): *When and how to unwind COVID-support measures to the banking system?*, mimeo.
- Krahnen, J. P., and R. Elsas (2003): *Universal banks and relationships with firms*, CFS Working Paper No. 2003/20.
- Laeven, L. and F. Valencia (2013): "Systemic banking crises database", *IMF Economic Review* **61**(2), 225-270.
- Laeven, L. and F. Valencia (2018): *Systemic banking crises revisited*, IMF Working Paper WP/18/206.
- Langfield, S. and M. Pagano (2016): "Bank bias in Europe: effects on systemic risk and growth", *Economic Policy* **31**(85), 51-106.
- Lazzari, V., L. Vena, and A. Venegoni (2017): "Stress tests and asset quality reviews of banks: a policy announcement tool", *Journal of Financial Stability* **32**, 86-98.
- Moreno, A., S. Ongena, A. Ventula Veghazy and A. Wagner (2020): "The global financial crisis and the COVID-19 pandemic", in: Billio, M. and S. Varotto (eds) *A new world post COVID-19: lessons for business, the finance industry and policy makers*, Venice: Fondazione Università Ca' Foscari, 23-34.
- Philippon, T. and A. Salord (2017): *Bail-ins and bank resolution in Europe. A progress report*, Geneva Reports on the World Economy Special Report 4.
- Pinto, J., and P. A. Alves (2016): "The economics of securitization: evidence from the European markets", *Investment Management and Financial Innovations* **13**(1), 112-126.

Segall, R., C. Dias, K. Grigaite, and M. Magnus (2021): *The EU's regulatory and supervisory response to addressing non-performing loans*. Available at: [https://www.europarl.europa.eu/RegData/etudes/IDAN/2021/659634/IPOL\\_IDA\(2021\)659634\\_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/IDAN/2021/659634/IPOL_IDA(2021)659634_EN.pdf)

## ANNEX

### Appendix A

#### Current situation and forecast of NPL levels

In the following, we present different approaches to gauge potential levels of future NPLs. Our first and main approach (Approach A) starts from loans that are currently under moratorium and asks by how much NPLs would increase if 0-50% of these loans end up as non-performing. Second, to complement these findings, we start from the total volume of outstanding loans in each country and ask how much NPLs would increase if a certain percentage of total loans would become non-performing (Approach B).<sup>33</sup> The range of up to 50% in the first approach is motivated by Gourinchas et al. (2020), who analyse the impact of COVID on bankruptcy rates by SMEs and conclude that NPLs are likely to increase by 7% on average. While Gourinchas et al. do not study loans under moratorium directly, these loans are particularly widespread among SMEs and thus form a natural benchmark in our view. We extend the range of potential NPLs up to 50% for several reasons. First, the 7% in Gourinchas et al. applies to total loans to SMEs and not just loans under moratorium as mentioned above. Hence, the overall percentage of NPLs is likely higher. Similarly, the authors assume one relatively short lockdown period in their projection, whereas most European countries in our sample are going through a second, much longer lockdown. This also increases the likely bankruptcy rate. Third, a mitigating factor is that loans under moratorium also comprise other entities than just SMEs which suggests a somewhat lower share of NPLs. Overall, we thus opt for a large range from 0-50% to reflect the considerable uncertainty around this number.

Our second approach uses projections for a lower and upper bound of likely default rates for December 2021 relative to *total loans* from EulerHermes (based on data from the EBA and Allianz Research).<sup>34</sup> When no projection was available in EulerHermes, we rely on peak NPL levels of Ari et al. (2020) and multiply these with total loan information from the ECB Statistical Data Warehouse to estimate the upper bound of NPLs.<sup>35</sup> We label these lower and upper bounds of projected NPL rates as Approach B: lower and Approach B: upper, respectively, in our results below.

Across countries, the lower and upper bounds imply that 2.0-2.3% (Germany) to 16%-50% (Cyprus) of all outstanding loans will become non-performing, which can be compared to the 7% estimate for SMEs from Gourinchas et al. (2020) mentioned above.

As a starting point, Figure 1 shows current NPL values obtained from the ECB Statistical Data Warehouse for selected European countries. For each country, the blue bar shows NPL levels (in EUR bn.) as of 2020Q2. As is well known from several other reports over the last months, NPLs have not yet increased substantially compared to the pre-pandemic time (2019Q4). This is partly due to the fact that

<sup>33</sup> We prefer the first approach since it starts from loans that are under the moratorium of 2020Q2 and thus specifically comprise borrowers in financial difficulty. However, we want to complement this with Approach B based on all outstanding loans to capture the obvious possibility that loans, which were not under moratorium as of 2020Q2, could become non-performing in the future due to continued lockdowns in many countries after 2020Q2.

<sup>34</sup> See Ozyurt and Utermöhl (2020).

<sup>35</sup> To calibrate estimates of peak NPLs in Ari et al. (2020) to the upper and lower bounds in the EulerHermes data, we multiply the peak NPL ratio in Ari et al. (2020) for a country with the total loans outstanding in that country (as of 2020Q2), which constitutes the upper bound. The upper bound is set to be 15% higher than the lower bound for these countries. This roughly matches the level and the width of the interval between lower and upper bound for countries with available data in EulerHermes. Also notice that we approximate the peak NPL value for Finland and Sweden by using the German NPL peak, the value for Poland and Romania has been approximated using the value for Hungary and the value for Slovakia is the average of Slovenia and Austria to roughly approximate the respective country characteristics.

NPLs typically only materialize several months after economic downturns have started and partly due to regulatory actions such as the EBA Guidelines on legislative and non-legislative loan repayments moratoria (which are currently set to last until at least 31 March 2021).

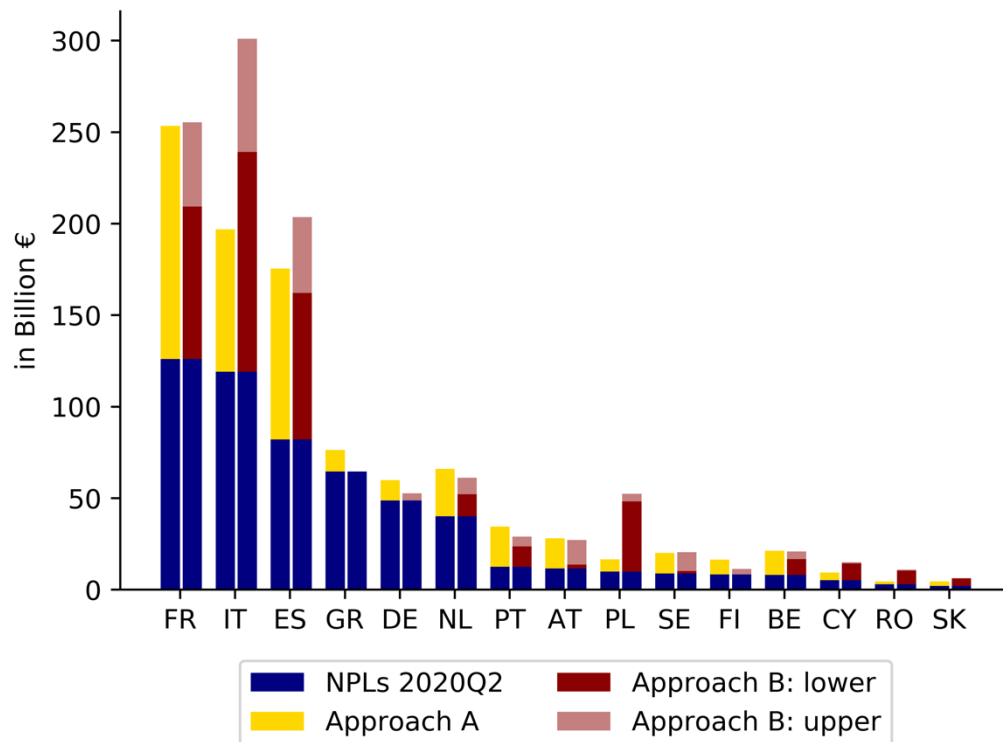
Using information from the European Banking Authority (EBA) (2020) on the amount of loans to households and NFCs with granted moratoria on repayment (as of June 2020), we can construct estimates of NPL levels that include defaults of loans under moratoria. For each country in Figure 1, the yellow portion of the bar on the left depicts a range of scenarios, in which we assume that up to 50% of all loans currently under moratorium could turn out to be NPLs.<sup>36</sup> For example, total NPLs in France stand at EUR 126bn. (as per 2020Q2). The yellow area above this bar spans the range from EUR 126bn to 253bn, which means that NPLs would rise to 253bn if 50% of all loans currently under moratorium turned into NPLs. Likewise, if, e.g., only 25% of all loans under moratorium turned into NPLs, this number would only rise to about EUR 176bn.

The right bar for each country in Figure 1 is based on the second approach and reports the lower and upper bound of potential NPL levels in December 2021 based on EulerHermes projections as discussed above. Overall, the two approaches yield qualitatively and quantitatively similar results for most countries, even though Italy, Poland, Cyprus, and Romania stand out as clear counterexample with much higher potential NPLs in the approach based on total outstanding loans (Approach B).

---

<sup>36</sup> A 20% default rate on loans under moratoria in this scenario is quite conservative. As a point of reference, Gourinchas et al. (2020) estimate that SME failures due to COVID would increase NPLs only by about 7%.

Figure A.1: Current state of NPLs and projections



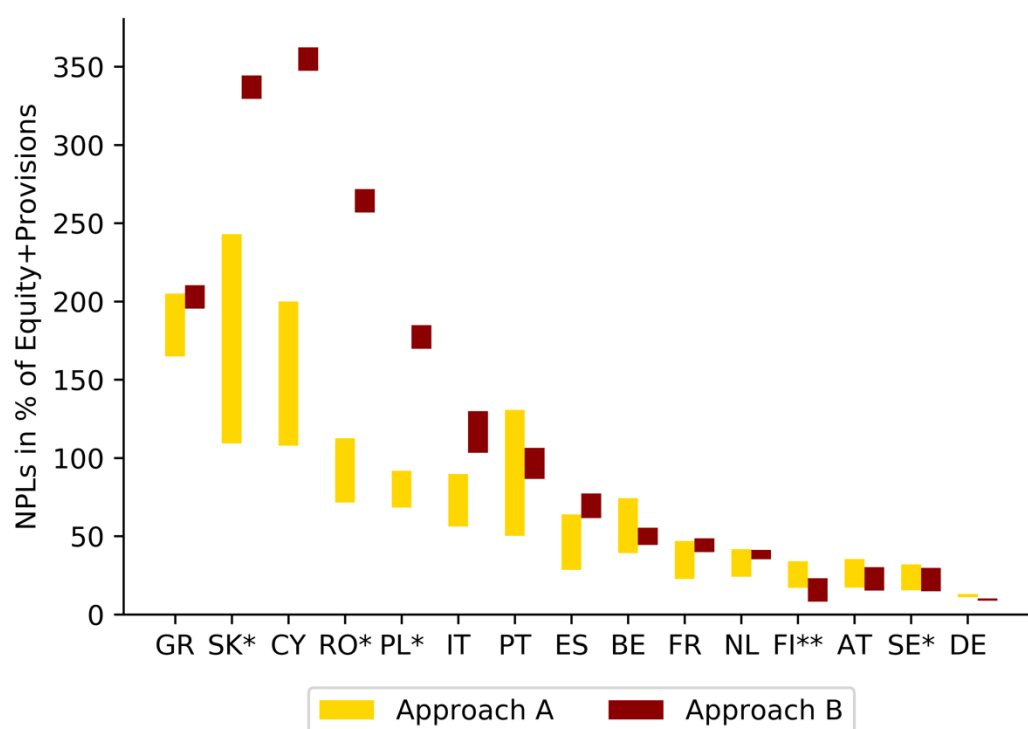
Source: ECB, EBA, EulerHermes, own calculations

## Default scenarios and equity/provisions

Figure A.2 expands on the exercise in Figure A.1 and expresses NPLs as a percentage of banks' equity capital and provisions (as reported to the ECB in 2020Q2). As above, we present a ranges of 0-50% of loans under moratoria becoming non-performing (yellow bars, Approach A) and ranges implied by the upper and lower NPL ratios discussed above (red bars, Approach B).

Based on Figure A.2, Greece, Slovakia, Cyprus seem especially vulnerable as (reported) levels of equity and provisions are insufficient to cover the potential loss even if no additional loans become non-performing. The same applies to Romania and Poland but only under the projections based on Approach B. More generally, there is a stark contrast between estimates from Approach A and B for the countries mentioned previously as well as Italy, which also fares much worse under the projection from Approach B. In contrast, countries such as France, the Netherlands, Finland, Austria, Sweden, and Germany show similar values under both approaches and do not seem especially vulnerable according to this metric.

Figure A.2: NPL projection for different scenarios



Source: ECB, EBA, EulerHermes, own calculations. \* Projections under Approach B for these countries have been approximated by data for similar economies. \*\* Data on provisions for Finland is not available for 2020Q2, only equity is used as an estimate.

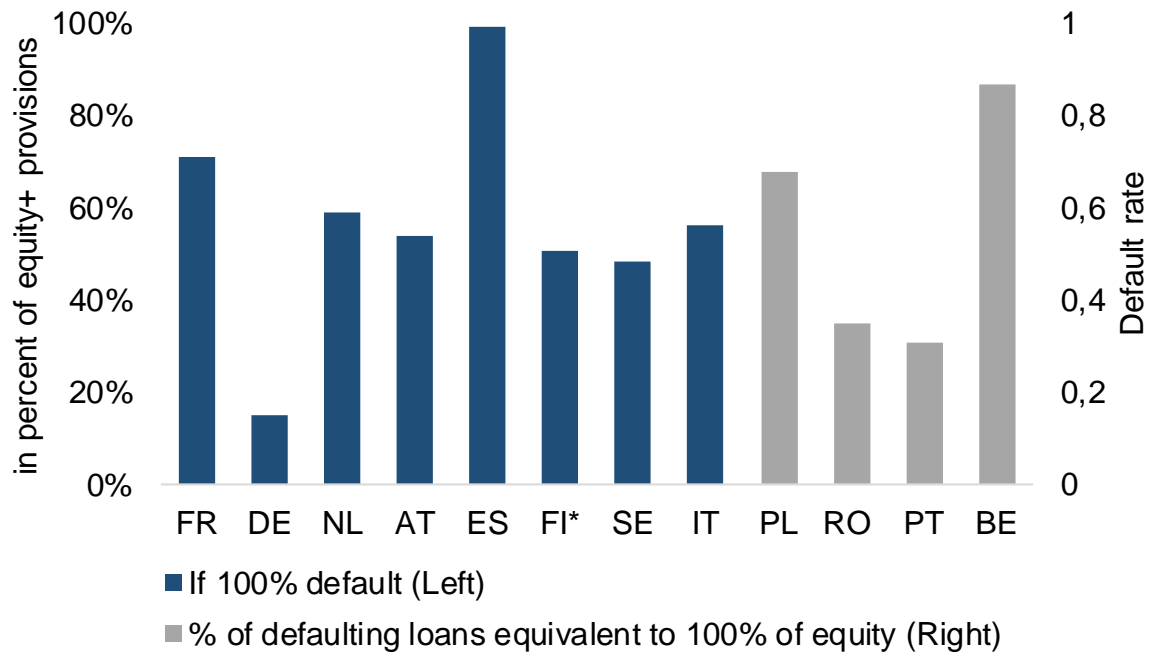
Finally, Figure A.3 looks more closely at the size of loans under moratorium and asks how much equity capital (and provisions) would be consumed if all loans under moratorium end up as defaults. For countries with sufficient capital buffers (equity and provisions), the blue bars show the percentage of capital needed to fully absorb losses if all loans on moratorium were to default. For example, the Netherlands have a value of close to 60%, which means that a default of all loans currently under moratorium would exhaust 60% of the equity capital in that country. For the remaining countries (grey bars), we report the default rate of loans on moratorium that can be absorbed by 2020Q2 reported equity and provisions. For example, equity capital in Belgium is sufficient to cover the case in which about 80% of all loans under moratorium end up as non-performing. Overall, there are marked differences across countries with Spain showing the highest and Germany the lowest value (blue bars). Romania, Portugal and Belgium (grey bars) do not have sufficient levels of capital to absorb a total default of loans on moratorium.<sup>37</sup>

Again, it is important to note that these results should only be seen as indicative and not be taken literally. Moreover, there are two opposing forces that should be mentioned in order to qualify these results further. In the calculations underlying Figures A.2 and A.3, we relate NPLs to the full equity capital of reporting banks in that country and not just excess buffers above the regulatory minimum. This would suggest that NPLs pose a more severe problem than indicated in these two figures. On the other hand, we do not take into account that NPLs typically have a non-zero recovery rate. For example, Fischetto et al. (2019) document recovery rates of 20-40% for Italian banks, whereas Acharya et al.

<sup>37</sup> Notice that Slovakia, Cyprus and Greece have levels of NPLs/(Equity+Provisions) that are above 100% already before the default of loans on moratorium (as per Figure 2) and are thus not included here.

(2007) report even higher values for a sample of US firms. All else equal, this would suggest that less capital is needed to deal with NPLs.

Figure A.3: NPLs and default of loans on moratorium

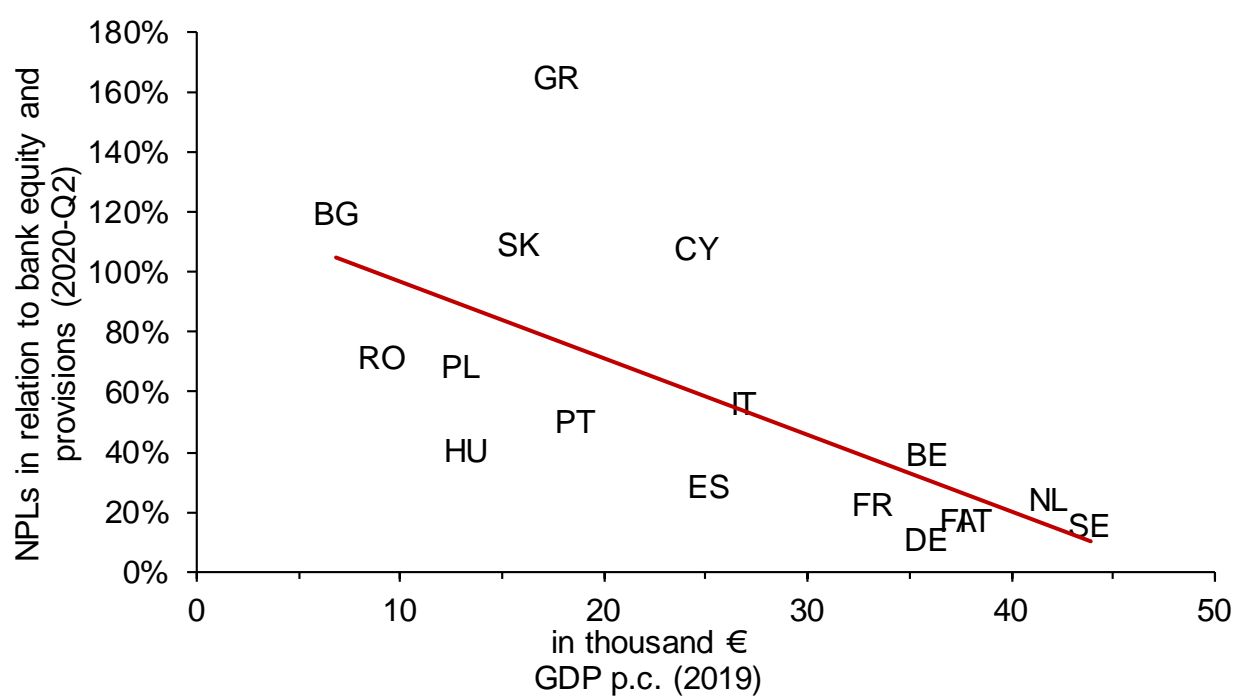


Source: ECB, EBA, EulerHermes, own calculations. \* Data on provisions for Finland is not available for 2020Q2, only equity is used as an estimate.

## A closer look at sector and country heterogeneity

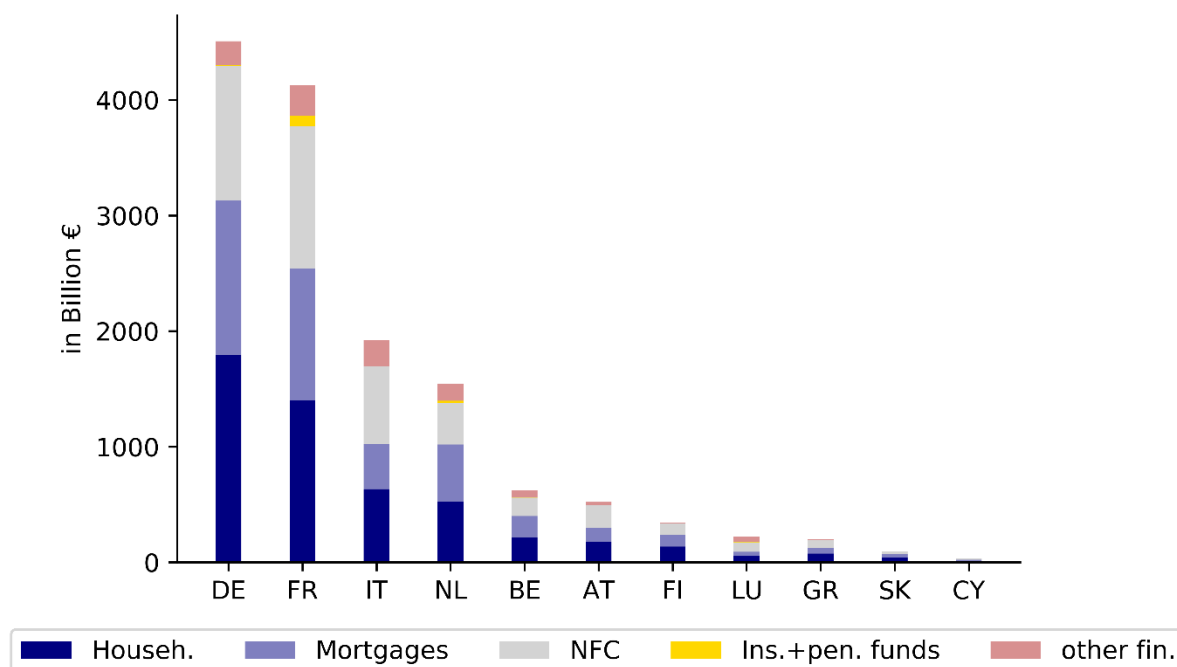
Apart from the scenario analysis discussed above, it also seems relevant to take a somewhat closer look at loans and NPLs across countries as well as sectors. First, Figure A.4 shows a simple scatterplot of GDP per capita (from Eurostat) against NPLs in relation to bank capital (and provisions) in 2020Q2. Not surprisingly, there is a negative relationship between per capita GDP and NPLs. In other words, NPLs tend to be larger relative to bank equity (and provisions) in countries with lower GDP per capita, i.e., those countries that are least equipped to recapitalize their banking system.

Figure A.4: Relationship of NPLs as share of equity and GDP per capita



Source: ECB, Eurostat, own calculations.

Figure A.5: Loan composition by sector 2020Q2

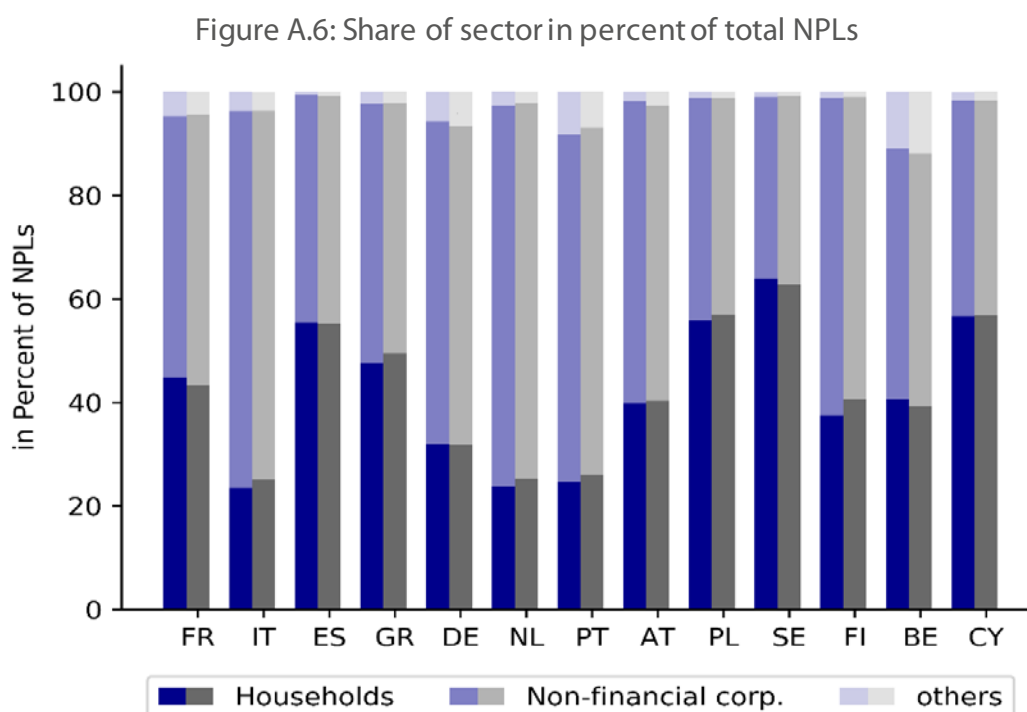


Source: ECB, own calculations.

As already discussed in relation to Figure 1 above, there are stark differences in the sectoral composition of NPLs across countries. For reference, Figure A.5 shows the composition of total outstanding loans across countries, whereas Figure 6 depicts the relative shares of different sectors in total NPLs for each country. In Figure A.6, the left (blue) bar for each country shows the pre-pandemic (2019Q4)



breakdown of NPLs whereas the right (grey) bars show the most recent available data (2020Q2). While the relative shares of NPLs within countries have not changed much from the pre-pandemic period to 2020Q2, there is strong heterogeneity across countries. For example, households account for a relatively low share (about 20-30%) in Italy, Germany, Portugal and the Netherlands but account for more than 50% of all NPLs in Poland, Spain, Sweden, and Cyprus. The opposite pattern can naturally be observed for the share of NPLs of the non-financial corporate sector.



Source: ECB, own calculations.

## Background: Some related literature based on recent policy papers

Studies analysing the effect of NPLs on economic performance are numerous and have mainly focused on the effect of NPLs in the context of the (banking) crisis of 2007-2009. Even though the current crisis is not per se a banking crisis, as banks confront NPLs with a higher capital buffer, the insights obtained are relevant in the current context as well.

Balgova et al. (2016) show that NPLs affect both sides of the lending market - borrowers and lenders. A downward spiral can be triggered when NPLs increase, as credit supply contracts, which reduces investments and thereby economic growth, which in turn can lead to more NPLs. The authors compare three possibilities to reduce NPLs: actively reducing NPLs, waiting for fast (enough) growth of new loans to mitigate the NPL problem, or inaction. They conclude that inaction results in poor economic performance. Actively seeking a resolution of NPLs and enhancing an influx of new loans are comparably more preferable options.

In contrast, Accornero et al. (2017) show that NPL ratios do not seem to affect bank lending directly. Using loan-level information of Italian banks for the period 2008-2015, they note that the negative correlation between NPL ratios and credit growth can be attributed to a contraction in demand, rather than a contraction in supply. However, an 'exogenous emergence' of NPLs, as potentially caused by the

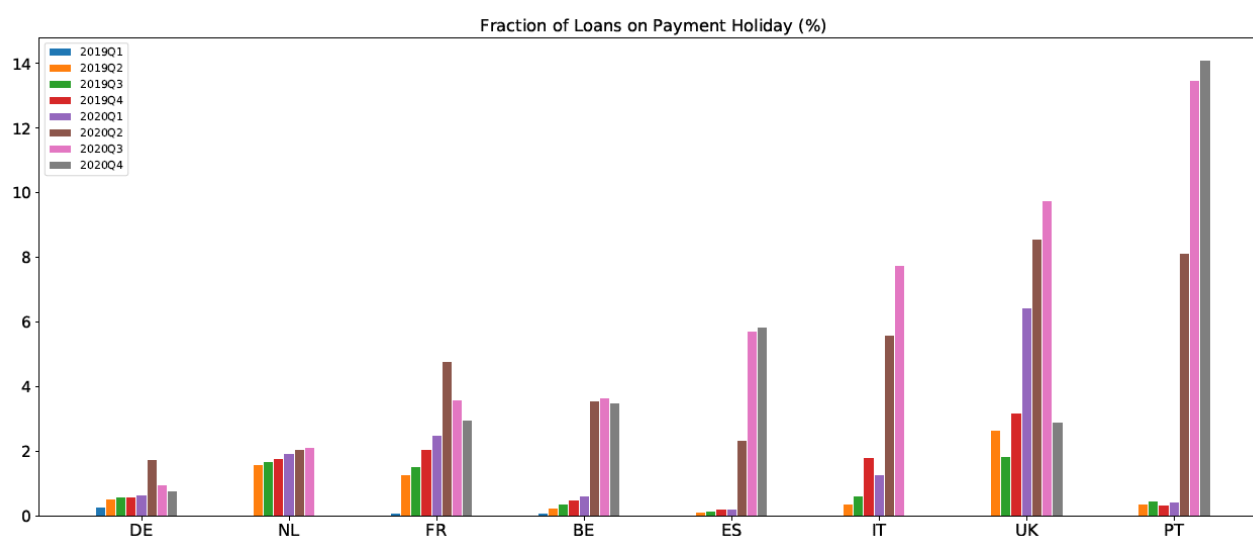
current crisis, can - in conjunction with the necessary increases in provisions - lead to a downward adjustment in credit supply.

Ari et al. (2020) analyse the dynamics of non-performing loans during banking crises. Their main finding is that countries that do not resolve high values of NPLs quickly, experience a more persistent output depression compared to peers that manage to reduce the amount of NPLs quickly. They further show that pre-crisis (institutional) conditions serve to predict NPL problems in crisis time, emphasizing that pre-crisis policy can contain excessive impact. They propose the following policy measures to confront problems concerning NPLs:

- Asset quality reviews, which serve to identify potential non-performing loans
- Categorization of assets into 'good' and 'bad' and subsequent formation of 'good' and 'bad' banks
- Recapitalized the 'good' (part of the) bank and enhance profitable lending behaviour

## Loans on payment holidays

Figure A.7: Fraction of loans on payment holidays



Source: European DataWarehouse. Calculations and graph provided by Virginia Gianinazzi.

## References (Appendix)

- Accornero, M., P. Alessandri, L. Carpinelli, and A. M. Sorrentino (2017): *Non-performing loans and the supply of bank credit: evidence from Italy*, Bank of Italy Occasional Paper No. 374.
- Acharya, V. V., S. T. Bharath, and A. Srinivasan (2007): "Does industry-wide distress affect defaulted firms? Evidence from creditor recoveries", *Journal of Financial Economics* **85**(3), 787-821.
- Ari, A., S. Chen, and L. Ratnovski (2020): *The dynamics of non-performing loans during banking crises: a new database*, ECB Working Paper No. 2395.
- Balgova, M., M. Nies, and A. Plekhanov (2016): *The economic impact of reducing non-performing loans*, EBRD Working Paper No. 193.
- Fischetto, A. L., I. Guida, A. Rendina, G. Santini and M. Scotto di Carlo (2019): *Bad loan recovery rates in 2018*, Bank of Italy Notes on Financial Stability and Supervision No. 18.
- Gourinchas, P.-O., S. Kalemli-Özcan, V. Penciakova and N. Sander (2020): *COVID-19 and SME Failures*, NBER Working Paper No. 27877.

---

This paper discusses policy implications of a potential surge in NPLs due to COVID-19. The study provides an empirical assessment of potential scenarios and draws lessons from previous crises for effective NPL treatment. The paper highlights the importance of early and realistic assessment of loan losses to avoid adverse incentives for banks. Secondary loan markets would help in this process and further facilitate bank resolution as laid down in the BRRD, which should be upheld even in extreme scenarios.

This paper was prepared by the Economic Governance Support Unit (EGOV) at the request of the Committee on Economic and Monetary Affairs (ECON).

---