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Policies in support of lending following the coronavirus (COVID-19) pandemic

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Contents

Abstract

This paper looks at the impact of mitigation policies implemented by supervisory and macroprudential authorities as well as national governments in the euro area during the coronavirus (COVID-19) pandemic to support lending to the real economy. The impact assessment concerns joint, and individual, effect of supervisory measures introduced by the ECB Banking Supervision, a reduction in macroprudential buffers put forward by national macroprudential authorities, and public moratoria and guarantee schemes. The analysis has been conducted in the first half of 2020, in a situation of high uncertainty about how the crisis will develop in the future. Against this backdrop, it proposes a method of addressing such uncertainty by assessing the impact of policies across a full range of scenarios. We find that the supervisory, macroprudential and government policies should have helped to maintain higher lending to the non-financial private sector (around 5% higher than lending in the absence of policy measures) and, in particular, to non-financial corporations (12% higher than lending in the absence of policy measures), preventing further amplification of the recession via the banking sector. The national and supervisory and macroprudential actions have reinforced each other, and have been jointly able to affect a broader share of the banking sector.

JEL Codes: E37, E58, G21, G28

Keywords: COVID-19, impact assessment, banking sector, real-financial feedback mechanism

Executive summary

The 2020 coronavirus (COVID-19) pandemic and the containment measures taken to halt the spread of the disease entail substantial economic costs. Although stay-at-home requirements and workplace closures are highly effective in curbing both infections and deaths, they interrupt production and break supply chains. The severity of the crisis in terms of the fall in GDP, increased unemployment, decreased investment and the number of firms defaulting could, potentially, be further exacerbated by the banking sector and a negative feedback loop between the contraction in economic activity and a curtailing of bank lending.

In response to the above concerns, supervisory, macroprudential authorities, and governments have taken large-scale action in order to mitigate the effects of the COVID-19 pandemic on real economies and banking systems. These policies include capital relief measures put forward by ECB Banking Supervision, the loosening of macroprudential policies by national authorities, public moratoria and guarantees, and supervisory flexibility which allows banks to benefit from the two latter measures. This paper assesses the joint and individual impact of these polices, focusing mostly on their impact on lending and GDP. As a secondary goal, the paper also discusses the implications for bank solvency, profitability and asset quality.

The policies have a strong positive effect on bank lending and GDP. In cumulative terms, for the period 2020-22, lending to the non-financial private sector is expected to be around 5% higher. The segment benefiting the most is non-financial corporations (NFCs), for which the impact on lending is around 12%. The largest contribution to stronger lending comes from public guarantee policies – these increase lending to NFCs by around 8%. Stronger lending translates into GDP growth which is about 0.6 percentage point higher in cumulative terms.

The impact on lending is amplified through interactions between policies. Supervisory and macroprudential measures aimed at lowering banks' capital targets combined with profit distribution restrictions strengthen bank capitalisation, which in turn positively affects the ability of banks to provide funds to the real economy. This is important for the functioning of public guarantee policies, as these will only be effective if banks are in a position in which they are willing and able to increase loan supply. Our analysis shows an increased impact of public guarantees on lending when guarantee policies are combined with supervisory measures.

Policy measures have a positive effect on the share of non-performing assets and bank profitability. By postponing the recognition of losses (as in the case of public moratoria), by reducing provisioning rates (as in the case of public guarantees) and, finally, by accelerating economic recovery, the policies reduce credit losses by around €20 billion in cumulative terms, depending on the scenario considered. The gains increase with the severity of the scenario as credit losses would be larger in more adverse economic conditions if the policies were not in place. Lower credit losses contribute to banks' return on assets (ROA) being about 0.03 percentage

points higher. All these measures together result in a 0.5 percentage points lower non-performing loan (NPL) ratio in 2022.

1 Introduction

The spread of the coronavirus COVID-19 and the introduction of lockdown measures related to the outbreak represent a severe real-economic shock. Economies all over the world experienced negative economic growth in the first half of 2020. This period has also featured a high degree of uncertainty regarding the timescale of economic recovery and future developments, which have become strongly associated with the evolution of the pandemic and the possible reestablishment or reinforcement of lockdown measures.

The shock to the real economy could have been further exacerbated by the banking sector. COVID-19 developments could have a negative bearing on bank profitability through larger credit losses and lower income generation. As these would put pressure on bank capital, banks could respond by cutting loan supply, especially when the deterioration of capital combined with an uncertain economic outlook. A contraction in loan supply and limited availability of funds to the real economy could amplify the effects of the initial shocks caused by the spread of the disease and the lockdown measures.

In response to the above concerns, policymakers introduced ample policy measures to mitigate the negative implications of COVID-19 shocks. The ECB's monetary policy response included the pandemic emergency purchase programme (PEPP), a new series of targeted longer-term refinancing operations (TLTROs) or adjustments of collateral requirements to allow the national Additional Credit Claim frameworks to account for the various national guarantees (Lagarde, 2020). The ECB's supervisory response included allowing banks to operate below the level of capital defined by the Pillar 2 Guidance, profit distribution restrictions, and the easing of provisioning requirements within the IFRS9. National macroprudential authorities released countercyclical capital buffers. Generous public guarantee policies were put in place across almost all euro area countries, in order to at least partially remove the credit supply constraints for NFCs, as losses from guaranteed loans are largely covered by the government. In addition, public moratoria were introduced for both NFCs and households, enabling them to postpone debt repayment for a certain period.

This paper studies the combined effects of supervisory, macroprudential and government policies (including interaction effects). Policies of ECB Banking Supervision, macroprudential authorities and national governments are assessed via the lenses of a semi-structural model in an *ex ante* fashion, reflecting the fact that the analysis had been conducted still in the first half of 2020, before early economic data on the effects of lockdowns became available. The policies are assessed collectively, but are also broken down into individual measures, to allow the discussion of their interactions and complementarities. Lastly, although the main emphasis is put on the effects of policies on lending and economic output, the paper also provides a comprehensive assessment of policies' impact on bank solvency, profitability and asset quality.

The impact assessment is performed using the ECB's macro-micro model (Budnik et al., 2020). The Banking Euro Area Stress Test (BEAST) model is a large-scale semi-structural model containing 19 euro area economies and over 90 banks. It combines bank reaction functions with detailed modelling of their balance sheets. A set of behavioural equations predict banks' behaviour in terms of profit distribution, lending, interest rates and adjustments to liability structure in response to economic conditions and regulatory capital requirements. The native version of the model can track the transmission mechanism of capital release measures and profit distribution restrictions. For the purpose of this analysis, the model has been extended to incorporate in high level of detail public moratoria and guarantees. The availability of public guarantees is a policy variable, but their use is an outcome of endogenous model mechanisms. Monetary policy, represented by the short-term interest rate and the size of ECB balance sheet, that both follow the endogenous Tylor rule type reaction functions.

To account for uncertainty regarding future economic trends, the impact of policies is assessed against three types of scenarios. The first half of 2020 witnessed an unpreceded level of uncertainty about the depth and the duration of economic recession. To address this uncertainty, we consider three narratives: (i) a relatively quick recovery (starting, already, in the second half of 2020) dubbed as a V-shaped recession, (ii) a slower recovery potentially interrupted by a second wave of the COVID-19 pandemic in the second half of 2020 i.e. a U-shaped recession, and (iii) prolonged period of lockdowns causing severe economic contraction i.e. an L-shaped recession. Scenarios closest to each of these narratives are selected from the full distribution of plausible scenarios relying on the historical distribution of structural macroeconomic shocks and taking model parameter uncertainty into account. They are then pulled together in three scenario groups and we will report the mean outcome for several scenarios representing the same economic narrative.

The three scenario narratives express increasing degree of pessimism about economic activity in 2020-2022. The first, and least severe, V-shaped set of scenarios is commensurate with slightly negative GDP growth in 2020-22 on a cumulative basis. The U-shaped scenarios result in a cumulative GDP drop of -8% in the same period. Finally, under the L-shaped scenario GDP contracts by 20% in cumulative terms.

This paper contributes to the emerging literature on the economic impact of the COVID-19 pandemic and the related mitigation policies. Hasan et al. (2020) consider the impact of the COVID-19 pandemic on lending conditions. They document increasing loan spreads for lender and borrowers most exposed to COVID-19 or policies aiming at containing the pandemic. Altavilla et al. (2020) study the effectiveness of TLTRO and buffer release policies in the euro area. They conclude that monetary policy supported bank-level lending and the release of capital buffers added to this effect. Our paper aims at advancing the understanding of the impact of economic policies during the COVID-19 pandemic along four dimensions. First, it is the first analysis of supervisory and macroprudential policies that inspects not only buffer releases, but also changes to the treatment of market risk, IRFS 9 standards and profit distribution restrictions. Second, it considers supervisory and

macroprudential policies jointly with government policies, which is important as the size of public guarantees programmes amounted to over 25% of annual GDP in several countries. Third, the impact of policies is considered in a modelling framework that is close to general equilibrium analysis, which is best suited to assess the aggregate lending and broader economic impact of policy measures. Fourth, the modelling framework allows for assessing the role of individual transmission channels.

The paper is structured as follows. Section 2 discusses the policies introduced by supervisory and national authorities. Section 3 explains the modelling approach. Section 4 presents the three scenario narratives and discusses their impact on bank lending, solvency and profitability in the absence of any policy measures. Section 5 presents the impact of a total policy package. Section 6 presents selected results in more depth to enrich our understanding of the main transmission channels. Section 7 concludes with some final remarks and policy implications.

2 Supervisory, macroprudential and government policies in 2020

The paper focuses on supervisory, macroprudential and government policies announced before the end of June 2020. This cut-off date represents the original ambition of the paper, to assess policy intentions and information as available in the first half of 2020. This notwithstanding, the COVID-19 pandemic and lockdown measures still last at the moment of the revision of this paper at the beginning of 2021. Many of the policies listed in this chapter have been extended, which we note if applicable.

On 12 March the ECB announced its first capital release package[1]**.** This announcement allowed banks directly supervised by the ECB to (i) operate below the level of capital defined by the Pillar 2 Guidance (P2G) and (ii) use capital instruments that do not qualify as Common Equity Tier 1 (CET1) capital to meet the Pillar 2 Requirements, thereby bringing forward a measure from the revision of the Capital Requirements Directive (CRD V)[2] that was initially scheduled to come into effect in January 2021. The communication also encouraged national authorities to release, when applicable, existing CCyB buffers.

On 20 March the ECB introduced another package, on this occasion concerning the treatment of non-performing loans (NPLs) and allowing banks to benefit fully from the moratoria and guarantees put in place by the public authorities[3]**.** First, in relation to all exposures that will benefit from government guarantees issued in the context of public interventions relating to the COVID-19 pandemic, the ECB committed to exercise flexibility with regard to the classification of debtors as unlikely to pay, as in the case of exposures covered by legally imposed payment moratoria related to the pandemic. Second, loans which become non-performing and are under public guarantee will benefit from preferential prudential treatment in terms of supervisory expectations regarding loan loss provisioning. Finally, supervisors will deploy full flexibility when discussing the implementation of NPL reduction strategies with banks, taking the extraordinary nature of current market conditions into account.

In a later letter to the banks under its supervision, the ECB has provided further guidance aimed at mitigating volatility in banks' regulatory capital and financial statements stemming from IFRS9 accounting practices.[4] The letter refers to the use of forecasts that exclude excessively procyclical assumptions in expected credit loss estimations. In particular, the ECB recommended that institutions: (i) avoid making excessively procyclical assumptions in their IFRS 9 models to determine their

1 ECB Banking Supervision provides temporary capital and operational relief in reaction to coronavirus.

2 Directive 2013/36/EU of the European Parliament and of the Council of 26 June 2013 on access to the activity of credit institutions and the prudential supervision of credit institutions and investment firms, amending Directive 2002/87/EC and repealing Directives 2006/48/EC and 2006/49/EC (OJ L 176, 27.6.2013, p. 338).

3 ECB Banking Supervision provides further flexibility to banks in reaction to coronavirus.

4 IFRS 9 in the context of the coronavirus (COVID-19) pandemic.

provisions; (ii) give greater weight, within the framework provided by international accounting standards, to long-term macroeconomic forecasts when estimating expected credit losses; and (iii) take ECB publications on macroeconomic projections into consideration when applying IFRS 9 provisioning policies.

On 27 March the ECB asked banks not to pay out dividends until 1 October 2020. This recommendation was issued with the aim of boosting banks' capacity to absorb losses and to further support lending to households, small businesses and corporates during the COVID-19 pandemic. On 27 May the European Systemic Risk Board recommended that the relevant authorities should extend this measure until at least 1 January 2021[5] – this was echoed by the corresponding extension of the restrictions by the ECB on 28 July.[6] [7]

Finally, on 16 April the ECB announced the temporary relief of the capital requirements for market risk.[8] The qualitative component of the market risk multiplier which is set by supervisors is reduced by currently observed increases in the quantitative component (the quantitative component of the market risk multiplier may rise when market volatility has been higher than the bank's internal model predicts).

ECB supervisory actions have been reinforced by the European Banking Authority (EBA). On 2 April 2020, the EBA published its Guidelines[9] clarifying which legislative and non-legislative moratoria do not trigger forbearance classification, while in all other cases the assessment must be done on a case-by-case basis. Furthermore, the guidelines supplement the EBA's Guidelines on the application of the definition of default[10] regarding the treatment of distressed restructuring. In particular, the guidelines clarify that the payment moratoria do not trigger forbearance classification and the assessment of distressed restructuring if they are based on the applicable national law or on an industry or sector-wide private initiative agreed and applied broadly by the relevant credit institutions.

On the 22 April the EBA published further guidance[11] on the use of flexibility in relation to the COVID-19 pandemic, which included a temporary increase in the additional valuation adjustments aggregation (AVA). To this end, the AVA factor was recalibrated to 66% for the core approach. The stated objective was to mitigate the excessive procyclical effect of the current prudent valuation aggregation.

The macroprudential authorities in the euro area revised their countercyclical capital buffer (CCyB) policies as early as March 2020. Belgium, Germany, France, Ireland and Lithuania lowered their CCyBs to 0% (or withdrew planned increases). In

5 Recommendation of the ESRB of 27 May 2020 on restriction of distributions during the COVID-19 pandemic.

6 ECB extends recommendation not to pay dividends until January 2021 and clarifies timeline to restore buffers.

7 Following the cut-off date of this analysis, profit distribution restrictions have been further extended for SSM banks until September 2021 on 15 December 2020.

8 ECB Banking Supervision provides temporary relief for capital requirements for market risk.

9 EBA regulation and policy.

10 EBA Guidelines on the application of the definition of default.

11 EBA provides further guidance on the use of flexibility in relation to COVID-19 and calls for heightened attention to risks.

addition, between March and April Estonia, Finland and the Netherlands lowered their structural buffers (systemic risk buffer or other systemically important institution buffer) while Ireland, Lithuania and Portugal deferred the introduction of structural buffers.[12]

On 19 March 2020 the European Commission adopted an amendment to state aid rules. The state aid rules were first amended on 3 April 2020[13] in order to provide more public support for researching, testing and producing products relevant to the fight against the COVID-19 outbreak. The amendment, known as Temporary Framework, also sought to protect jobs and offer further support to the economy. On 8 May 2020 the Commission adopted the second amendment extending the scope of Temporary Framework to include recapitalisation and subordinated debt measures.[14] The Temporary Framework stipulates that five types of aid can be granted by Member States:

- direct grants, selective tax advantages and advance payments;
- state guarantees for loans taken out by companies from banks;
- subsidised public loans to companies;
- safeguards for banks which channel state aid to the real economy;
- short-term export credit insurance.

Along with the second amendment, Temporary Framework was set to be in place until the end of December 2020.

Following the adoption of state aid Temporary Framework, Member States have implemented a broad range of support measures. These measures include, in many instances, some form of moratorium on the payment of credit obligations, with the aim of supporting the short-term operational and liquidity challenges faced by borrowers. As these moratoria are adopted in practice in various forms across jurisdictions, the EBA clarified several aspects in relation to the use of public and private payment moratoria (i.e. the legislative and non-legislative proposals) in its statement of 25 March 2020.[15]

Already at the beginning of March 2020 the national authorities of several euro area countries also announced guarantee schemes for all new loans and credit lines. Member States can provide state guarantees which ensure banks continue to provide loans to the business customers who need them. These state guarantees can cover loans to help businesses address immediate working capital and investment needs. These programmes have been introduced to mitigate the consequences of the COVID-19 pandemic, support businesses and safeguard funding for families and the self-employed, and have been primarily targeted at viable non-financial businesses

12 ESRB Policy measures in response to the COVID-19 pandemic.

13 European Commission amendment to state aid rules.

14 The Temporary Framework was later augmented on 29 and 19 October 2020, and last on 28 January 2021. These extensions do not enter our analysis but they effectively prolonged the Temporary Framework until end 2021.

15 EBA provides clarity to banks and consumers on the application of the prudential framework in light of COVID-19 measures.

and the self-employed. The Spanish government, amongst other measures, has announced a guarantee scheme for a maximum amount of €100 billion, which will be divided into different tranches. In Germany, depending on revenue and firm size, companies can receive loans of up to €800,000. The French government announced a scheme of €300 billion, only available for new loans granted between 16 March 2020 and 31 December 2020. While other COVID-19 measures are targeted at self-employed individuals, small and medium-sized enterprises or particular sectors, the guarantee scheme is also available to larger businesses, in any sector, which have been negatively impacted by the COVID-19 pandemic.

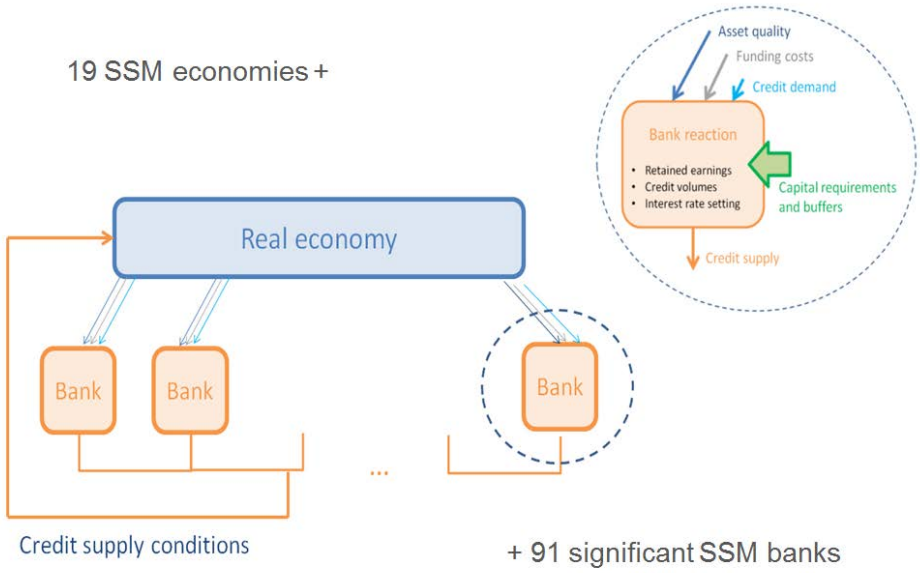
3 Methodology

3.1 The model

The exercise employs a large-scale semi-structural model linking macro and bank-level data. The model captures the heterogeneous behaviour of individual banks and includes interactions between the financial sector and the real economy.[16] It covers 91 of the largest euro area banks and their individual balance sheets and profit and loss accounts, and 19 euro area economies. The sample of banks covers around 65% of the euro area banking sector in terms of total assets.

The model examines the dynamic adjustments made by banks and economies. The approach focuses on modelling banks' adjustments of loan and other asset volumes accompanied by behavioural responses in respect of their liability structures (see Figure 3.1). It also projects the evolution of loan pricing, funding costs and profit distribution policies in line with empirical bank-level evidence. Finally, the model aggregates the impact of these bank individual responses on the credit supply and lending rates to the real economy, thus capturing the dynamic interdependencies of aggregate real and financial variables.

Figure 3.1
Schematic illustration of the macro-micro BEAST



Bank assets are included in the form of a sectoral and geographical breakdown to reflect heterogeneous exposures to macroeconomic shocks. The model accounts for individual banking book structures, distinguishing between bank

[16] For a more detailed description of the model see Budnik et al. (2020) and the earlier example of its use in Budnik et al. (2019).

exposures to sovereigns, the financial sector, the NFC sector, households backed by real estate, and household loans for consumption purposes. For lending to the non-financial private sector the model separates exposures by country of exposure. In addition, for each of these portfolios the model replicates the IFRS 9 impairment stages with endogenous transition rates and the changes in risk weights conditional on macroeconomic developments. Credit risk weights are modelled separately for the advanced, foundation internal models and the standardised approach. Banks may also adjust their loan volumes within and across lending segments in response to loan demand conditions and depending on their own capital positions, profitability or asset quality.

The liability side of the model distinguishes between equity, customer deposits and other debt funding. The evolution of term deposits from households, term deposits from NFCs, sight deposits from households, and sight deposits from NFCs i links mainly by general economic conditions and, to a lesser degree, the deposit margins offered by individual banks. It is assumed that banks fill the funding gap between equity and customer deposits, first through deposits from sovereigns and other financial institutions and, after that, through wholesale funding. The cost of wholesale funding depends on endogenous maturity choices and the bank leverage ratio. This channel captures the effects of higher capitalisation on bank funding costs and the impact of its counterbalancing capacity on profitability.

With regard to profit and loss, the framework dynamically models net interest income, loan loss provisioning and net fee and commission income. Bank-level interest rates for new lending and deposit rates depend on economic conditions, banks' situation and monetary policy rates. Other components of the profit and loss statement, including dividend income, follow simple dynamic rules which link them, for instance, to the evolution of banks' total assets. The dynamics of trading book assets and market risk capital surcharges, dividend holdings of banks, and operational risk capital charges follow similar simplified dynamics. Banks adjust their profit distribution policies to retain their management buffer[17] over regulatory requirements including Pillar 2 Requirements (P2R) and Pillar 2 Guidance (P2G). The model assumes, conservatively, that banks do not tap markets to issue fresh equity and, accordingly, capital will be endogenously generated by retained profits.

The macroeconomic block of the model can be described as a reduced-form multi-country setup. The dynamics of single euro area economies are represented by a structural vector autoregressive (VAR) model estimated in a panel setup. The macro block involves 12 endogenous variables per economy and 12 structural shocks, including aggregate demand, aggregate supply, house price shocks and two monetary policy shocks, namely one for standard and one for unconventional monetary policies. An additional block of cross-country trade spillovers links countries' import volumes to foreign demand variables, and their export prices to foreign price variables. The set of

[17] The management buffer varies over time and depends on bank characteristics such as the structure of their liabilities (with flightier forms of funding empirically implying a higher management buffer), the revenue structure (a larger contribution of relatively less variable net fee and commission income (NFCI) is linked to lower management buffers), NPLs (a greater proportion of non-performing exposures will lead to larger internal buffers) and a bank's size (the larger a bank's balance sheet, the lower the management buffer).

endogenous variable includes monetary policy interest rate, representing the standard monetary policy, and the ECB asset size, which is coupled with unconventional monetary policy.[18]

Structural shocks in country VARs are used to simulate potential outcomes under many positive and adverse scenarios. The stochastic simulations delivering alternative scenarios involve multiple drawing from the joint distribution of structural shocks. These are jointly normally distributed with the variance-covariance matrix being estimated in parallel with country VaRs parameters. Furthermore, the simulations involve parameter uncertainty in respect of the SPVAR model by including several parameter draws from their posterior distributions.

3.2 Modelling the policies

Using the model, assessing the impact of capital release measures is a straightforward matter. P2R, P2G and macroprudential buffers are all included in the target capital ratio of a bank and, via this channel, affect its lending. The more banks dip into P2G and macroprudential buffers, the sharper the reduction in lending. Once banks fall below their P2R level they stop lending altogether. P2G and macroprudential buffers differ in terms of their impact on profit distribution, with only macroprudential buffers triggering maximum distributable amount restrictions. The release of P2G and macroprudential buffers is incorporated into the model by setting their bank-specific values to zero from the first quarter of 2020. The front-loading of changes in the composition of P2R is incorporated by reducing CET1 P2R requirements by around 40%, and Tier 1 requirements by 25%, with own funds' P2R requirements being unaffected. Profit distribution restrictions overwrite the endogenous bank-level rule by setting bank dividends to zero for a period when these restrictions remain binding.

The impact due to the change of the market risk multiplier and the AVA aggregation factor is calibrated based on Q4 2019 and Q1 2020 data. The estimated impact is conservatively assumed to be constant for the projected horizon, with the proviso that the positive effect of the market risk multiplier and the AVA aggregation factor on bank solvency could be greater if market risk was to increase sharply for the forecast horizon.

Changes in the treatment of IRFS 9 parameters are incorporated in a simplified manner, emphasising their increased over-the-cycle component. In the model, transition rates, along with the loss-given-default (LGD) and loss rate (LR) parameters of each bank are governed by a set of empirical equations estimated on historical data. The parameters will respond to changes in the economic situation and, under the adverse conditions considered in the analysis (transition rates to Stage 2), LGDs and LRs are expected to increase, reflecting the deterioration of asset quality. Policies related to IRFS 9 standards are captured by increasing the degree of stickiness of these parameters until the end of 2020. This means that in the presence of

[18] This interpretation follows from the structural identification of shocks following Budnik and Bochmann (2017) and references therein.

IRFS 9-related policies these parameters are slow to react to economic conditions, with a lower share of loans reclassified from Stage 1 to Stage 2, and lower provisioning rates applying to loans in all stages (see also Appendix 9, Section 9.2).

The impact of national moratoria is modelled along similar lines as that of IRFS 9 treatment, acknowledging the differences between national regimes with regard to the duration and sectoral scope of the policies. National moratoria are assumed to affect transition rates to Stage 3 and to slow down the recognition of corresponding credit losses. Bank-level transition rates to Stage 3 become less dependent on economic conditions for the duration of the moratoria, e.g. if national moratoria imply a three-month delay in the recognition of losses, the transition rates will remain only marginally affected by economic conditions for a quarter. These assumptions are only introduced for market segments covered by the moratoria, distinguishing between household lending for housing, consumption, and corporate loans for SME and non-SME. The parameters relevant for the model calibration of national moratoria are summarised in Appendix 9 (Section 9.1).

The modelling of public guarantees facilitates a comprehensive assessment of their impact on risk-weighted amounts and profit and loss. Public guarantees are assumed to cover only newly issued loans. Two different country-specific parameters govern the share of new loans potentially eligible for guarantee programmes. One parameter establishes the share of eligible re-issued loans replacing loans maturing in 2020, while another establishes the share of eligible newly issued loans. The two parameters help to capture the differences between regimes, such as the full exclusion of the former type of loans from the guarantee programmes in Germany.[19] Loans granted against public guarantees are assigned lower risk weights, which are derived as the weighted averages of the risk weight that would be attributed to these loans in the absence of public guarantee programmes (the unsecured part of a loan) and the risk weight on sovereign exposures (the secured part).[20] The risk weight on the secured part of a guaranteed loan is proportional to the maximum fraction of loan value backed by public guarantees and national programmes. The parameters relevant for the model calibration of national guarantee programmes are summarised in Appendix 9 (Section 9.3).

The availability of public guarantees has a positive impact on the supply of corporate loans. The impact of public guarantees on loan volumes is captured by modifying the corresponding model equations. The corporate loan volume equations separate between supply-side and demand-side factors. Supply-side factors include, among other, banks' distance from their regulatory capital ratios, the evolution of sector specific NPLs and the relative risk weights attributed to corporate exposures.

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19 The share of non-replacement loans that can enter the guarantee programme is set at 50% for all countries (except for Germany, where it is set at 0), while the share of eligible replacement loans is set at 75%. A series of robustness checks validates the sensitivity of model outcomes to these values.

20 Transition rates and, accordingly, the point-in-time probability of default of the loans backed by public guarantees, are assumed to have the same transition rates that would characterise the same loans in the absence of guarantee programmes. This reflects the belief that the impact of public guarantees on default probability is ambiguous. On the one hand, loans eligible for public guarantee programmes should target sectors experiencing only temporary COVID-19-related problems (and which were solvent before 2020), which may suggest that their default probability will be lower than that of similar loans not covered by the programme. On the other hand, the availability of the programmes may reduce banks' incentives to screen eligible loans and, therefore, may increase moral hazard.

Reflecting the fact that guaranteed loans are attributed low risk weights and have an insignificant share of defaulted exposures, their availability will shift upward credit supply.

The lending impact of public guarantees is substantiated by an increased corporate loan demand. In the first quarters of 2020, corporates were seeking to meet their obligations from income which has fallen sharply due to the lockdown. The credit demand impact of credit guarantee schemes as well as the increased corporate liquidity demand has not been well captured by original model equations. Along with the latter, loan demand in 2020 should have weakened along with the deteriorating economic situation. The effect is therefore approximated by a set of country- and time specific dummy variables included in the re-estimated loan volume equations.[21]

The pricing of loans backed by guarantees takes account of the costs of a guarantee and reflects the intention of many governments to keep interest rates on loans backed by public guarantees low. It is assumed that banks intend to fully pass through guarantee premia to costumers. The final interest rate margin on new lending including the premium will evolve along with economic conditions but must remain below the interest rate margin of the corresponding corporate loans not back by guarantees. The guarantee costs are also deducted from banks' interest income.

The actual use of public guarantee programmes is an endogenous outcome of the model, although it is constrained by the duration and size of the national envelopes. The interplay of loan supply and loan demand fixes the volume of new loans that can be granted by a bank in a quarter. The proportion of these loans that is eligible for a guarantee programme is granted under the programme. The remaining loans can be granted outside the programme, although this is conditional on the bank reassessing their risk. The lending action is assumed to last until the end of the programme or until the funds made available by the governments are exhausted.

3.3 Looking at plausible scenarios

To reflect the high uncertainty relating to future economic developments, the policy assessment incorporates a range of plausible scenarios following a common narrative. The prevalent element of the current pandemic crisis is a sharp economic contraction in the first two quarters of 2020 due to the lockdown measures which were introduced at the time. The economic shutdowns are incorporated into the model by severe negative aggregate demand and supply shocks hitting the euro area economies as well as most global economies in a symmetrical manner.

The model is used to generate the full distribution of macroeconomic and bank-level outcomes. The distributions of model variables reflect both scenario and

[21] The reestimation of loan volume equations has been possible only at the end of 2020, when the paper has been revised. The initial approximation of the impact of liquidity seeking and public guarantee programs on loan demand had been based on the outside model difference-in-difference analysis of loan data available in 1-2Q 2020. The impact was assumed to be proportional to the difference-in-difference-in-difference (DIDID) between the growth rate of corporate loans in the first two months of 2020 (where Covid-19 risks were already pronounced) and in the next three months as corrected by the corresponding difference derived for household loans.

parameter uncertainty, with individual scenarios using different values of model parameters drawn from the estimated parameter distributions. Each scenario is then constructed as a sequence of structural shocks drawn from their distributions. Accordingly, each scenario path is consistent with the historical distribution of identified structural macroeconomic shocks and the model structure. Each macroeconomic scenario path (see Chart 3.1) affects the banking block differently and, therefore, also creates a distribution of solvency impacts on the banking block (see Chart 3.2).

Chart 3.1

Full distribution of euro area GDP dynamics

(growth rate (year-on-year), percentages)

All scenario paths follow adverse shocks in 2020

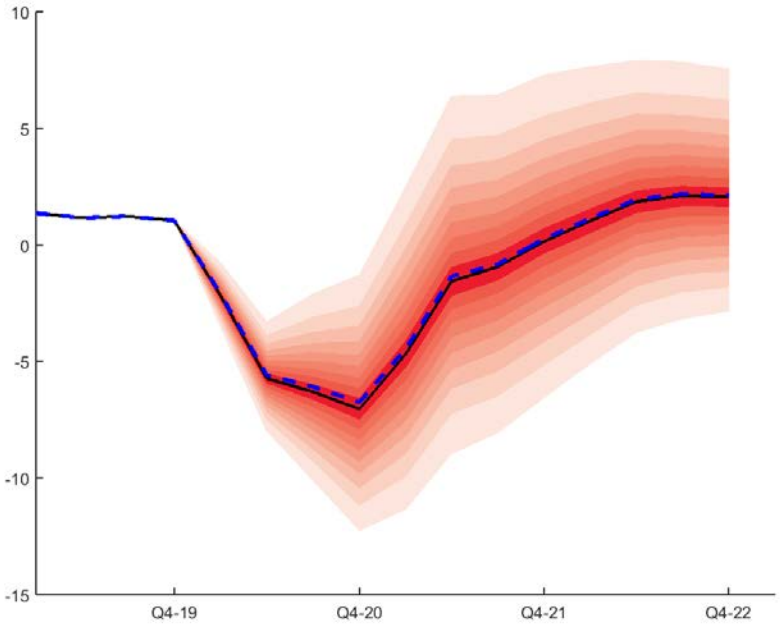
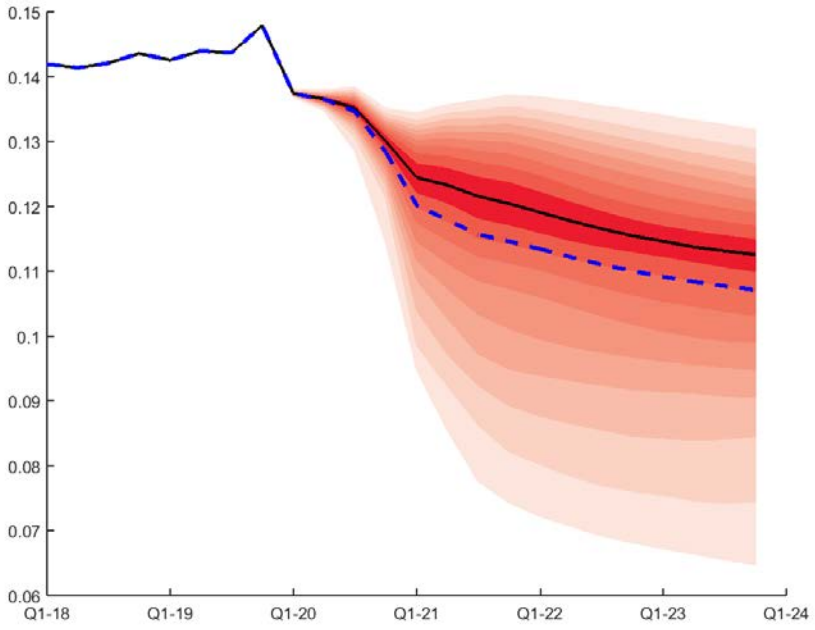


Chart 3.2

Full distribution of bank solvency levels

(CET1 ratio, decimals)

High range of scenario impacts on bank-level outcomes



Economic narratives provide a yardstick for selecting a subset of relevant simulations from the full distribution. The selection procedure includes a multidimensional non-parametric sorting algorithm which ranks scenario paths according to chosen criteria. In the case at hand, the criteria refer to phenomena linked to the pandemic, including the severity of the output contraction, the intensity of trade disruptions, the magnitude of adverse aggregate demand and supply shocks, asset and house price devaluations, increases in the level of unemployment and long-term interest rates, as well as accommodative standard and unconventional monetary policy. The procedure sorts all scenarios in the distribution, selecting out a subset of the highest ranked. The selected scenarios are all consistent with the same narrative, although they differ with regard to the evolution of variables not established by the narrative, and the exact timing or magnitude of shocks.[22]

Last, the scenarios corresponding with the same narrative are combined into mean paths (see Chart 3.3. for a graphical illustration of the approach). By deriving the mean we average out the differences between alternative paths while taking full account of uncertainty over factors not pinned down by the narrative.

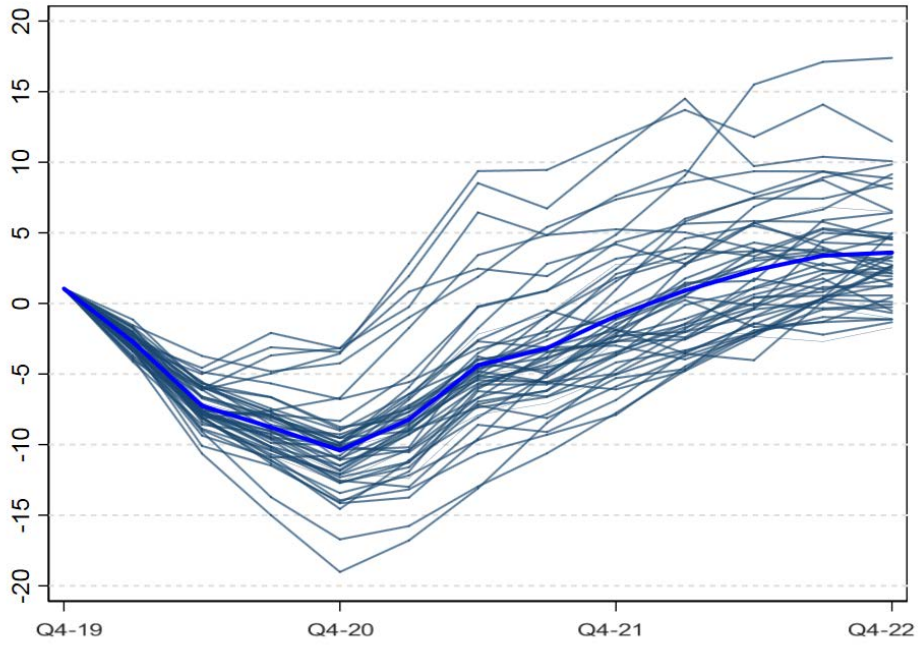
[22] This method of scenario selection is a good reflection of the uncertainty ingrained in many economic narratives. Narratives often focus on or tell us about a limited set of variables, e.g. a strong fall in house prices or the low interest rate environment, but they remain silent on developments in the rest of the economy.

Chart 3.3

Selected individual scenario paths within a U-shaped narrative

(GDP growth (year-on-year), percentages)

All scenario paths follow adverse shocks 2020



Note: The thick blue line represents the mean scenario path.

4 Looking ahead to an uncertain future

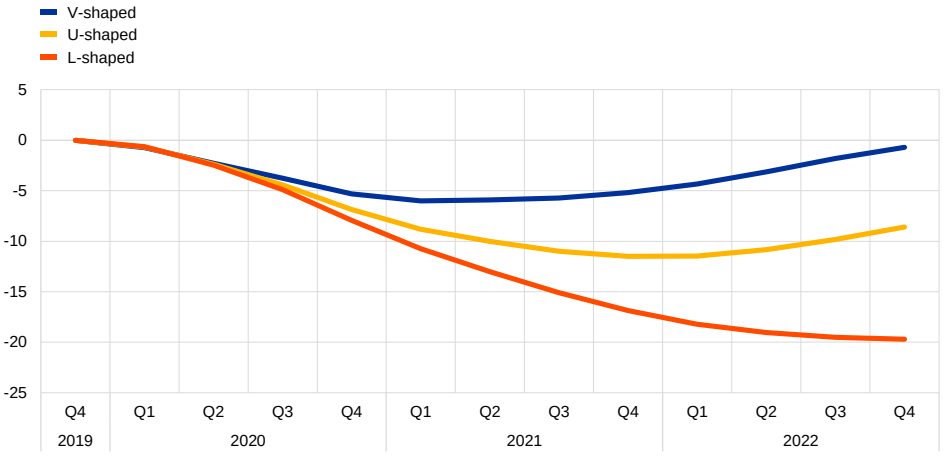
Due to high uncertainty over future economic developments, policy impact is assessed under three alternative scenario types. All these scenarios are tail events which reflect the materialisation of systemic risks originating with the COVID-19 outbreak. The scenarios differ in respect of the length and depth of the recession following the COVID-19 outbreak, also assuming a possible extension or reinforcement of the lockdown measures.[23]

Chart 4.1

GDP paths relative to 2019

(GDP growth, percentages)

To account for uncertainty over future economic paths, policy impact is assessed under three alternative scenarios



Note: The displayed paths exclude policy measures.

The first scenario is a V-shaped recession following the outbreak of the COVID-19 crisis. It is derived under the assumption of strong aggregate demand and aggregate supply shocks hitting the euro area and other advanced economies in the first and second quarters of 2020. The slowdown in economic activity is also reflected in a substantial trade reduction, drastically reducing import volumes and demand for exports compared with 2019 levels. These shocks are coupled with a decrease in asset prices, and a sudden, though not lasting, increase in sovereign bond spreads. It implies (after averaging of similar scenarios) a drop of euro area real GDP of 5% in 2020, and a gradual recovery in 2021 and 2022. Unemployment is expected to reach a peak (13%) in 2021.

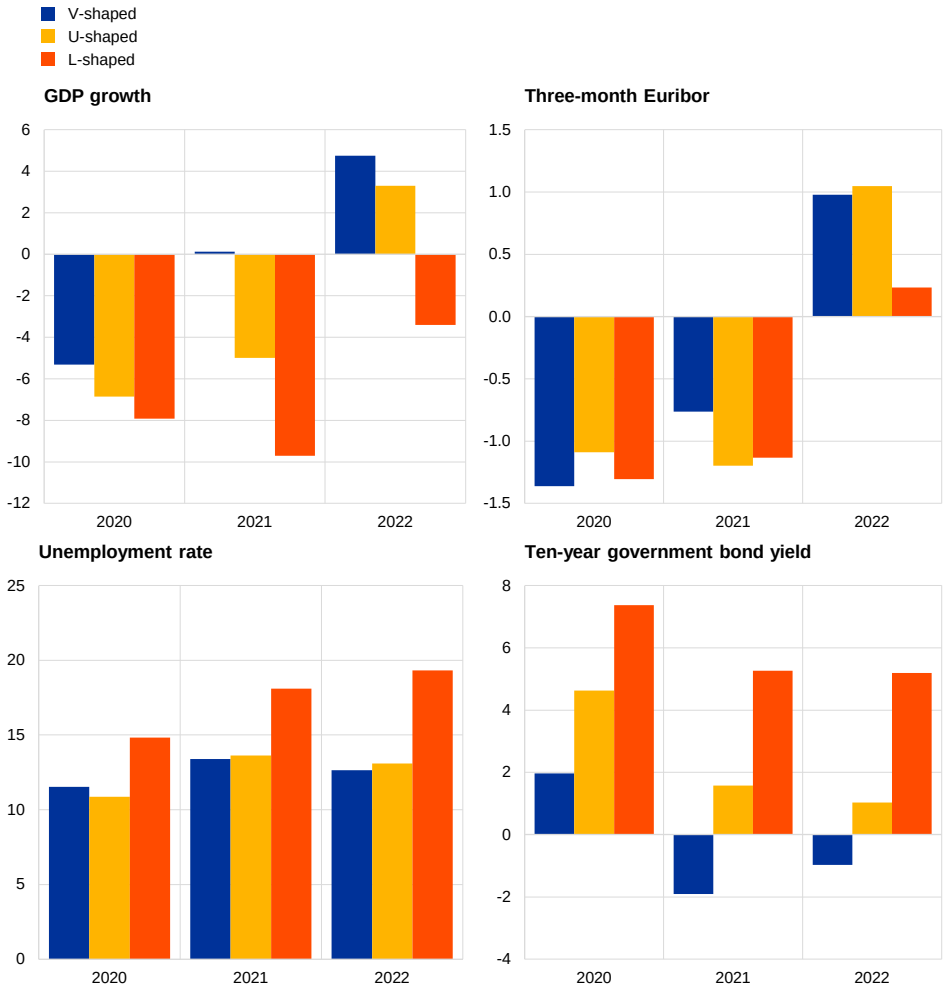
[23] The first scenario assumes a similar shape of recovery to the scenarios produced in the June and September ECB staff macroeconomic projections. In terms of cumulative drop, the V-shaped scenario designed here is comparable to the baseline scenarios (around 0%) and the U-shaped scenario is comparable to the severe scenarios (around -6%) of the ECB staff projections. The unemployment rate in both scenarios broadly follows the path of the ECB staff severe scenarios, assuming a peak of around 11-13% in 2021. The L-shaped scenario accounts for significantly more severe developments than those reflected in the scenarios of the ECB staff macroeconomic projections for the euro area.

The second scenario reflects a U-shaped recession. The same set of shocks as in the V-shaped scenario is followed by a second wave of negative aggregate demand and supply shocks in the second half of 2020. In the U-shared recession, euro area GDP declines by 7% in 2020 and 5% in 2021, starting to recover in 2022, when it grows by 3%.

Chart 4.2

GDP, unemployment and lending rates under the three scenarios

(percentages)



Note: The displayed paths exclude policy measures.

The last and the most severe scenario resembles an L-shaped recession. Lockdown measures are expected to stay in place for a prolonged period, with severe negative implications for economic activity in the longer run. GDP is expected to contract each year from 2020 to 2022 and to decrease by almost 20% in cumulative terms. Unemployment rate will continue to increase and is expected to reach 19% by 2022.

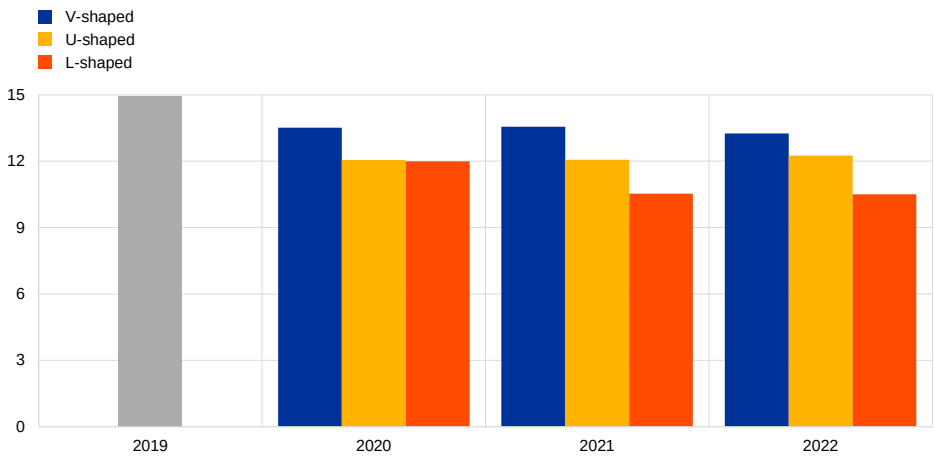
Bank solvency decreases proportionately to the relative adversity of the three scenarios. In the V-shaped scenario, the CET1 ratio drops from about 15% in 2019 to

13.5% in 2020 (see Chart 4.3). After that it remains relatively stable, reflecting a gradual return to normal economic activity. Compared with the V-shaped scenario, the CET1 ratio in the U-shaped scenario is about 1-1.5pp lower, standing at 12.5% in 2022. The effect of the prolonged recession in the L-shaped scenario is mainly reflected in 2021 and 2022, when the CET1 ratio is expected to be 10.5%, which is almost 2 and 3 percentage points lower than in the U and V-shaped scenarios respectively.[24]

Chart 4.3

CET1 ratio

(percentages)



Note: The displayed paths exclude policy measures.

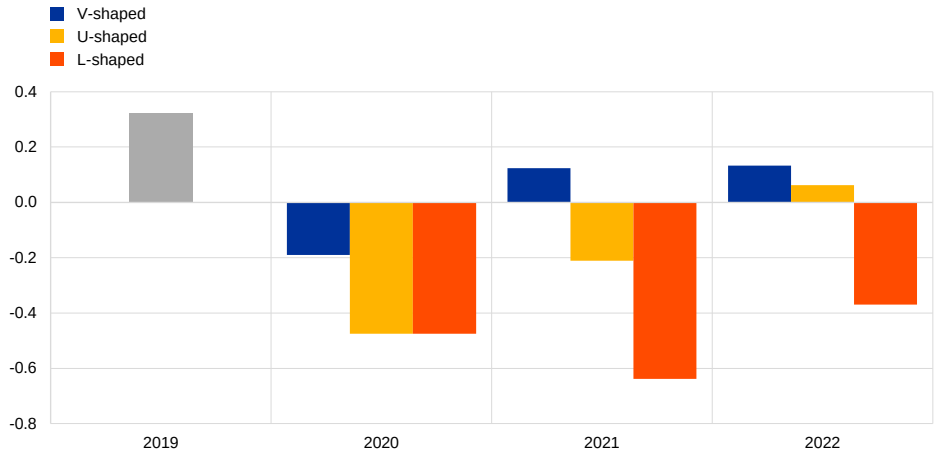
In all scenarios bank profitability turns negative in 2020. In the V-shaped scenario, the return on assets (ROA) is -0.2% in 2020 and recovers in the following years reaching around 0.1% in 2021 and 2022 (Chart 4.4). ROA is below -0.4% in the U- and L-shaped scenario in 2020. ROA slowly turns positive in 2022 in the U-shaped scenario, while it remains negative until the end of the horizion in the L-shaped scenario. The negative profitability outlook in the L-shaped scenario links to high credit losses deriving from an increase in sovereign bond yields, accompanied by a big increase in unemployment and plummeting GDP. In the period 2020-2022 credit losses amount, on average, to 1.1% of total assets in the L-shaped scenario, as opposed to 0.5 and 0.7% in the V and U-shaped scenarios respectively.

[24] For the sake of comparison, the COVID-19 Vulnerability Analysis estimated a decrease in the CET1 ratio to 12.6% in 2022 in the central scenario and to 8.8% in the severe scenario. Macroprudential stress test 2020 prepared on the back of the vulnerability analysis, which works under the dynamic balance sheet assumption and incorporates banks' responses to stress conditions gives a more favourable prediction of 13.6% for the CET1 ratio in the central scenario and 12.4% in the severe scenario. Both exercises include supervisory and fiscal relief measures taken in response to the coronavirus crisis.

Chart 4.4

Return on assets (ROA)

(percentages)



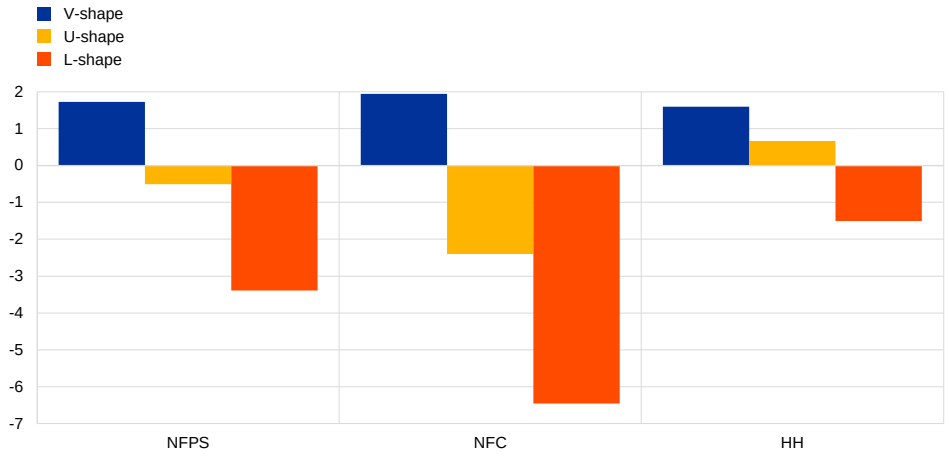
Note: The displayed paths exclude policy measures.

In the absence of any policy measures, loans are expected to contract in U- and L-shaped scenario. In cumulative terms, from end-2019 to end-2022, loans to the non-financial private sector would increase by 2% under the V-shaped scenario (see Chart 4.5). Although positive, this growth rate represents only one fifth of the observed growth rate in the preceding 3 years. In the U and L-shaped scenario loans to non-financial private sector are projected to contract in cumulative terms by 0.5% and 3.4%, respectively. There is a significant difference between the evolution of loans to NFCs and those to households. Corporate loans contract stronger, reflecting the greater sensitivity of corporate loan demand to economic conditions, and the reduced willingness of strained banks to lend to the corporate sector given that corporate exposures are subject to relatively high risk weights.

Chart 4.5

Loan evolution

(percentages)



Note: The displayed paths exclude policy measures. NFPS – non-financial private sector, NFC – non-financial corporates, HH – households.

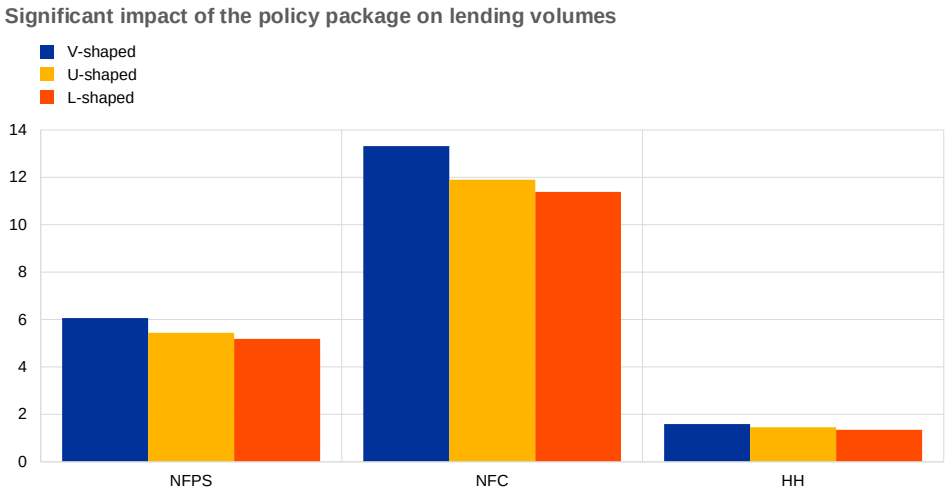
5 The impact of policies on lending, the economic outlook and bank vulnerability

The policies proposed during and following the COVID-19 lockdowns show a strong positive lending effect. Compared with lending in the absence of policy measures, lending to the euro area non-financial private sector is expected to be about 5-6% higher in cumulative terms when measured until end-2022 (see Chart 5.1). The impact is greatest for the V-shaped scenario. It is mostly thanks to released capital requirements and buffers which make banks less likely to fall below the regulatory thresholds and, therefore, better able to meet increased loan demand coming from faster economic recovery.

Chart 5.1

Impact on lending volumes

(difference in cumulative loan growth, percentage points)



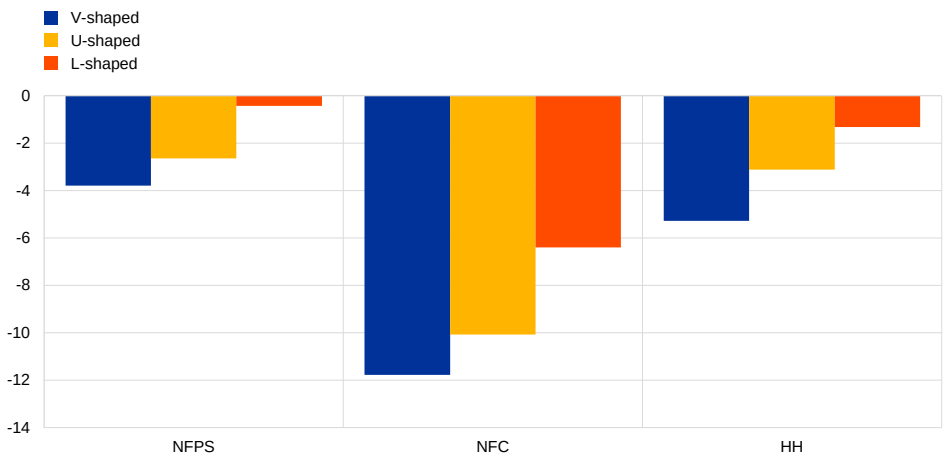
Looking across lending segments, the impact on lending volumes is by far the greatest for NFCs. In every scenario the cumulative gains exceed 10 percentage points, reaching 13 percentage points in the V-shaped scenario. The significant impact for NFCs lending relates mainly to the availability of public guarantees which specifically target this segment and simultaneously increase loan demand and banks' willingness to provide funds to corporates. Additionally, NFCs' loan supply exhibits higher sensitivity to changes in banks' regulatory capital targets[25], which reinforces the impact of supervisory measures for this lending segment. The latter effect is also reflected in a stronger decrease in lending rates for new loans for NFCs than they do for households (see Chart 5.2).

[25] One of the key drivers of loan supply in the model is bank solvency, which is measured as the distance from the regulatory capital target consisting of all the requirements and guidance. This sensitivity is guided by an empirical equation, which shows the strongest elasticity for NFCs, reflecting higher risk weights for these loans and their shorter-term, on average, maturity. For more details see Budnik et al (2020).

Chart 5.2

Impact on lending rates

(average difference in lending rate in the period 2020-22, basis points)

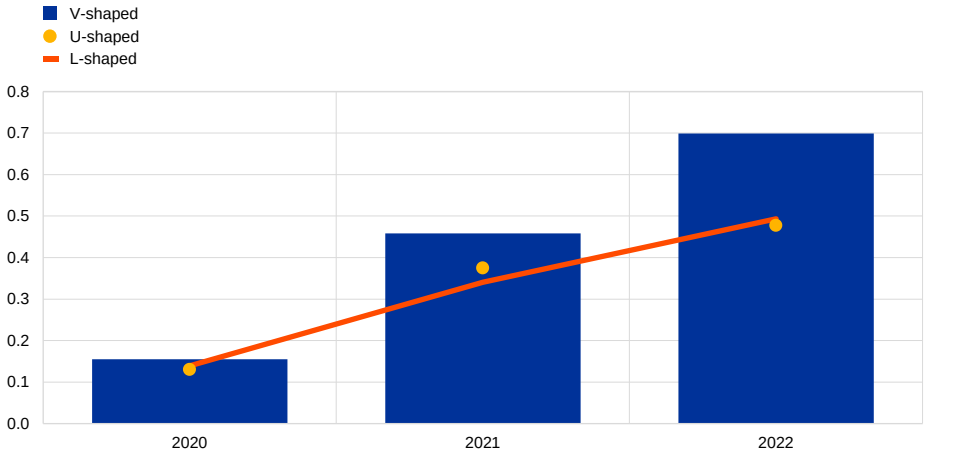


At the end of 2022, GDP growth is expected to be more than 0.6% higher in cumulative terms than under a no-policy adjustment scenario (see Chart 5.3). This follows from more favourable credit supply conditions. Even though the policy measures are introduced during the first half of 2020, the effect of the policy package on GDP growth is strongest in 2022, when annual GDP growth is 0.5-0.7 percentage points higher than in the absence of the policy package.

Chart 5.3

Impact on GDP

(difference in cumulative GDP growth, percentage points)



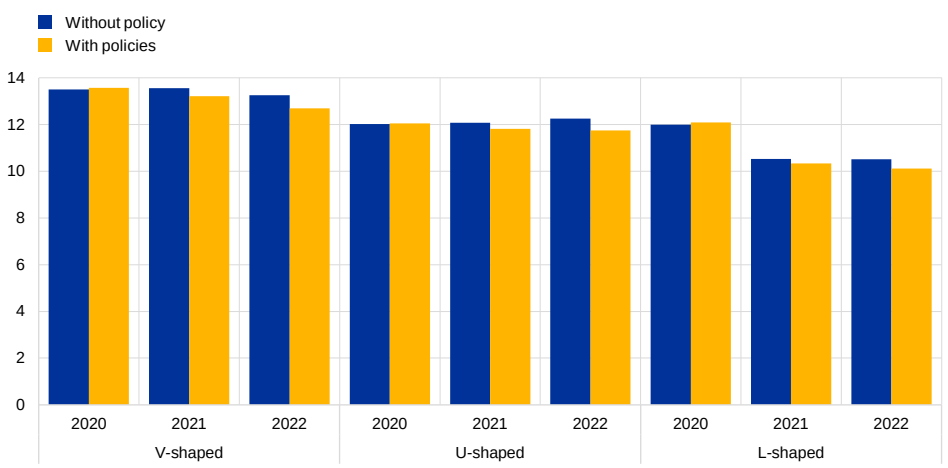
The policy impact on the CET1 ratio is very small. Across all the scenarios, the effect of policies on CET1 ratio is slightly positive in 2020, and moderately negative thereafter (see Chart 5.4). The initial increase in CET1 ratio relates mainly to profit

distribution restrictions that support the build-up of own funds. Later in the horizon, the positive effect of public guarantees on the denominator of the CET1 ratio dominates their positive impact on its numerator.

Chart 5.4

CET1 ratio

(percentages)

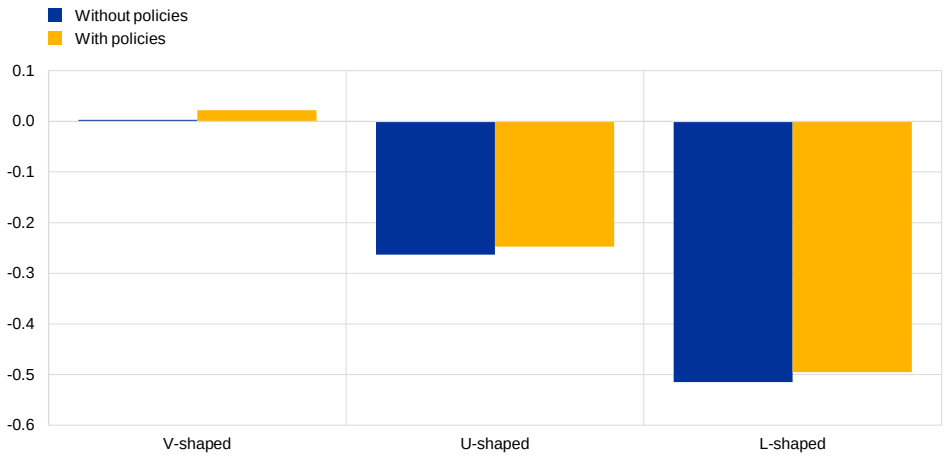


Policy measures have a positive effect on bank profitability. Even though average annual ROA remains very low or negative due to adverse economic conditions, it is higher with policy measures in place across all scenarios (see Chart 5.5). The positive impact of policies on ROA effect is similar across all the scenarios and amounts to around 0.03 percentage points. This impact is non-negligible and amounts to around 10% of the ROA realised in 2019.

Chart 5.5

Impact on ROA

(annual average, percentages)

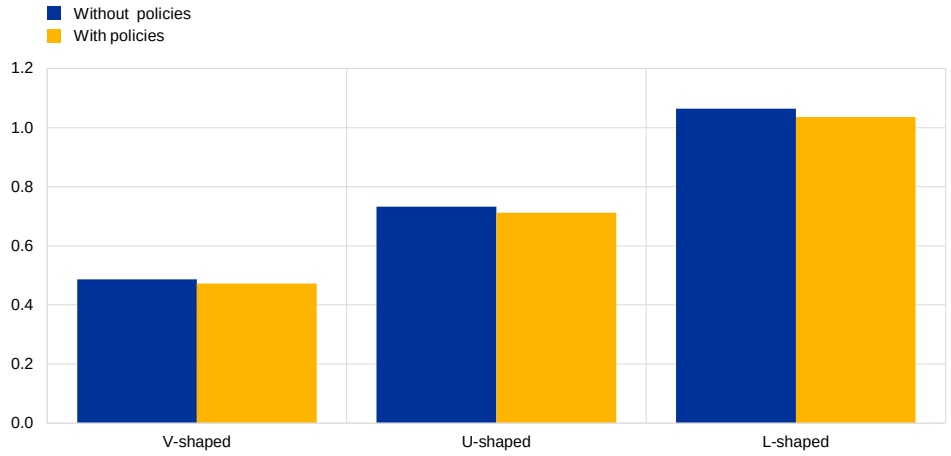


The positive effect on bank profitability mainly results from lower credit losses (see Chart 5.6). There are two complementary channels driving this effect. First, the positive impact of policies on lending and economic activity translates into lower transitions to default and a lower LGD. The former also affects the NPL ratio, which is in 2022 lower by about 0.5 percentage points when policies are in place (see Chart 5.7).[26] Second, the effect of a lower LGD is further intensified with a guarantee policy in place, since the guaranteed part of a loan bears significantly lower losses in case of default.

Chart 5.6

Credit losses with and without policies

(annual average, percentage of total assets)

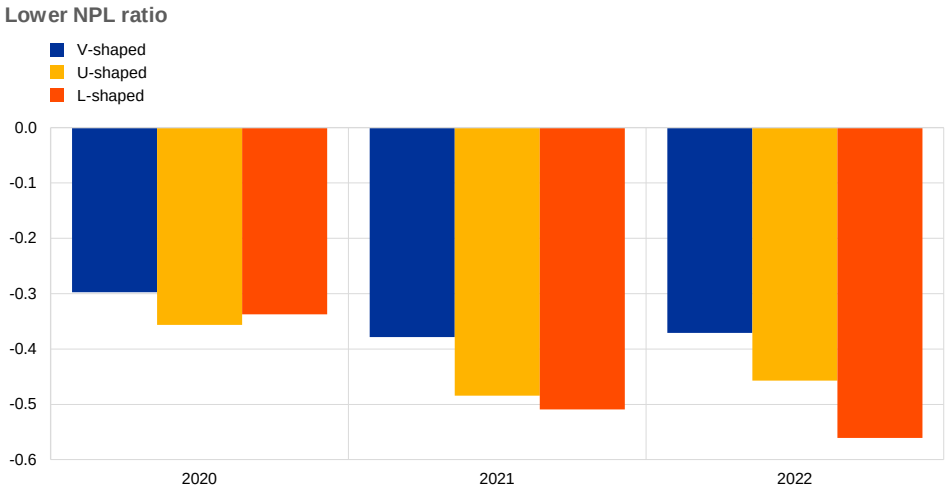


[26] The model incorporates the SSM coverage expectations for NPEs (Budnik et al, 2021), leading to the timely provisioning of defaulted loans. In the model, loans are subsequently written off when they are fully provisioned, which prevents a significant increase in NPL ratios, even in the absence of COVID-19 policies.

Chart 5.7

Impact on NPL ratio

(difference in NPL ratio, percentage points)



6 Selected results

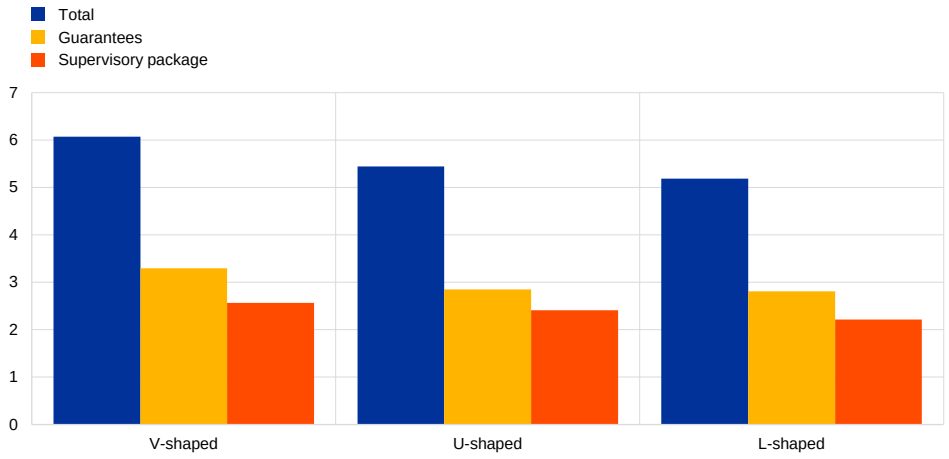
6.1 Distinguishing between the effects of supervisory and macroprudential measures versus public guarantees

Guarantees contribute the most to higher lending and GDP. In every scenario the cumulative impact of guarantees on lending to the non-financial private sector in the period 2020-2022 is around 3 percentage points (see Chart 6.1). The impact of the supervisory and macroprudential package, on the other hand, is somewhat lower, in the range of 2.2-2.5 percentage points. Both the impact of guarantees and that of supervisory and macroprudential measures, including the supervisory treatment of public moratoria, decrease with severity of scenario. This is due to the lower loan demand under more severe economic conditions that limits the potential use and impact of the guarantee package. The impact on GDP largely reflects differences in lending. Guarantees increase cumulative GDP growth by about 0.2-0.5 percentage points, whereas supervisory measures add an additional 0.2 percentage points on top of that (see Chart 6.2).

Chart 6.1

Cumulative lending impact of policy packages for the period 2020-22

(difference in cumulative loan growth, percentage points)

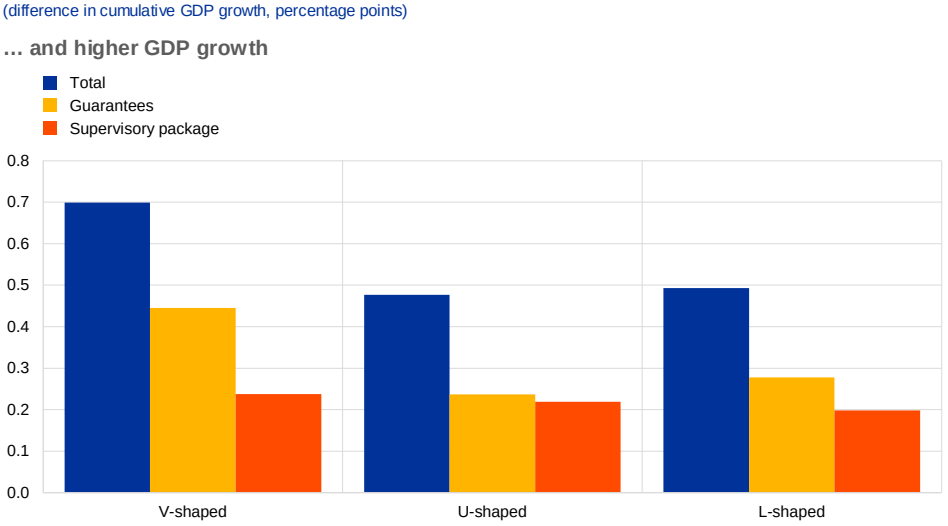


Note: "Total" includes both, supervisory and guarantee policies. Bars for "Guarantees" are derived by incorporating only guarantee policy, whereas the results for "Supervisory package" only include supervisory policy measures, i.e. release of P2G and CCyB by national authorities, frontloaded P2R revision, reduced IFRS9 procyclicality, dividend pay-out restrictions and moratoria.

Chart 6.2

Cumulative GDP impact of policy packages in the period 2020-22

(difference in cumulative GDP growth, percentage points)



Note: "Total" includes both, supervisory and guarantee policies. Bars for "Guarantees" are derived by incorporating only guarantee policy, whereas the results for "Supervisory package" only include supervisory policy measures, i.e. release of P2G and CCyB by national authorities, frontloaded P2R revision, reduced IFRS9 procyclicality, dividend pay-out restrictions and moratoria.

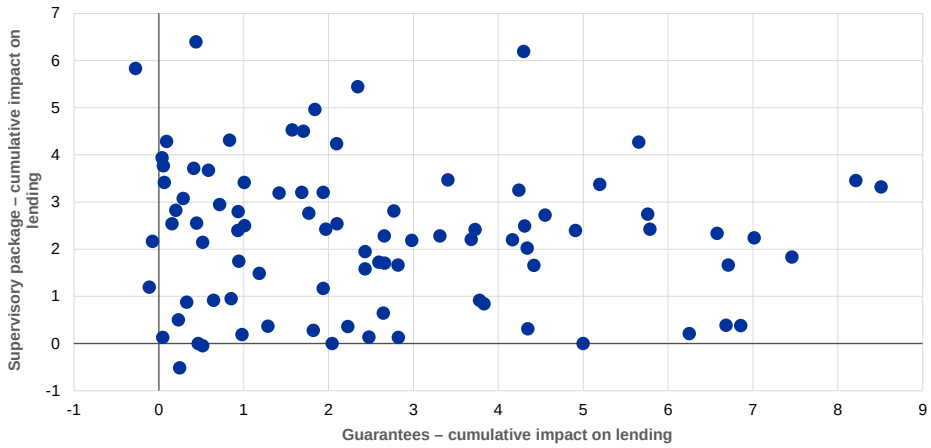
The individual lending effects of the supervisory package and the public guarantee policy are weakly associated. Chart 6.3 depicts, at bank level, the cumulative lending impact of the supervisory package (vertical axis) and public guarantees (horizontal axis). It should first be noted that the impact is positive for almost all banks for both policy packages. Guarantees contribute up to 8 percentage points to lending to the non-financial private sector, whereas the impact of supervisory measures is up to 6 percentage points. What is also clear from Chart 6.3 is that it is impossible to establish a specific association between the impact of the two policy packages. The lack of systematic relationship between the policy packages shows that their lending effect is largely complementary.

Chart 6.3

Lending impact – supervisory and macroprudential package vs. guarantee policy

(percentage points)

Low association between the impact of the supervisory and macroprudential package and guarantees on lending



Note: Results on x-axis are derived by incorporating only guarantee policies, whereas those on y-axis only include supervisory-policy package.

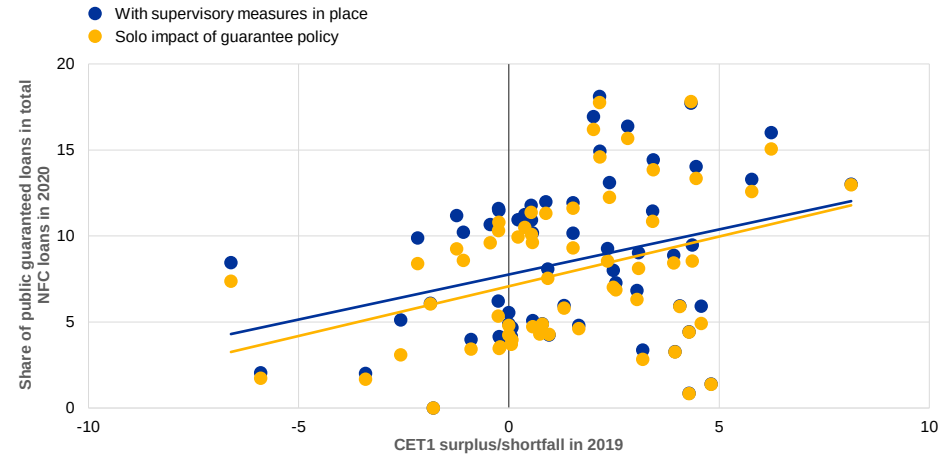
However, the lending impact of public guarantees is intensified when it is combined with supervisory measures. Chart 6.4 shows the relationship between bank capitalisation, measured in Q4 2019 by CET1 surplus/shortfall relative to requirements[27], and the share of loans under public guarantee schemes in total loans to NFCs in Q4 2020. The chart shows a positive relationship between initial bank capitalisation and the proportion of guaranteed loans when only guarantee policies are in place (blue dots), as well as when they are combined with supervisory measures (green dots). This positive relationship reflects the fact that better capitalised banks can lend more against guarantee funds, i.e. sound bank capitalisation increases the effectiveness of guarantee policies. The presence of supervisory measures shifts the relationship slightly upwards, meaning that more guaranteed funds can be drawn when the public guarantee policies are combined with supervisory measures. The median share of drawn funds increases by 0.6 percentage points when the two packages are combined.

[27] Pillar 1 requirements, Pillar 2 requirements and combined buffer requirements.

Chart 6.4

CET1 surplus/shortfall vs. share of used guarantee funds – U-shaped scenario

(percentages)



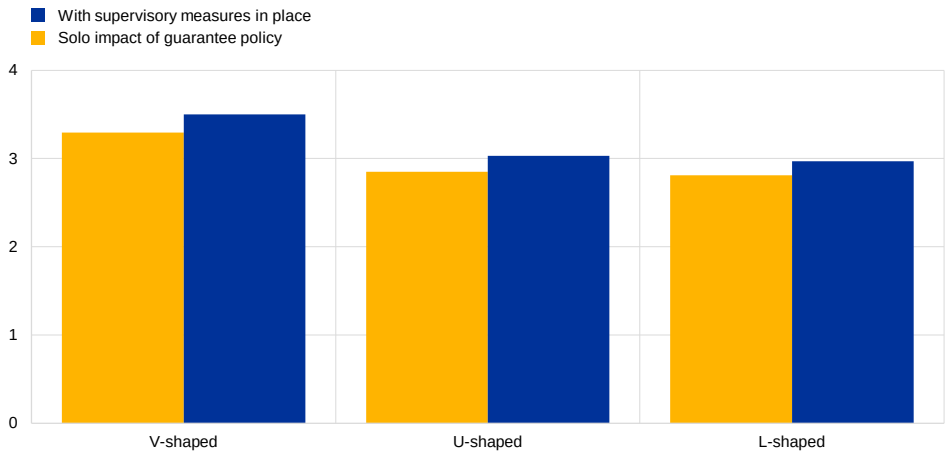
Note: Results for "Solo impact of guarantee policy" only includes guarantee policy package. Results for "With supervisory measures in place" are derived by incorporating both, guarantees and supervisory policies.

Accordingly, combining public guarantees with supervisory measures leads to a larger impact on lending. Chart 6.5 translates the cross-sectional relationship from Chart 6.4 into aggregate numbers. It compares the marginal lending impact of public guarantees in the absence (yellow bars) and in the presence (blue bars) of supervisory measures including public moratoria. The marginal impact of public guarantees is about 0.2 percentage points higher in each scenario if the national policies are coupled with the same directional supervisory response.

Chart 6.5

Lending impact of guarantees with and without supervisory and macroprudential measures in place

(percentage points)



Note: Results for "Solo impact of guarantee policy" only includes guarantee policy package. Results for "With supervisory measures in place" show the impact of the guarantee policy package when it is incorporated on top of the supervisory measures.

6.2 The impact of supervisory and macroprudential measures

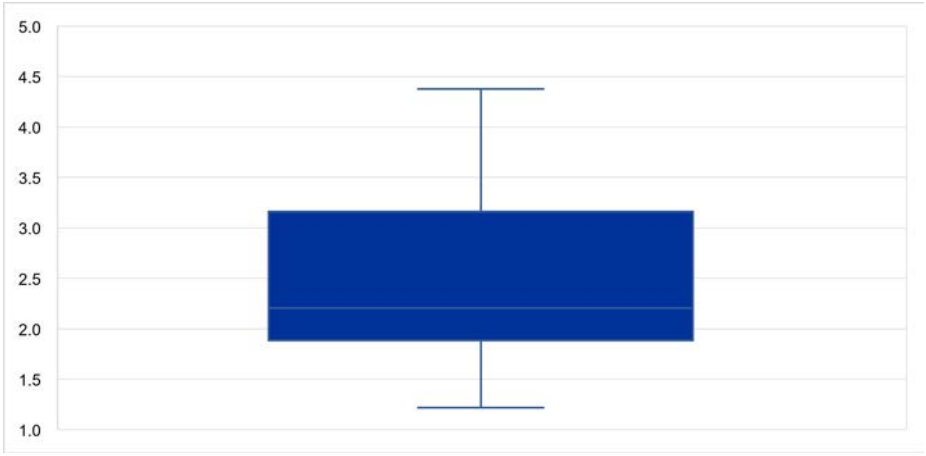
The overall supervisory and macroprudential policy package immediately releases CET1 capital amounting to around 2% of risk-weighted amounts. The distribution of the capital release shows a large dispersion across 91 banks (see Chart 6.6). The release of capital requirements ranges from 1 percentage point to 5 percentage points, with a median release of about 2.2 percentage points. This implies that there are large differences in the policy impact on banks, which is likely to translate into varying lending impact.

Chart 6.6

Released requirements – bank distribution

(percentage points)

For a median bank, capital requirements decrease by 2.2 percentage points



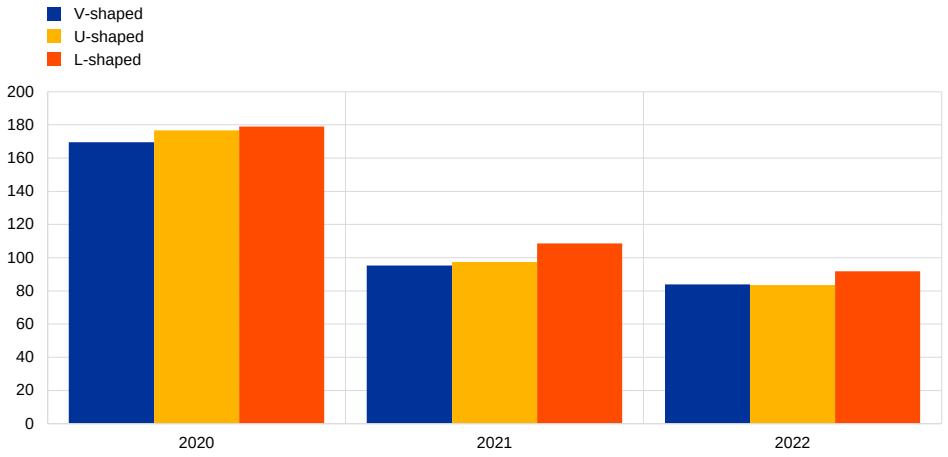
Note: Chart shows the distribution of released capital requirements across 91 banks used in the analysis.

Released capital requirements increase bank loss absorption capacity. The capital surplus in Chart 6.7 relates to the amount of capital banks hold above regulatory requirements, including capital buffers and P2G. The initial surplus increases by the amount of released capital requirements. The sudden drop of the estimate in 2021 relates to the fact that the release of P2R capital is merely frontloaded. For this reason, the additional surplus generated by the package almost halves from 2021 onwards. Further along the horizon the surplus also depends on the evolution of CET1 capital, profitability and the exposure amount. In total, following the policy change, banks should have around €100 billion of higher capital surplus (or lower capital shortfall) until end-2022. The capital gains increase with intensity of scenario, since the policy of released capital requirements prevents banks from falling deeper into the capital shortfall range.

Chart 6.7

Capital surplus

(EUR billions)

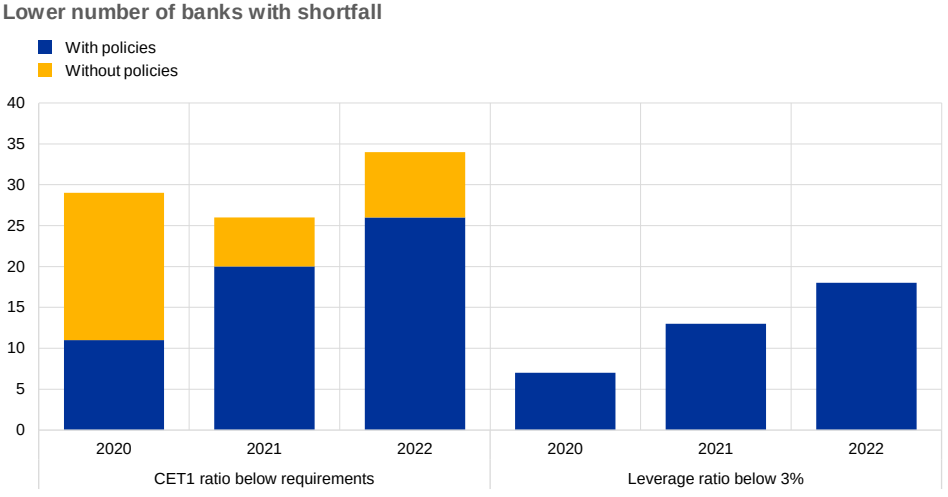


Note: Chart shows increase in capital surplus above the regulatory threshold. It is measured as difference in capital surplus with supervisory measures in place and capital surplus without COVID-19 policies.

Supervisory and macroprudential measures significantly reduce the number of banks falling below regulatory capital thresholds. Chart 6.8 shows the number of banks that fall below their CET1 ratio and leverage ratio requirements with and without policies in place. 6 to 18 fewer banks do not meet their CET1 requirements in the presence of policies. This improvement reflects not only the direct effect of released capital requirements but also the indirect positive effect of the capital release package on bank solvency, via their impact on economic activity.

Chart 6.8

Number of banks below regulatory threshold – U-shaped scenario



Note: Chart shows the number of banks with CET1 ratio below regulatory requirements (P1R+P2R+Combined buffer requirements) and the number of banks with leverage ratio below 3%. All the results are for U-shaped scenario.

Banks with strongest initial capitalisation or with highest capital release show largest expansion of lending (see Chart 6.9). The positive association between the

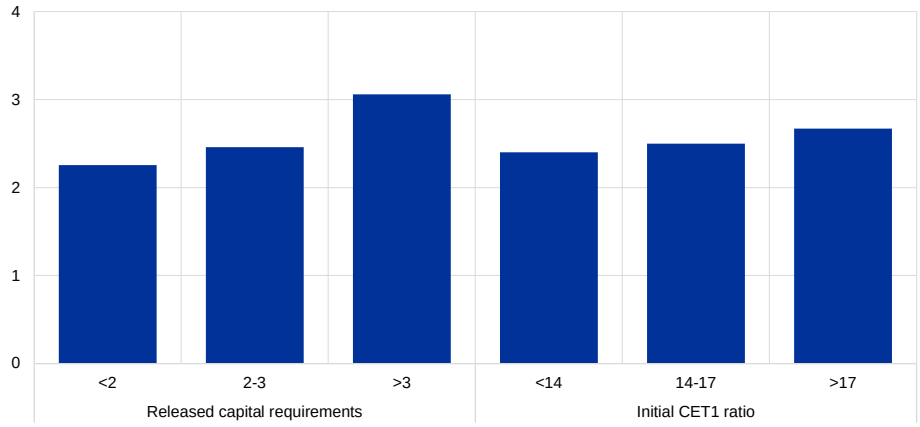
initial capitalisation level and the lending impact at least partially follows from the positive relationship between the size of released capital requirements and initial capitalisation measured by the CET1 ratio in 2019.

Chart 6.9

Impact on lending across buckets of initial CET1 ratio and of released capital – U-shaped scenario

(loan growth in percentage points, CET1 ratio as a percentage; capital requirements in percentage points)

Greater impact for better capitalised banks and banks with a larger release of requirements



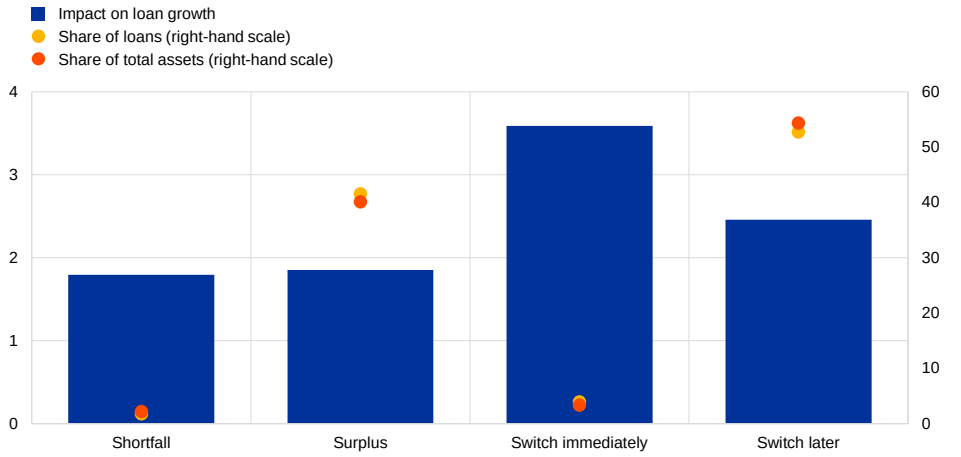
Note: Chart shows policy impact on lending split across three groups of initial (Q4 2019) CET1 ratio and across the amount of released capital requirements from supervisory package in Q1 2020. All the results are for U-shaped scenario.

Furthermore, the marginal lending effect is highest for banks which do not fall below their capital requirements, only as a result of capital release. Chart 6.10 depicts the lending impact split into four groups of banks, depending on their capitalisation level relative to broadly defined regulatory capital targets including capital buffers and P2G. The first group (Shortfall) includes banks that experience a CET1 shortfall for the same number of periods under both regimes – i.e. with and without the supervisory and macroprudential measures. The second group (Surplus) are banks whose CET1 ratio is above the regulatory threshold over the whole horizon. The third group (Switch immediately) are banks which experience a capital shortfall in the absence of the capital release policy and switch back to surplus status as soon as the policy is introduced. The last group (Switch later) are banks that switch from shortfall to surplus status further along the horizon, i.e. after Q1 2020. As can be seen, by far the largest positive lending impact is observed for banks that immediately switch from shortfall to surplus status. As these banks deleverage extensively in the absence of the capital release, they are able to keep lending at a higher rate with the policies in place. It is worth noting that these banks represent only about 5% of total loans/assets.

Chart 6.10

Impact on lending across capitalisation buckets – U-shaped scenario

(percentage points (left-hand scale), percentages (right-hand scale)



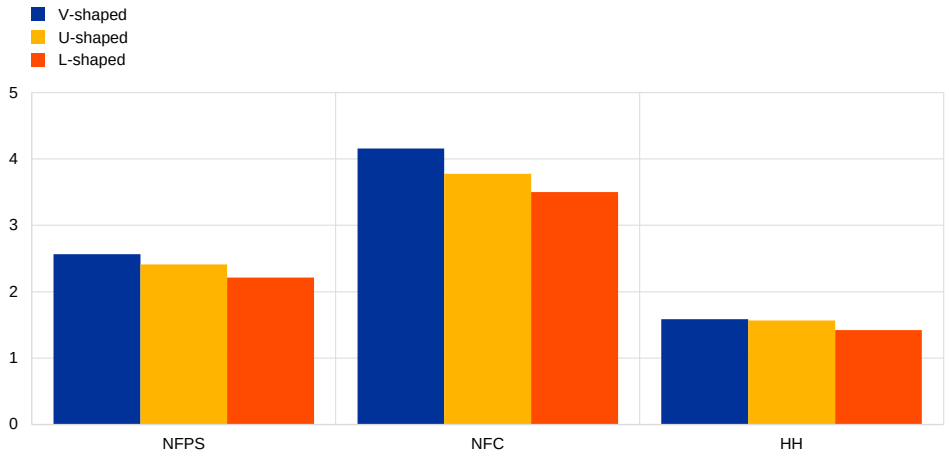
Note: "Shortfall" – banks experiencing CET1 shortfall for the same number of periods with and without policy measures. "Surplus" – banks with CET1 surplus over the whole horizon under both regimes. "Switch immediately" – banks that switch from CET1 shortfall to surplus when the policy is introduced. "Switch later" – banks that switch from CET1 shortfall to surplus after Q1 2020. All the results are for U-shaped scenario.

Supervisory and macroprudential policies show the largest impact on lending to NFCs. The impact is the greatest under the V-shaped scenario, in which cumulative gains for NFCs exceed 4 percentage points (see Chart 6.11). The greater impact for NFCs results from the higher sensitivity of loan supply to changing bank capitalisation.

Chart 6.11

Impact on lending – by sector

(percentage points)



Note: Chart shows impact on lending for total supervisory policy package.

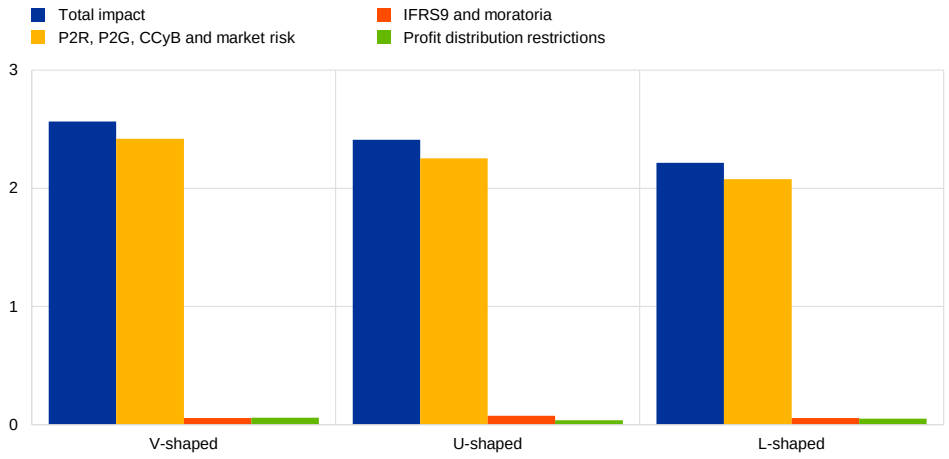
Looking separately at the different parts of the supervisory and macroprudential package, almost all positive impact on lending derives from capital release. The frontloaded P2R changes and the released P2G and CCyB increase cumulative lending to the non-financial private sector by more than

2 percentage points in any scenario (see Chart 6.12). The modified supervisory treatment of IFRS 9 and public moratoria affect lending via lower credit losses and lower NPL ratios (see Charts 6.13 and 6.14), their effect on lending is however only marginal.

Chart 6.12

Lending impact split by different parts of the supervisory package

(percentage points)

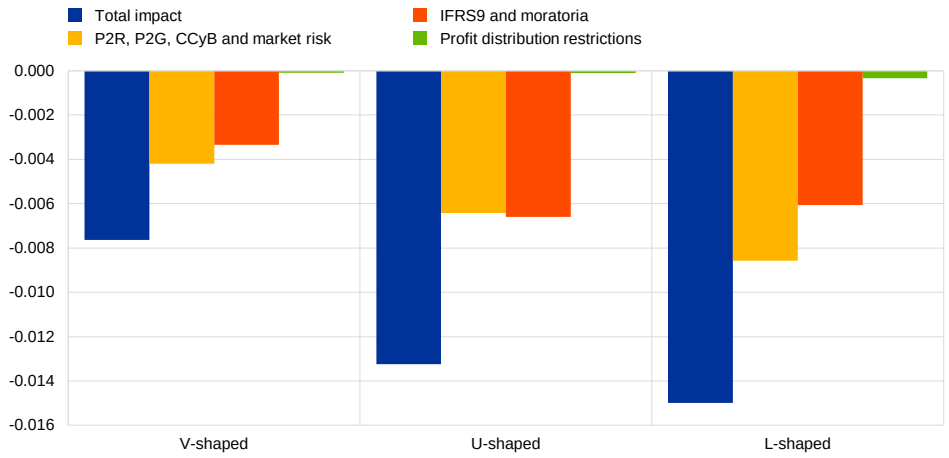


Note: Chart shows impact on lending to the non-financial private sector for different components of the supervisory policy package. "Total" is total impact of all the components of the supervisory policy package. The rest are solo impacts of individual components or groups of measures.

Chart 6.13

Impact on credit losses

(percentage of total assets)

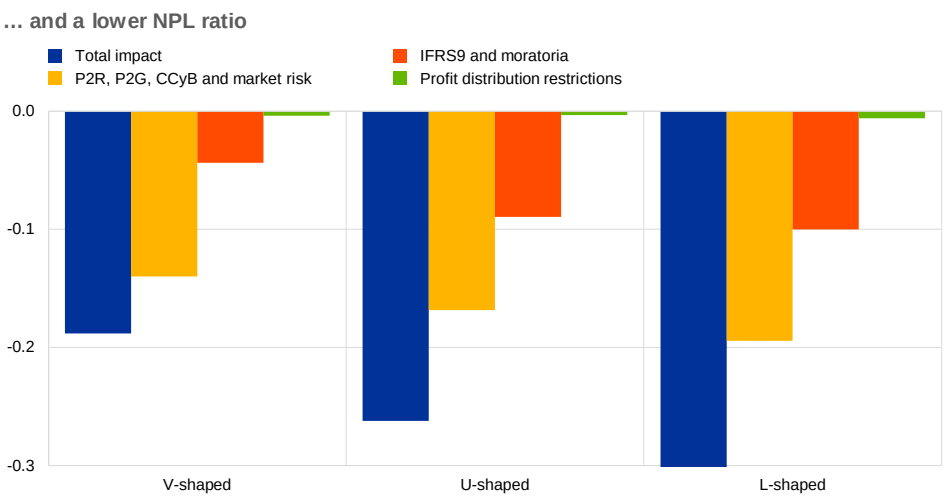


Note: Chart shows impact on credit losses for different components of the supervisory policy package. "Total" is total impact of all the components of the supervisory policy package. The rest are solo impacts of individual components or groups of measures.

Chart 6.14

Impact on the NPL ratio in 2022

(percentage points)



Note: Chart shows impact on NPL ratio for different components of the supervisory policy package. "Total" is total impact of all the components of the supervisory policy package. The rest are solo impacts of individual components or groups of measures.

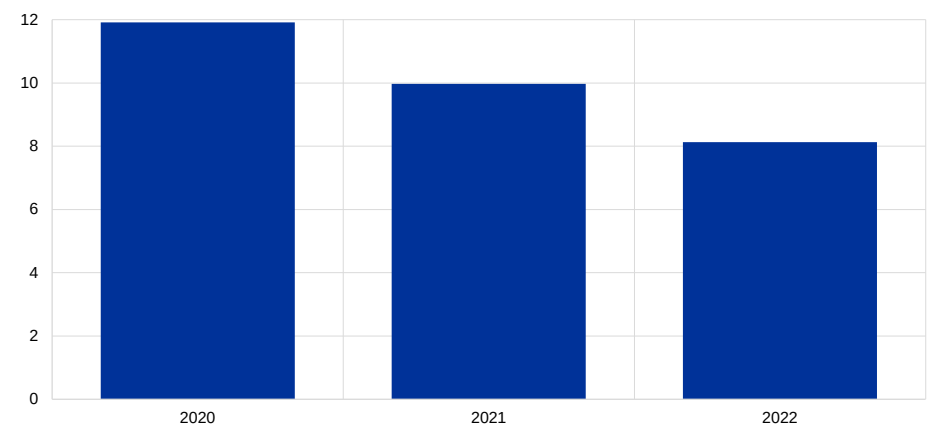
6.3 The impact of public guarantees

The share of loans under public guarantee is decreasing over time. Public guarantee policies are effective in 2020 and only applies to new loans. The rate of decrease in the share of loan stock under public guarantee schemes depends on the maturity of the secured loans. As Chart 6.15 shows, loans under public guarantee schemes represent a share of about 12% of the total stock of loans to NFCs in 2020. The share decreases to 8% by 2022.

Chart 6.15

Share of loans under public guarantee of total NFC loans

(percentages)



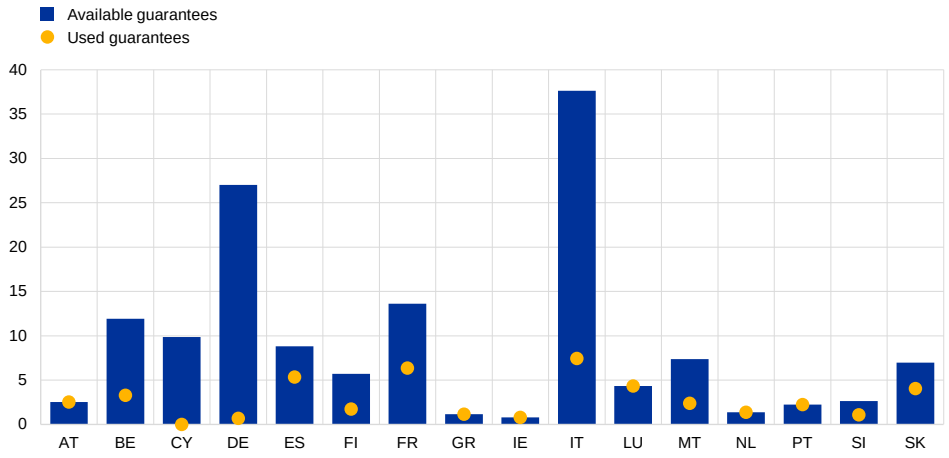
Note: Chart shows share of loans under public guarantees for U-shaped scenario.

There are large differences in available funds across countries (Chart 6.16). The size of available funds that may be obtained via the guarantee policy varies from less than 2% of GDP in Greece, Ireland and the Netherlands to almost 40% in Italy. In addition, available funds are not necessarily fully used. The proportion of drawn funds depends on the demand for these loans as well as on the ability of banks to supply them. In total about 22% of all available funds are used.

Chart 6.16

Available vs used guarantee funds

(as a percentage of GDP)



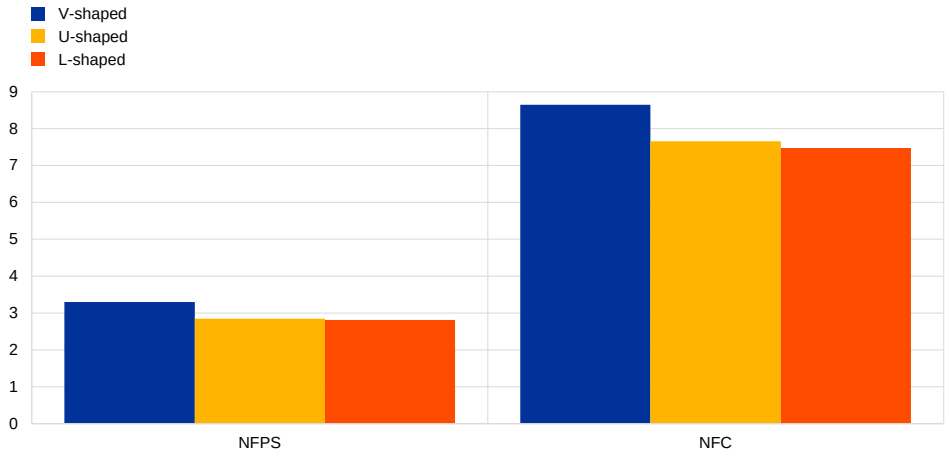
Note: Chart shows share of available and used guarantee funds in % of GDP. It is measured in Q4 2020 when guarantees reach maximum in most of the countries. The displayed results are for U-shaped scenario and differ very little for other two scenarios.

The cumulative lending impact of public guarantees on NFC lending is around 8 percentage points (see Chart 6.17). A guarantee policy directly affects only lending to NFCs. As lending to this sector would be strongly negatively affected in the absence of a guarantee policy (see Chart 4.5), the guarantees provide sizeable support to lending and economic activity. Other sectors could also benefit from a guarantee policy through the second-round effect of higher GDP growth. In total, guarantees increased lending to the non-financial private sector by about 3 percentage points.

Chart 6.17

Impact of guarantees – by sector

(difference in cumulative loan growth; percentage points)

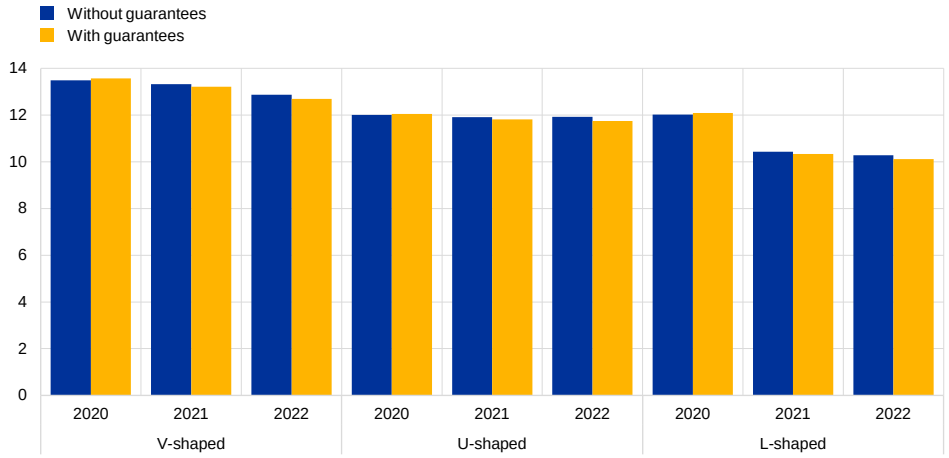


Public guarantees impact CET1 ratios through several channels, with the overall impact being slightly negative (see Chart 6.18). Chart 6.19 shows the breakdown of the CET1 impact. Public guarantees increase lending and, therefore, total assets – these increase by more than 1.5% each year from 2020 to 2022. However, since the guaranteed part of NFC loans receives a lower risk weight, an increase in risk weighted amounts is lower than that of total assets. As a result, the impact on CET1 ratio of loan expansion is only slightly negative.

Chart 6.18

CET1 ratio – with and without public guarantees

(percentages)

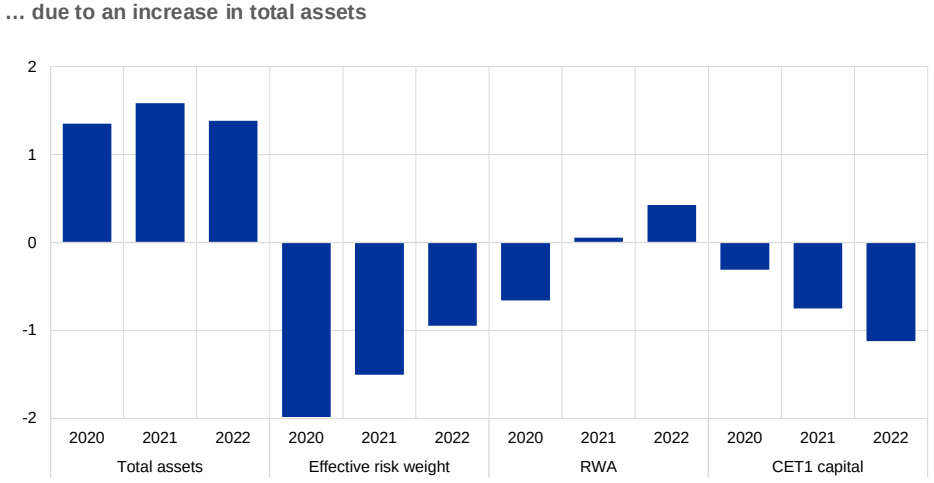


Note: Chart shows CET1 ratio for: "Without guarantees" – results derived with supervisory measures in place, but without guarantee policy. "With guarantees" – results including supervisory measures and guarantees.

Chart 6.19

The breakdown of the impact of public guarantees on CET1 ratio – U-shaped scenario

(percentages)



Note: Chart shows impact of guarantee package on total assets, effective risk weight, risk-weighted assets (RWA) and CET1 capital. All the results are measured as difference (in %) to results where only supervisory package is implemented. Results are for U-shaped scenario.

6.4 Heterogenous impact on banks

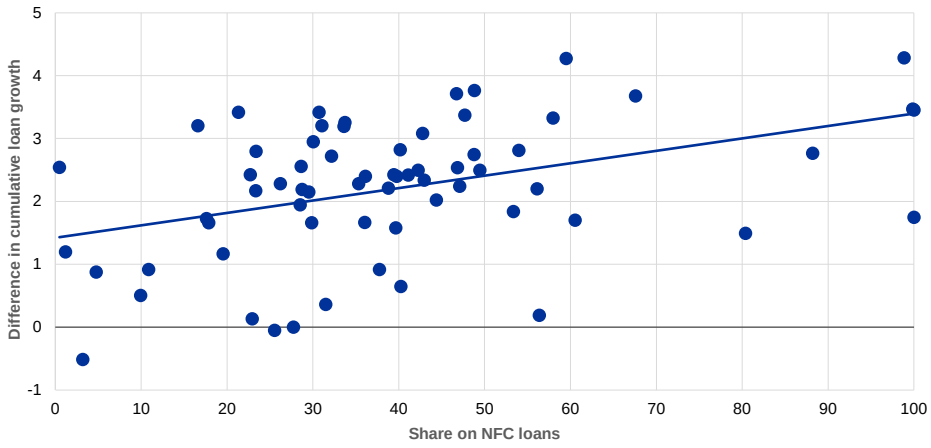
Banks with a higher share of NFC loans in their portfolio show a greater impact on lending. This holds for supervisory and macroprudential measures (see Chart 6.20) as well as for public guarantees (see Chart 6.21), for which the impact is particularly intensified as the share of NFCs increases (note that the vertical axes on the two charts have different scales). For the macroprudential and supervisory package this outcome is the result of a greater sensitivity of NFC loan supply to changing bank capitalisation. For guarantees, the outcome relates directly to the fact that they specifically target NFC lending. How much bank lending benefits from policy packages depends on several factors, including the availability of guarantees in a certain country, loan demand as well as banks' own financial situation.

Chart 6.20

Lending impact with supervisory measures vs share of NFC loans – U-shaped scenario

(y-axis: percentage points; x-axis: percentages)

Banks with a higher share of NFC loans show a stronger lending impact from supervisory measures ....



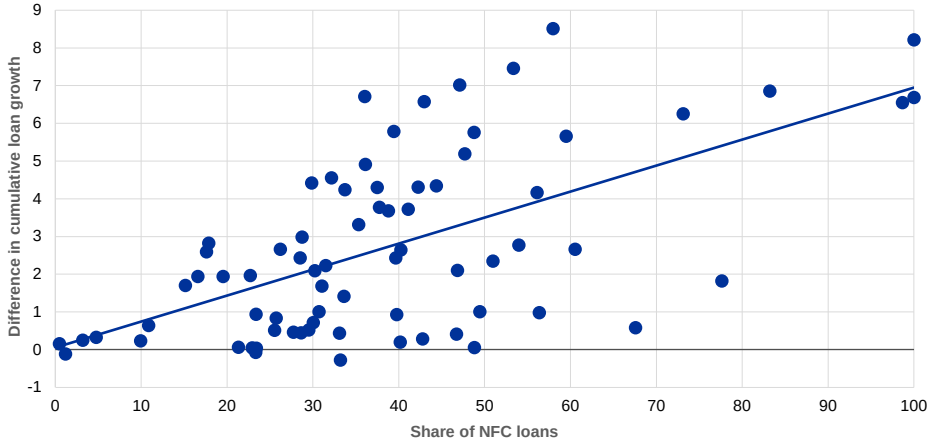
Note: x-axis: share of loans to NFCs in total loans to non-financial private sector. y-axis: Lending impact of supervisory measures. Results for U-shaped scenario.

Chart 6.21

Lending impact with guarantee policy vs share of NFC loans – U-shaped scenario

(y-axis: percentage points; x-axis: percentages)

... which is further strengthened with guarantees in place



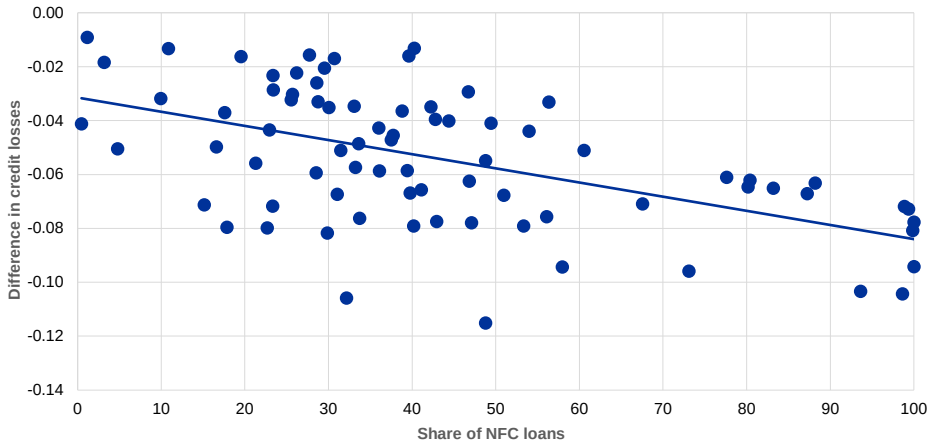
Note: x-axis: share of loans to NFCs in total loans to non-financial private sector. y-axis: Lending impact of guarantee policy implemented on top of supervisory measures. Results for U-shaped scenario.

Credit losses and effective risk weights are reduced more for banks with a higher share of NFC loans (see Charts 6.22 and 6.23). The reduction in risk weights reflects the fact that banks can apply more favourable risk weights for the guaranteed part of the NFC loan. The reduction in credit losses relates, in turn, to lower LGD values for loans under the guarantee scheme, as a large part of credit losses is covered by the state in the case of default.

Chart 6.22

Impact on credit losses vs share of NFC loans – U-shaped scenario

(y-axis: percentage points; x-axis: percentages)

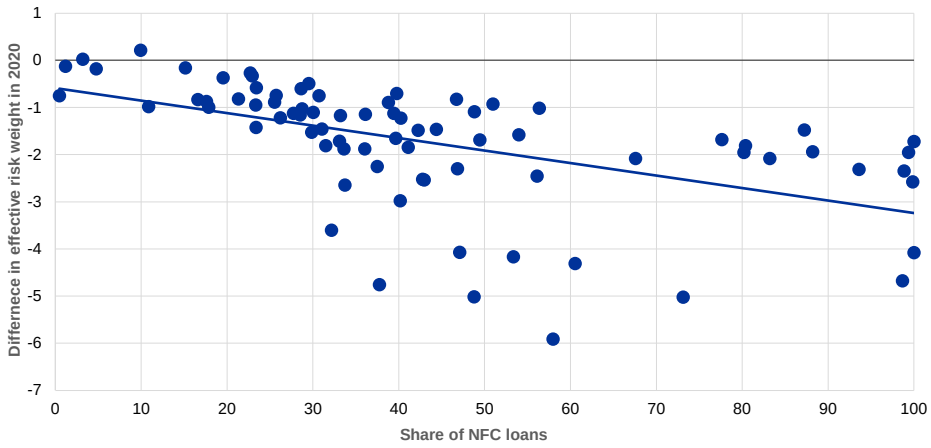


Note: x-axis: share of loans to NFCs in total loans to non-financial private sector. y-axis: impact on credit losses measured as cumulative difference in % of total assets. Results for U-shaped scenario.

Chart 6.23

Impact on effective risk weight vs share of NFC loans – U-shaped scenario

(y-axis: percentage points; x-axis: percentages)



Note: x-axis: share of loans to NFCs in total loans to non-financial private sector. y-axis: impact on effective risk weight measured in 2020 in percentage points. Results for U-shaped scenario.

6.5 Overview of results by country

The policy package shows positive effects across all euro area countries. For half of the countries, increases in lending to the non-financial private sector exceed 5 percentage points (see Chart 6.24). The lending benefits are the highest for Italy, where loan growth increases by 10 percentage points, in line with large size of the

guarantee package. GDP gains are the highest in Portugal, Austria and Finland (see Chart 6.25).

Chart 6.24

Lending impact of all mitigation policies by country

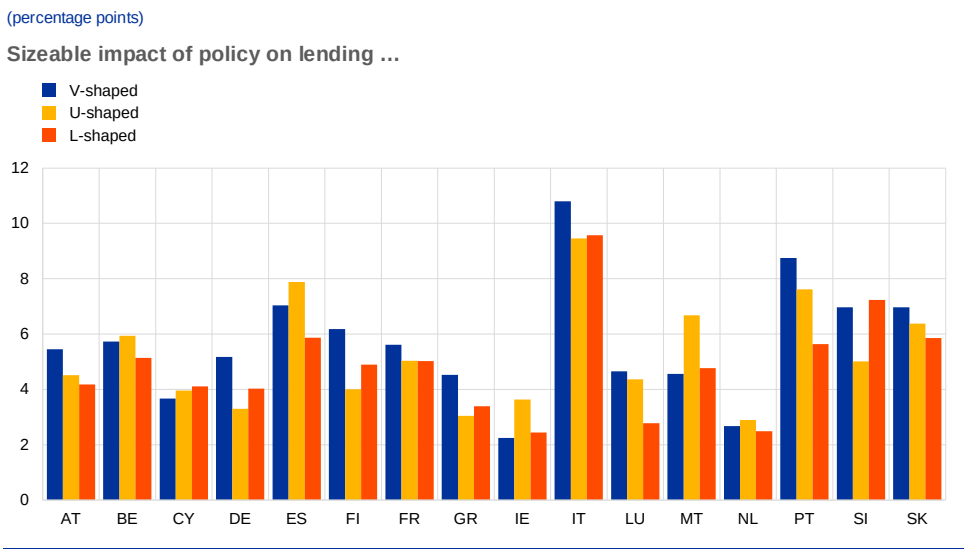
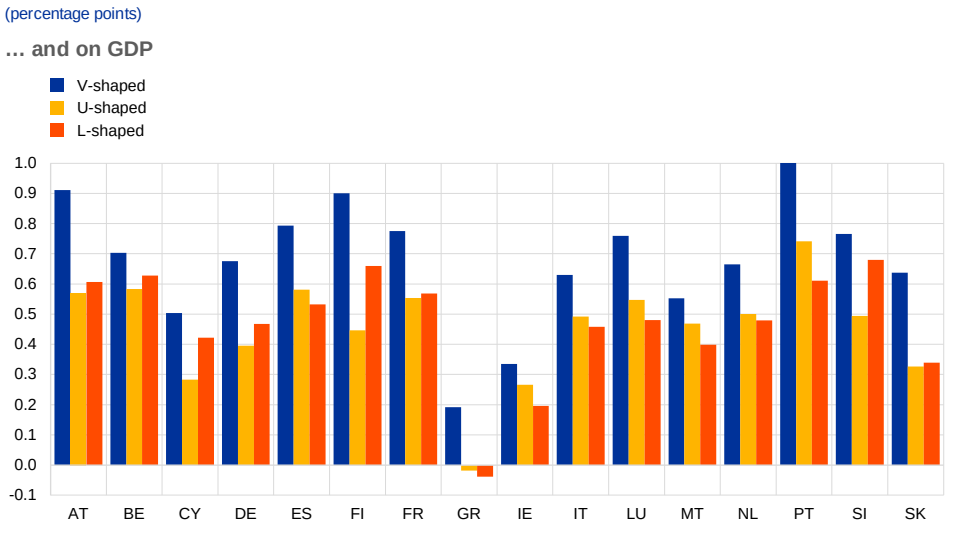


Chart 6.25

GDP impact of all mitigation policies by country



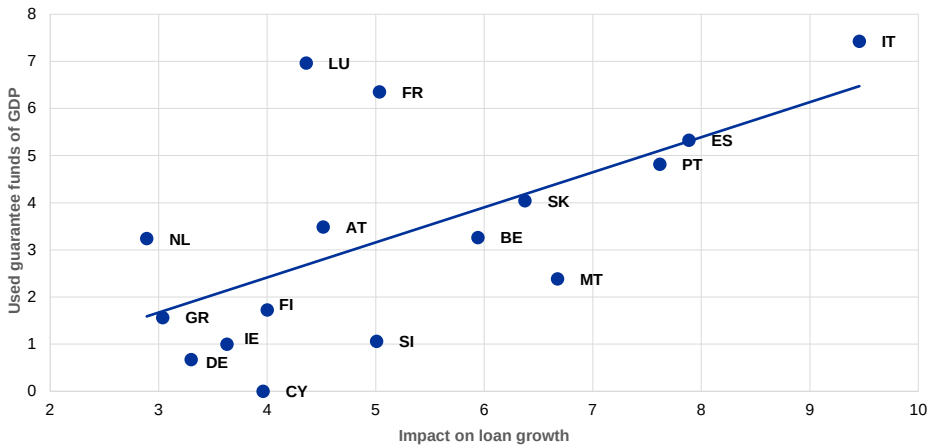
The impact on lending and GDP is strongly correlated with the projected use of guarantee funds in a country. Chart 6.26 shows the relationship between used funds as a percentage of GDP and lending impact. The positive slope of the relationship means that countries in which more funds are drawn benefit more from all mitigation policies. Finally, Chart 6.27 establishes a link between lending and GDP, which is positive.

Chart 6.26

Used public guarantee funds vs lending impact of all mitigation policies in the U-shaped scenario

(y-axis: as a percentage of GDP; x-axis: percentage points)

There is a higher impact on lending in countries with larger share of drawn funds ...



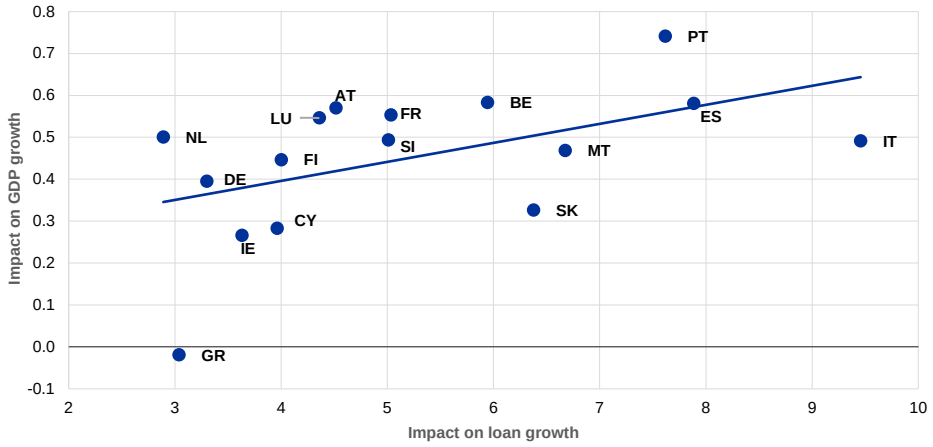
Note: x-axis: impact on lending to non-financial private sector. y-axis: share of used guarantee funds in % of GDP. Results for U-shaped scenario.

Chart 6.27

Impact on lending vs GDP of all mitigation policies in the U-shaped scenario

(percentage points)

... which translates into higher GDP growth



Note: x-axis: impact on lending to non-financial private sector. y-axis: Impact on GDP growth. Results for U-shaped scenario.

7 Conclusions

This paper discusses the impact of supervisory and national policies enacted to mitigate the economic recession the euro area is experiencing. The impact assessment is performed using the semi-structural BEAST model adapted to incorporate a potentially broad set of transmission channels for capital relief measures, the flexible application of IRFS 9 standards, public moratoria and guarantees. As a result, the model provides a comprehensive picture of the impact of such measures on lending, economic activity and the banking sector, as well as the interactions between these factors.

The paper proposes a novel approach to reflect high uncertainty over future economic developments and, accordingly, policy impact. The methodology presented in the paper relies on the full distribution of possible future outcomes which are consistent with historical relationships. It then selects several economic paths which are closest to the economic narratives that are of interest to policymakers. It then averages the outcomes of the analysis across these scenarios.

In this case, the policy assessment incorporates a range of three plausible scenarios that differ in respect of the length and depth of the recession following the COVID-19 lockdown measures. The first scenario (a V-shaped recession) reflects a strong contraction in aggregate demand and supply in the euro area and other advanced economies in the first and second quarters of 2020 and a gradual rebound of economic activity thereafter. The second scenario (U-shaped) reflects a slower recovery. The last and most severe scenario (L-shaped) foresees a second wave of the pandemic and lockdown measures in 2020, with recovery coming as late as in 2022.

The ECB Banking Supervision's and macroprudential policy packages immediately release CET1 capital that amounts to around 2% of risk-weighted amounts. The distribution of the capital release shows a large dispersion across banks, ranging from 1 percentage point to 5 percentage points. Released capital requirements and profit distribution restrictions increase a bank's loss absorption capacity, while IRFS 9 changes and public moratoria delay the recognition of credit losses.

Public guarantee policies differ greatly across jurisdictions, with the largest guarantee envelops unlikely to be fully used. The proportion of drawn funds depends on the demand for guaranteed loans in relation to the conditionality of guarantees in a certain country, as well as on credit supply constraints. How much lending banks intermediate depends on the banks' ability to do so, reflected in their profitability and funding costs.

The policies enacted by supervisory agencies and national governments are complementary with regard to supporting the growth of lending across various scenarios. By easing credit supply constraints, supervisory policy actions support the use of public guarantees, as reflected in the complementary lending effect of

supervisory actions and public guarantees in the analysis. The effectiveness of the policies depends on the severity and duration of the recession. Most of the policies considered in the analysis act by easing credit supply constraints, although a protracted economic slowdown could weaken credit demand and reduce the lending impact of policies targeting the banking sector, or that of public moratoria and guarantees.

Banks with a larger share of NFC loans in their portfolios show a greater lending effect of policies. This holds for supervisory measures as well as for public guarantees, for which the impact is particularly intensified as the share of NFCs on banks' balance sheets increases.

Even though this policy assessment is comprehensive, it still leaves several gaps which will need to be filled by future or complementary analyses. The assessment largely abstracts from unconventional monetary policy actions taken by the ECB in response to COVID-19 developments. Although the model predicts endogenous monetary policy easing in response to the contraction in economic activity, it probably does not fully account for the beneficial effect of the ECB's TLTROs (recalibrated in March and April) and those of the PEPP (initiated in March 2020). Another factor is that the assessment was conducted in the early months of the COVID-19 crisis. Not all the information which continues to accumulate over time, such as updates on supervisory information or loan-level data, could be explored and used to inform the analysis. Finally, even though great care has been taken to accommodate scenario risk, the assessment is subject to model risks such as the instability of model parameters estimated based on historical data during the extraordinary circumstances of 2020.

8 References

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9 Appendix: policies in the model

This appendix summarises main modifications of the BEAST that allow capturing the impact of COVID-19 mitigation policies. The main model equations are presented and discussed in Budnik et al (2020), but the inclusion of public moratoria, of more lenient interpretation of IRFS 9 accounting standards and of public guarantees required some modifications (or extensions) of model equations.

9.1 National moratoria

Public moratoria launched in response to the pandemic crisis commonly apply only to performing obligors and to loan contracts granted before the announcement. The suspension of interest payments is coupled with the proportional extension of the term of the contract. The accrued interest on loans under moratoria continue to be accounted for in the profit and loss as interest income.[28]

The model assessment of public moratoria focuses on their impact on default flows. The two dimensions of public moratoria captured in the calibration are their sectoral scope and duration. The effect of deferred payments has been implemented as an overlay on the IRFS 9 transition matrices, and more specifically:

1. In quarters for which the moratorium policy is in place, we assume moderated default flows (into Stage 3) for the eligible share of the asset classes

2. In following quarters the default flows remain as predicted by the original IFRS 9 transition rates equations.

The sectoral calibration distinguishes between household debt (broken down into housing and consumption incl. other loans) and corporate credit (broken down into SME and non-SME). For the relevant loan segments of banks, and for the duration of public moratoria, the evolution of transitions into default under IRFS 9 gets largely decoupled from the evolution of real economy by introducing a high degree of inertia of default probabilities. This form of an ad hoc inertia effectively 'freezes' the default probabilities at levels close to observed before the COVID-19 pandemic.

The calibration of the duration of public moratoria has been based on the following principle. If public moratoria enters into force on 1 April and closes on 30 June, with individual loans remaining under the moratoria not longer than 3 months (not longer than until 30 June), it has been assumed that any loan which would hit the limit of 90 days due (and be classified in Stage 3) between April and June, will instead default between 1 July and 30 September. Furthermore, any loan which would default between 1 July and 30 September in the absence of public moratoria, will also default also a quarter later. Accordingly, in the case at hand, the effect of public moratoria will

[28] In cases where the impact of the moratoria on the cash flow is large, i.e. the moratoria lasts very long, banks would need to de-recognize such loans and re-recognize them again with the new payment schedule.

be captured by two quarter (2 and 3Q) assumption of extraordinary inertia in default rates.

The calibration of moratoria will use the information about the duration of the programme (timeframe for applicants) and the maximum payment deferral they would be eligible for. For simplicity all public moratoria are assumed to enter starting from 2Q 2020 included. Table 1a shows the sector involved and the duration of the measure by country.

Table A.1

Key features of moratoria in euro area economies

			Country								
			AT	BE	CY	DE	EE	ES	FI	FR	GR
Targeted sectors	Household	Consumption	Y	N	Y	Y	Y	Y	N	N	Y
		Housing	Y	Y	Y	N	Y	Y	N	N	Y
		SME	Y	Y	Y	Y1	Y	Y	Y	Y	Y
		Non SME	N	Y	Y	Y1	Y	Y	N	Y	Y
Number of affected quarters	Household	Consumption	3	-	4	3	3	3	-	-	2
		Housing	3	3	4	-	5	5	-	-	2
		SME	3	3	4	2	3	3	5	3	4
		Non SME	-	3	4	2	3	3	-	3	4

Sources: ESRB, Policy measures in response to the COVID-19 pandemic and IMF Policy Tracker.
Note: Legend: 1 Insolvency moratorium.

Table A.2

Key features of moratoria in euro area economies

			Country									
			IE	IT	LU	LT	LV	MT	NL	PT	SK	SI
Targeted sectors	Household	Consumption	Y	N	N	Y	N	Y	N	Y	Y	Y
		Housing	N	Y	N	Y	N	Y	N	Y	Y	Y
	NFC	SME	Y	Y	Y	Y	N	Y	Y	Y	Y	Y
		Non SME	Y	N	Y	Y	N	Y	N	Y	Y	Y
Number of affected quarters	Household	Consumption	2	-	-	3	-	5	-	7	4	5
		Housing	2	5	-	5	-	5	-	7	4	5
	NFC	SME	2	4	3	3	-	5	3	7	4	5
		Non SME	2	-	3	3	-	5	-	7	4	5

Sources: ESRB, Policy measures in response to the COVID-19 pandemic and IMF Policy Tracker.
Note: Legend: 1 Insolvency moratorium.

9.2 IRFS 9 interpretation in early 2020

On April 1, the ECB Banking Supervision asked banks to avoid excessively procyclical assumptions in their IFRS 9 models to determine their provisions. It further indicated that we would provide significant institutions with central macroeconomic scenarios to be used for IFRS 9 modelling purposes. In its earlier

communication the ECB Supervision encouraged more over-the-cycle interpretation of IRFS 9 forecasting inputs.

The model replicates the postulated reduction in volatility of expected credit losses by increasing the stickiness of flows between Stage 1 and Stage 2. The approach is like that applied in case of moratoria, i.e. the transition rates between performing states are assumed to have extraordinary degree of inertia until the end of 2020 and are accordingly partially decoupled from real economic developments. The adjustment concerns only flows between Stage 1 and Stage 2, as the transitions to Stage 3 (governed by 90 days past due principle) are least likely to be affected by economic forecasts.

9.3 Public guarantees

The EC Temporary Framework from 19 March 2020 put forward a set of restrictions on state aid for companies affected by the coronavirus outbreak. The guarantees under the framework were to be granted by 31 December 2020 at the latest and may relate to both investment and working capital loans (i.e. loans used to pay wage bills, suppliers and other forms of circulating capital in a recurrent manner usually via open credit lines from banks). The duration of the guarantee is limited to a maximum of six years and the public guarantee does not exceed:

- 90% of the loan principal where losses are sustained proportionally and under same conditions, by the credit institution and the state; or
- 35% of the loan principal, where losses are first attributed to the state and only after that to the credit institutions (i.e. a first-loss guarantee).

In both above cases, when the size of the loan decreases over time, e.g. because the loan starts being reimbursed, the guaranteed amount must decrease proportionally.

Public guarantees are only provided on performing loans. This limits the usefulness of guarantees for those parts of the corporate sector that continue to face a debt overhang from the previous crisis. The share of the loan that is guaranteed varies based on the size of a firm and the seniority of the state in the case of a credit loss. The EC framework recommends loss absorption of up to 90% of the loan, although in Italy a limited amount of credit is available with full coverage.

In the model, each national public guarantee program is characterised by a set of parameters. These include *the overall size of public guarantee programme*, which will relate to the overall envelope i.e. funds made available by the governments to the purpose, *the duration of the programme*, which will correspond with the last quarter in which loans backed by the guarantees can be granted. The two limits will limit the maximum aggregate use of public guarantees. The majority of countries set the duration of the program along with the guidance provided by the EC, with two exceptions: Spain, where the last public guarantees were to be granted end of September, and the Netherlands, where the scheme was designed to last until end March 2021.

Two other parameters govern the coverage of loans granted under the national schemes with a public guarantee. The coverage with a public guarantee is calibrated separately for SME and non-SME, and the calibration is informed by the maximum coverage of loans for SMEs (and self-employed) and for large (or other) enterprises under national programmes. The mapping is not always straightforward as most of national programs provide loans with different coverage under different conditions (or at different point of time). Tables A.3 and A.4 summarises the calibration with the legend providing additional information on calibration choices.

The lion's share of national schemes applies to new loans, with additional restrictions on loan refinancing in selected jurisdictions. In many countries, a borrower fulfilling general criteria for receiving a loan backed by public guarantees (such as solvency ahead of COVID-19 developments) can request a new line of credit which substitutes (refinances) earlier loans. In Belgium and Germany this possibility is restricted, by limiting the scope of the public guarantee programme to new lending excluding refinancing credits and reinstatements of credits granted before the date of entry into force of public guarantees. In the model it is assumed (arbitrarily) that 75% lending due in the reference period will be eligible to be renewed under public guarantee schemes in all countries but these where additional restrictions apply. For the later countries the corresponding coefficient is set to 0%.

Table A.3

Key features and calibration of the national public guarantee schemes

		Country								
		AT	BE	CY	DE	EE	ES	FI	FR	GR
Size (EUR billions)		15	50	-	822	1.8	100	12	300	2
Targeted sectors	Self employed	Y	Y	-	Y	N	Y	N	Y	N
	SME	Y	Y	-	Y	N	Y	Y	Y	Y
	Corporates	Y	Y	-	Y	Y	Y	Y	Y	Y
Duration of the programme		4Q 20 (31 Dec.)	4Q 20 (31 Dec.)	-	4Q 20 (31 Dec.)	4Q 20 (31 Dec.)	3Q 20 (30 Sep.)	4Q 20 (31 Dec.)	4Q 20 (31 Dec.)	4Q 20 (31 Dec.)
Coverage (percentage)	SME	901	90	-	90	904	80	80	90	80
	Non-SME	902	803	-	90	904	705	80	758	80
Restrictions on refinancing of earlier credit		N	Y	-	Y	N	N5	Y	N	N
Guarantee premium		EU	EU	-	EU	EU	Lower for SME and non-SME	EU	EU	EU

Sources: ESRB, Policy measures in response to the COVID-19 pandemic, EBA, List of public guarantees schemes in response to the COVID-19 pandemic, and European Commission. For Germany: Bundesfinanzministerium.
Notes: Legend: 1 Under AWS and OeHT SME can receive loans with 80, 90 or 100% coverage. 2 As under OeKB for 'large enterprises'. 3 The general (available also to non-SMEs) state guarantee system is applied at portfolio level (waterfall system): a bank will bear the first 3% losses on the portfolio level, for portfolio losses between 3-5% the bank and the state will bear each 50% of the losses, for losses above 5%, the state will bear 80% of the losses and the bank 20% of the losses. 4 The Estonian programmes applied a substantial degree of differentiation by sector. For construction sector and retail or wholesale trade enterprises, guarantees could have covered up to 60% a loan (or even 50% for real estate developers). At the same time, Estonian authorities set up programmes with 100% coverage for some other service sectors. 7 70% in new operations and 60% for renewals. 8 The coverage depends on the company's turnover: 1.5-5b€: 80%, >5b€: 70%operations.

Another aspect regulated by the EC Temporary Framework from 19 March 2020 are guarantee premiums. The minimum levels of guarantee premiums for SME are

set at 25bps for a 1 year maturity loan, 50bps for 2-3 year maturity loan, and 100bps for longer maturity loans. For non SMEs the premium are double that high. In most of jurisdictions the guarantee premiums follow this or very similar scheme, however there is no guarantee premium is charged in Italy. In some countries e.g. Spain guarantee premiums are generally lower (therein, 20bps, 30bps and 60 bps for SMEs and 30bps, 60bps and 120bps for largest borrowers) and the calibration will reflect this lower level of premium. In other countries, e.g. Finland or Lithuania, the exact mechanism of calculating the premium deviates from the EC Temporary Framework but will provide similar ranges of outcomes (and in this cases we apply the general 'EU' calibration).

In the model a guarantee premium is dependent on the duration of a loan in a linear fashion. The model assumes that all loans granted under national programmes have the average maturity of banks' corporate loans (i.e. does not account for limits imposed in many national schemes on the duration of a loan) and the premium on such loan will be calculated based on the fitted linear regressions informed by the minimum levels of guarantees with 1 to 5 years maturity.

Table A.4

Key features and calibration of the national public guarantee schemes

		Country									
		IE	IT	LU	LT	LV	MT	NL	PT	SK	SI
Size (EUR billions)		2	307	2.5	0.7	0.25	0.35	12.8	4.2	4.51	2
Targeted sectors	Self employed	N	N	N	N	Y	Y	N	N	Y	Y
	SME	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	Corporates	N	Y	Y	Y	Y	Y	Y	N	N	N
Duration of the programme		4Q 20 (31 Dec.)	4Q 20 (31 Dec.)	4Q 20 (31 Dec.)	4Q 20 (31 Dec.)	4Q 20 (31 Dec.)	4Q 20 (31 Dec.)	1Q 21 (31 Mar.),	4Q 20 (31 Dec.)	4Q 20 (31 Dec.)	4Q 20 (31 Dec.)
Coverage (percentage)	SME	80	90	85	804	504	905	67.56	90	90	80
	Other	802	753	85	804	504	905	80	80	80	70
Restrictions on refinancing of earlier credit		N	N	N	N	N	N	N	N	N	N
Guarantee premium		Lower for SMEs	0	EU	EU	EU	Lower for SMEs and non-SMEs7	Higher for SMEs	Lower for non-SMEs	EU	EU

Sources: ESRB, Policy measures in response to the COVID-19 pandemic, EBA, List of public guarantees schemes in response to the COVID-19 pandemic, and European Commission, and European Commission.
Notes: Legend: 1 The Act 67/2020 foresees that the total amount of bank guarantees provided by the Slovak Government as financial assistance should be EUR 500 million per month. The maximum amount set as 9-month equivalent of the maximum monthly amount. 2 Available only to small mid-caps (defined as businesses with up to 499 employees). 3 The average of 80% for enterprises with a turnover value between € 1.5 billion and € 5 billion and with more than 5000 employees in Italy and 70% for enterprises with turnover value above € 5 billion. 4 An additional cap of 20% applies at a portfolio level for the guaranteed amount. 5 An additional cap of 50% applies at a portfolio level for the guaranteed amount. 6 As under BMKB-C, very small SMEs can also benefit from 95% coverage under KK-C or 90% under GO-C. 7 Reflects effectively lower premium due to lower premium on loans with lower duration.

The calibration does not account for other factors distinguishing national schemes. These include the maximum duration of a loan (e.g. 3 year maturity), the maximum loan per company covered by a state loan guarantee (e.g. 25% of turnover in 2019), whether a guarantee applies on principal amount or on principal and interest jointly. The implementation also assumes that public guarantees apply to new (even if

refinanced) credit, and abstracts from programmes, such as in Estonia or Italy, that provide guarantees for existing credit.

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