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Call for applications: Klaus Liebscher Economic Research Scholarship

Please e-mail applications to *scholarship@oenb.at* by the end of October 2021. Applicants will be notified of the jury's decision by end-November 2021.

The Oesterreichische Nationalbank (OeNB) invites applications for the "Klaus Liebscher Economic Research Scholarship." This scholarship program gives outstanding researchers the opportunity to contribute their expertise to the research activities of the OeNB's Economic Analysis and Research Department. This contribution will take the form of remunerated consultancy services.

The scholarship program targets Austrian and international experts with a proven research record in economics and finance, and postdoctoral research experience. Applicants need to be in active employment and should be interested in broadening their research experience and expanding their personal research networks. Given the OeNB's strategic research focus on Central, Eastern and Southeastern Europe, the analysis of economic developments in this region will be a key field of research in this context.

The OeNB offers a stimulating and professional research environment in close proximity to the policymaking process. The selected scholarship recipients will be expected to collaborate with the OeNB's research staff on a prespecified topic and are invited to participate actively in the department's internal seminars and other research activities. Their research output may be published in one of the department's publication outlets or as an OeNB Working Paper. As a rule, the consultancy services under the scholarship will be provided over a period of two to three months. As far as possible, an adequate accommodation for the stay in Vienna will be provided.[1]

Applicants must provide the following documents and information:

- a letter of motivation, including an indication of the time period envisaged for the consultancy
- a detailed consultancy proposal
- a description of current research topics and activities
- an academic curriculum vitae
- an up-to-date list of publications (or an extract therefrom)
- the names of two references that the OeNB may contact to obtain further information about the applicant
- evidence of basic income during the term of the scholarship (employment contract with the applicant's home institution)
- written confirmation by the home institution that the provision of consultancy services by the applicant is not in violation of the applicant's employment contract with the home institution

[1] *We assume that the coronavirus crisis will abate in the course of 2021. We are also exploring alternative formats to continue research cooperation under the scholarship program for as long as we cannot resume visits due to the pandemic situation.*

87th East Jour Fixe: CESEE's second transition – challenges on the road to low-carbon economies

Andreas Breitenfellner, Mathias Lahnsteiner, Thomas Reininger[1]

Having successfully transitioned to market economies over the past three decades, the countries of Central, Eastern and Southeastern Europe (CESEE) now face the challenges of a "second" transition toward carbon neutrality. The OeNB's most recent East Jour Fixe[2] on June 17, 2021, mapped this endeavor by comparing past, present and future climate policy strategies in CESEE and other EU member economies. In his opening remarks, OeNB Governor *Robert Holzmann* reminded participants of the challenges and opportunities arising from the fact that the region's fossil-based economies are still in the process of catching up. Explaining the motivation behind the event, he pointed to the exposure of Austrian banks to CESEE economies from the perspective of climate-related risks: since climate-related risks are also financial risks, the Oesterreichische Nationalbank (OeNB) must consider these risks in its supervisory tasks.

Climate change and policies: where do CESEE economies stand?

In the first session, *Andreas Breitenfellner* and *Thomas Reininger* (both lead economists at the OeNB's Foreign Research Division) took stock of the green transition in CESEE. In their view, the physical risks of climate change are broadly the same for the CESEE economies and other EU member states. Transition risks, in contrast, that occur on the bumpy road to a low-carbon economy are more of an issue in CESEE. After CESEE EU member states had achieved sizable cuts in greenhouse gas emissions – linked to the profound structural changes in their economies – in the first decade of their "first" transition, further emission reductions were substantially smaller and below those of other EU member states. Thus, on average, CESEE economies are to some degree lagging behind the rest of the EU. Both CESEE and other EU member states must step up their efforts in the coming years. This would also offer great economic opportunities in terms of energy efficiency, low-cost renewables, energy independence and modernized infrastructure.

In the following discussion, moderated by the OeNB's chief economist *Doris Ritzberger-Grünwald*, *Ada Ámon* (Chief Climate Advisor to the Mayor of Budapest) and *Piotr Arak* (Director of the Polish Economic Institute) shared their views on climate-related issues from both national and European perspectives. The two discussants reflected critically on the climate change awareness of people living in Hungary and Poland and their willingness to take action. They also covered the coal industry in Poland, the use of EU funds for climate-related projects in CESEE, and implications of EU climate policies for Western Balkan economies. Ámon argued that – at least in the capital Budapest – there certainly is awareness, but no willingness to take the actions needed. She also sensed that the ruling government may

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[2] *The presentations and the workshop program are available at: https://www.oenb.at/en/Calendar/2021/2021-06-17-east-jour-fixe.html*

not be interested in meaningfully addressing climate policy issues in Hungary. In her opinion, EU taxpayers should watch closely how EU funds are being used for climate-related projects and whether these projects are being realized in the end. Regarding the Western Balkans, she highlighted the large heterogeneity between countries with respect to their energy mix and their huge potential for renewable energy. Arak explained that people in Poland are aware of climate change, but do not want to pay more for energy. In this respect, he raised the issues of energy poverty and energy cost inflation (in part driven by rising emissions trading scheme (ETS) prices) in his country. Concerning Poland's energy mix, he drew attention to investments in wind parks and photovoltaic installations as well as to further investment plans to increase the share of these renewable energy sources. He pointed to the political importance of the country's coal regions, whose population accounts for a large number of votes. The loss of jobs in the coal industry, which dates back to the 1990s, is still subject to political debates in Poland. Finally, Arak argued that it is not realistic for Poland to become climate neutral by 2050.

Investment needs for CESEE's green transition

The keynote speech of the OeNB's 87th East Jour Fixe was delivered by *Harry Boyd-Carpenter* (Managing Director for Green Economy and Climate Action at the European Bank for Reconstruction and Development – EBRD), who spoke about the "Investment needs for CESEE's green transition." He pointed out that the goal of net zero emissions by 2050 requires an unprecedented energy transition which must aim at a far larger share of renewables, mainly at the cost of coal and oil, while ensuring that the total primary energy demand will not be higher in 2050 than in 2018. Thus, wind, solar and other renewables like geothermal and biofuels as well as increased energy efficiency must be among the main sources of emission reductions to realize necessary interim targets by 2030. Consequently, investment in CESEE up until then should focus on the following three key areas: (1) energy efficiency – by e.g. progressively renovating both public buildings and residential buildings; (2) renewable energy – by building power plants and promoting network investments through regulated utilities; (3) transport electrification – by increasing the share of electric vehicles in new sales despite higher up-front costs (compared to competitive lifetime costs) and expanding the electric vehicle charging infrastructure. Boyd-Carpenter agreed with the moderator, *Helene Schuberth* (Head of the OeNB's Foreign Research Division) that expanding the provision of public transport, such as railways and urban transport services, would be needed as well. To enable these investments, he highlighted the need for establishing a meaningful carbon price and setting minimum standards. At present, financing is not a constraint, given abundant liquidity, but a rise in long-term interest rates in the future would make investment projects more difficult. He also saw limited potential for expanding hydropower, given environmental challenges and the low cost of energy from other renewable sources like solar. *Jürgen Schneider* (Head of the Directorate General for Climate Action and Energy at the Austrian Federal Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology) supported this view, emphasizing both the challenge of complying with the EU Water Framework Directive and the need for involving residents early on. More generally, Schneider reviewed the most recent changes to EU policies. EU climate law will soon enter into force, requiring climate neutrality by 2050

and emission reductions of 55% by 2030. Austria has set itself the goal of becoming climate neutral by 2040 and switching to fully renewables-based electricity production by 2030, supported by the introduction of a carbon pricing scheme in early 2022. He concluded by highlighting the need for fostering climate transition through policy-supported adjustments in the labor market.

Steering the financial sector to address the climate challenge

The final round of discussion, chaired by *Andreas Breitenfellner*, addressed the role of banks and supervisors in the low-carbon transition. *Katrin Ganswindt* (Team Coordinator for Coal and Divestment Campaigns at urgewald e.V.) criticized the term "net zero" for being misleading and the transition timeline until 2050 for being too long – intermediate targets are needed on the way. She acknowledged the efforts of 31 banks (including Raiffeisen Bank International – RBI) to implement policies aimed at divesting from companies that extract and use coal, since big polluters would need financial restrictions. She recommended, however, to use additional metrics for exclusion thresholds, given that the complex business structure of those companies makes it difficult to determine the total share of coal in revenues. *Gábor Gyura* (Head of the Sustainable Finance Department at the Magyar Nemzeti Bank – MNB) emphasized that the MNB had introduced a comprehensive sustainable finance strategy. By pursuing a clear legal green mandate to support environmental policy in Hungary, without endangering its primary mandate of price stability, the MNB even went beyond the consensus among central banks which focuses on addressing climate risks as part of their mandate. Thus, the MNB is encouraging green lending and introduced preferential capital requirements for renewable energy lending, green bond investments and energy-efficient mortgages. RBI, for their part, signed the UN-led Principles for Responsible Banking and published a new coal policy in early 2021, as was pointed out by *Roland Mechtler* (Head of Group Regulatory Affairs & Data Governance at RBI). Taking these issues seriously implies a lot of in-depth work to obtain the necessary data from customers (i.e. firms). Their reporting has yet to be established, however, and this will take time. What is more, companies need to carefully choose the timing of investments: if they invest too early, they may lose money; if they invest too late, they may receive no financing. Hence, a benchmark guiding companies in their decisions is needed. Mechtler also recalled that the S in ESG, i.e. the social dimension of environmental, social and governance criteria, is often overlooked, but nonetheless very important in political decision making. Ganswindt, though, defended the E in ESG being disproportionately significant, as climate change worsens social problems and decarbonization helps solve them. *Josef Meichenitsch* (Head of the OeNB's Supervision Policy, Regulation and Strategy Division) compared ESG-related policies with anti-money laundering legislation which had turned from a soft to a hard topic in the last decade, with the ECB even withdrawing several bank licenses on money-laundering grounds. Every regulatory topic has its own life cycle, and ESG is somewhere in the middle, with regulatory measures getting tougher. The OeNB's supervisory arm has started to conduct climate stress tests making risks visible and measurable, the results of which will be published in late 2021. Applying a top-down approach, they investigate emission intensity at the industry and economy level using publicly available data and scenarios as well as the OeNB's own model to estimate potential losses of companies, and their impact on banks. CESEE countries

are only included by assumption, although the OeNB has started to engage in a dialogue with some central banks in the region. Mechtler added that RBI is trying to align all CESEE subsidiaries which, apart from the group's policies, must also reflect the transition paths of their countries. Gyura emphasized that subsidiaries of Austrian banks in Hungary get impulses from many sides (including from the ECB, the European Banking Authority (EBA) as well as Austrian and Hungarian supervisors), which calls for further coordination, as the MNB, for instance, is also working on a climate stress test. He concluded by inviting OeNB supervisors to a green finance workshop focusing on CESEE, which will be held by the MNB around early December 2021 in Budapest.

Studies

Use of loan moratoria by CESEE households: who are the users and how vulnerable are they?

Katharina Allinger, Elisabeth Beckmann[1]

Loan repayment moratoria were widely used during the COVID-19 pandemic to mitigate liquidity problems in the private sector and thus rapid asset quality deterioration in the banking sector. We provide novel, comparable survey evidence on the use of moratoria by households in ten Central, Eastern and Southeastern (CESEE) countries. In countries where eligible borrowers had to opt in to use moratoria, i.e. qualify and apply, 14% of borrowers did so on average; in countries where borrowers had to opt out, i.e. take action not to make use of automatically applied moratoria, take-up was 55% on average. We find that for opt-in moratoria, the main determinant of take-up is the degree to which borrowers' finances were affected by the pandemic. Moratorium take-up is also strongly affected by the extent of indebtedness, particularly in opt-out countries. Using information on loan arrears, we show that individuals who had exited from their moratoria by fall 2020 were not more likely to be in arrears than those who never used moratoria. However, these results probably constitute the lower bound for loan defaults that may occur once all moratoria have expired. After all, we also find that borrowers whose moratoria were still active in fall 2020 were subject to more adverse shocks and exhibited a higher degree of indebtedness than borrowers who had exited moratoria.

JEL classification: G51, D14, G18, G28
Keywords: household debt relief, moratoria, loan arrears

One of the tools frequently employed to cushion economic fallout from the COVID-19 pandemic and related containment measures were loan repayment moratoria.[2] Repayment moratoria essentially served to alleviate pandemic-related liquidity shocks to households and businesses. In implementing the moratoria, the CESEE-10[3] countries covered in this study adopted a range of approaches (see table 1), reflecting the varying impact of the pandemic in these countries, the policy mix chosen by governments and central banks, and the different structures of the national financial systems. Most countries provided for public moratoria[4] that required borrowers to opt in. Data on the actual take-up of moratoria are quite scarce and difficult to compare. This is partly due to the legal complexity of the matter, with a number of countries applying different moratorium regimes sequentially or even in parallel. Beyond private or public moratoria, banks may moreover have bilaterally negotiated repayment deferrals with clients.

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[2] *Repayment moratoria were often linked to enforcement moratoria, i.e. the temporary suspension of a lender's right to enforce loan security. Please note that the observations in this study are limited to repayment moratoria.*

[3] *CESEE-EU: Bulgaria, Croatia, Czechia, Hungary, Poland, Romania; Western Balkans: Albania, Bosnia and Herzegovina, North Macedonia, and Serbia.*

[4] *Following general custom, we use the term "public moratoria" to refer to legislative moratoria and the term "private moratoria" to refer to nonlegislative moratoria as provided by several institutions to a large predefined group of obligors regardless of their creditworthiness.*

Our paper is related to the extensive research on debt relief programs for households. A central debate in this research is whether government interventions prevent unnecessary foreclosures or generate moral hazard problems (see e.g. Guiso et al., 2013, and Agarwal et al., 2017). For CESEE, research on previous debt relief has focused on foreign currency loans (see e.g. Fischer and Yesin, 2019).

Research analyzing debt relief in the form of loan moratoria during the COVID-19 pandemic is still extremely scarce. A notable exception are Cherry et al. (2021), who analyze debt relief measures in the US based on credit registry data. They find that in contrast to previous economic crises, loan default rates did not increase in 2020 along with unemployment and that debt distress was successfully reduced by debt relief measures. Also providing evidence for the US, Haughwout et al. (2020) find that borrowers who relied on moratoria had lower credit scores and approximately 30% higher outstanding debt balances than those who did not.

So far, very few details are (publicly) known regarding the characteristics of moratorium users and the effectiveness of moratoria in preventing short-term liquidity and medium-term solvency issues in CESEE. At the time of writing, the Hungarian National Bank (2020, box 3) is, to our knowledge, the only CESEE-10 central bank to have published more detailed information on moratorium user characteristics.

Our study is therefore one of the first to fill an important gap in the literature on a highly policy-relevant topic. We present evidence on the use of moratoria by individuals in CESEE-10 collected in the 2020 wave of the OeNB Euro Survey, which was conducted from late September until early November. To our knowledge, our data are the only comparable cross-country evidence on the use of moratoria by individuals for such a large set of CESEE countries. In the following, we first provide some descriptive evidence on the use of moratoria and then proceed to analyze who used moratoria, differentiating between active and expired[5] moratoria, and provide some preliminary evidence on how moratoria affected loan defaults.

Our results show that the take-up of moratoria cannot be explained by socio-economic characteristics of borrowers. For opt-in moratoria, the main determinant of take-up is how seriously borrowers' finances were affected by the COVID-19 pandemic, e.g. whether borrowers were laid off or suffered some other income loss. The use of moratoria in opt-in and opt-out countries was strongly affected by the extent of indebtedness, for instance, money owed to several lenders. Being adversely affected by the pandemic increased the probability of borrowers still using moratoria at the time of the survey. Borrowers with higher debt amounts or a larger number of debt instruments were significantly more likely to continue to rely on moratoria in fall 2020. Thus, the debt overhang or difficulties servicing debts are likely going to be larger for borrowers who relied on moratoria for an extended period of time or whose moratoria were still active at the time of the survey.

When looking at arrears, we find that borrowers whose moratoria had expired by fall 2020 are not more likely to be delinquent on loans than borrowers who never took up moratoria. This finding gives rise to cautious optimism – even though our result is subject to some caveats. Moreover, our finding regarding loan

[5] *Expired moratoria comprise both voluntary and involuntary exit (expiration) from the moratorium.*

arrears may not be transferable to borrowers who relied on moratoria for an extended period of time.

In the following, we briefly discuss the design of moratoria in CESEE in section 1. Section 2 provides an overview of the OeNB Euro Survey data and the limitations of these data. Section 3 presents the descriptive evidence. In section 4 we outline our empirical strategy before presenting analytical results and robustness analyses in section 5. Section 6 concludes.

1 The design of moratoria in CESEE

The topic of moratoria is quite complex in CESEE as public approaches to support borrowers and private agreements for loan repayment deferrals differed considerably, even within individual countries. In this section we focus on the aspects relevant for our study for reasons of scope and clarity.

Many countries closely or loosely modeled moratoria on the European Banking Authority's (EBA) guidelines on legislative and nonlegislative moratoria in light of the COVID-19 pandemic, published on April 2, 2020. The EBA guidelines set out the conditions for general payment moratoria which do not automatically trigger the reclassification of exposures as forborne (as defined under Article 47b of the CRR) or defaulted (as defined under Article 178 of the CRR). Over time, the EBA guidelines were extended and amended. At the time of the interviews in fall 2020, EBA/GL/2020/08 applied and most EU member states included in the OeNB Euro Survey were using EBA guideline-compliant moratoria.[6] In Croatia, the application deadline exceeded the one set out in the guidelines, while Romania did not notify the EBA about compliance.[7]

However, even in the countries that provided EBA-compliant moratoria, not all moratoria were compliant to the letter of the EBA guidelines. As summarized in table 1, key design features[8] differed across countries, for instance the requirement for borrowers to either opt in (e.g. apply for the moratorium) or opt out (of the automatically applied moratorium). In the opt-out countries, Hungary, North Macedonia[9] and Serbia, the take-up of moratoria was much higher than in the opt-in countries. This makes sense as the opt-out regime did not require further action from borrowers such as contacting their bank or compiling application documents. Moreover, unlike most opt-in moratoria, the opt-out moratoria were not conditional on borrowers' degree of affectedness by the pandemic. Some moratoria

[6] *See EBA Guidelines on legislative and non-legislative moratoria on loan repayments applied in the light of the COVID-19 crisis: https://www.eba.europa.eu/regulation-and-policy/credit-risk/guidelines-legislative-and-non-legislative-moratoria-loan-repayments-applied-light-covid-19-crisis.*

[7] *All EU member states covered in this study were listed as compliant with the latest version of the EBA guidelines (EBA/GL/2020/15) as of end-December. Applications for EBA-compliant moratoria were accepted until March 31, 2021.*

[8] *The importance of policy design aspects for policy outcomes is well documented in the economics and behavioral science literature, a review of which would be beyond the scope of this study.*

[9] *In North Macedonia, individuals had to opt in whereas businesses had to opt out.*

may thus also have been used preventively. Therefore, we should find different determinants of moratorium use for opt-out and opt-in countries (see section 5.1).[10]

Other important design differences are public (or legislative) moratoria versus private (or nonlegislative) moratoria. Private moratoria, which were largely based on guidelines issued by national banking associations, were implemented in Croatia, Poland and Bulgaria.[11] According to information provided by the central banks of Poland and Croatia, the conditions for these moratoria varied quite widely across borrowers. Most countries provided moratoria for companies and households, and some countries applied different criteria for companies and households. Many countries accepted a broad range of credit products (e.g. credit cards, overdrafts, leasing agreements) and included nonbank lenders. However, regarding these points there was also considerable variation within the region: Czechia, for instance, was among the more restrictive countries, as the moratorium did not apply to credit products other than loans, and corporates were not allowed to defer interest payments.

Table 1

Some key design features of moratoria in CESEE

Country	Public/private	Application deadline	Opt-in/opt-out	Eligible borrowers/repayments
Bulgaria	Private[1]	March 31, 2021	Opt-in	Corporates and individuals if negatively affected by COVID-19
Czechia	Public	Oct. 31, 2020	Opt-in	Corporates (principal only), households (interest capitalized)
Hungary	Public	June 30, 2021[3]	Opt-out	Private sector
Croatia	Private[2]	March 21, 2021	Opt-in	Corporates and individuals if negatively affected by COVID-19
Poland	Private	Sept. 30, 2020[4]	Opt-in	Corporates and individuals if negatively affected by COVID-19
Romania	Public	March 15, 2021	Opt-in	Corporates and individuals if negatively affected by COVID-19 (interest accrued and (except for mortgages) capitalized)
Albania	Public	Aug. 31, 2020	Opt-in	Corporates and individuals if negatively affected by COVID-19
Bosnia and Herzegovina	Public[5]	Dec. 31, 2020	Opt-in	Corporates and individuals if negatively affected by COVID-19
North Macedonia	Public	Sept. 1, 2020[6]	Opt-out (for individuals)	Corporates and individuals
Serbia	Public	Sept. 30, 2020[3,7]	Opt-out[7]	Corporates and individuals

Source: Authors' compilation.

[1] The initial solution was a public moratorium, which applied for banks until May 13, 2021, and was tied to the state of emergency.
[2] A public moratorium was provided for loans from the Croatian Development Bank HBOR. These make up a small portion of overall loans.
[3] End date rather than application deadline for opt-out moratoria in Hungary and Serbia.
[4] Extended until March 31, 2021, for negatively affected corporates.
[5] Banks were required to work out adequate modalities for repayment and offered moratoria as one option.
[6] Borrowers were offered two opportunities to switch to more favorable loan terms, first in March and then in September.
[7] In mid-December, a new opt-in moratorium was adopted with the application deadline running until April 30, 2021, for negatively affected borrowers.

[10] Clearly, opt-in and opt-out moratoria come with advantages and disadvantages which will have influenced the decision to implement one or the other in different countries. While opt-out moratoria by design will cover all borrowers in need of the moratorium, opt-in moratoria will i.a. benefit only informed and financially literate borrowers. The obvious policy question whether one is ultimately a more "successful policy" than the other is even more complex. After all, the definition of "success" would have different implications depending on whether the focus is on financial stability or on household welfare. Moreover, such a discussion would have to draw on previous research in behavioral economics, e.g. the broad debate on nudge theory, as well as evidence on present bias, loss aversion and inattention. Covering this complex albeit very topical issue is beyond the scope of this paper and the underlying data.

[11] Bulgaria initially provided for a public moratorium that expired in May 2020 and was replaced by a private moratorium. Croatia applied a public moratorium on loans granted by the Croatian Development Bank (HBOR).

Also, the deadlines for applications differed. In most countries covered by the OeNB Euro Survey, our main data source for this study, borrowers were still able to apply for moratoria at the time of the interviews in fall 2020. However, in Albania the deadline for applications had expired already in August 2020 and in Serbia the opt-out moratorium expired at the end of September and the new opt-in moratorium for distressed debtors was not announced until mid-December. North Macedonia is also an outlier, as borrowers were offered two opportunities to switch to more favorable loan terms, most often in the form of a postponement of repayments.

2 Data

The main data source for this study is the 2020 wave of the OeNB Euro Survey[12] – a repeated cross-sectional face-to-face survey of individuals, aged 18 or older. The survey covers six non-euro area EU member states (Bulgaria, Croatia, Czechia, Hungary, Poland and Romania) and four EU candidates and potential candidates (Albania, Bosnia and Herzegovina, North Macedonia, and Serbia). In each country and in each survey wave, a sample of 1,000 individuals is polled based on multistage random sampling procedures. Each sample reflects a country's population characteristics in terms of age, gender, region and ethnicity. Weights are calibrated on census population statistics for age, gender, region, and where available, on education and ethnicity.

In the 2020 wave of the OeNB Euro Survey, we included a question on moratoria, which read:

Due to the outbreak of the Corona crisis, banks and governments have increasingly provided borrowers with the possibility to postpone loan repayments for a certain period of time. Which of the following statements apply to you? Please name all that apply.[13]

I was not aware of this
I was aware of this possibility but do not know anyone who has made use of it
A member of my household has made use of this possibility
I know of somebody else (not living in my household) who has made use of this possibility

[ONLY IF RESPONDENT HAS A LOAN]
I am still making use of this possibility
I made use of this possibility, but don't do so any longer
I am aware of this possibility, but I am not making use of it

For each item:	*mentioned*	*not mentioned*
Or all items:	*don't know*	*no answer*

Our question clearly has some caveats when considering the different design features of moratoria discussed in section 1. The wording is necessarily a compromise that applies better to some countries than others. For instance, we decided to filter moratorium use on loan holders for simplicity, despite the fact that other credit products, e.g. overdrafts, were also eligible for moratoria in some countries.

[12] *For more information on the OeNB Euro Survey, see www.oenb.at/en/Monetary-Policy/Surveys/OeNB-Euro-Survey.html.*

[13] *Multiple answers were possible.*

Our data thus only capture moratoria taken up by borrowers with at least one loan outstanding.[14] Moreover, we do not ask for loan amounts and therefore cannot make any assessment about the volumes of household loans affected by moratoria. These caveats are among the main reasons why we do not enter into a detailed comparison of our data with the scarce publicly available data on moratorium take-up in section 3.

The OeNB Euro Survey also elicits a rich set of information on socioeconomic characteristics; information on individual finances, including loan characteristics; beliefs and expectations; trust; financial literacy; indicators of wealth and income; income and labor shocks; as well as mitigating actions taken in response to the COVID-19 crisis. Table A1 in the annex provides a definition of the variables we use in this study and the wording of the survey questions. Table A2 shows the summary statistics of our main sociodemographic and other variables of interest for the full sample and groups of interest.

3 Descriptive results on moratorium use

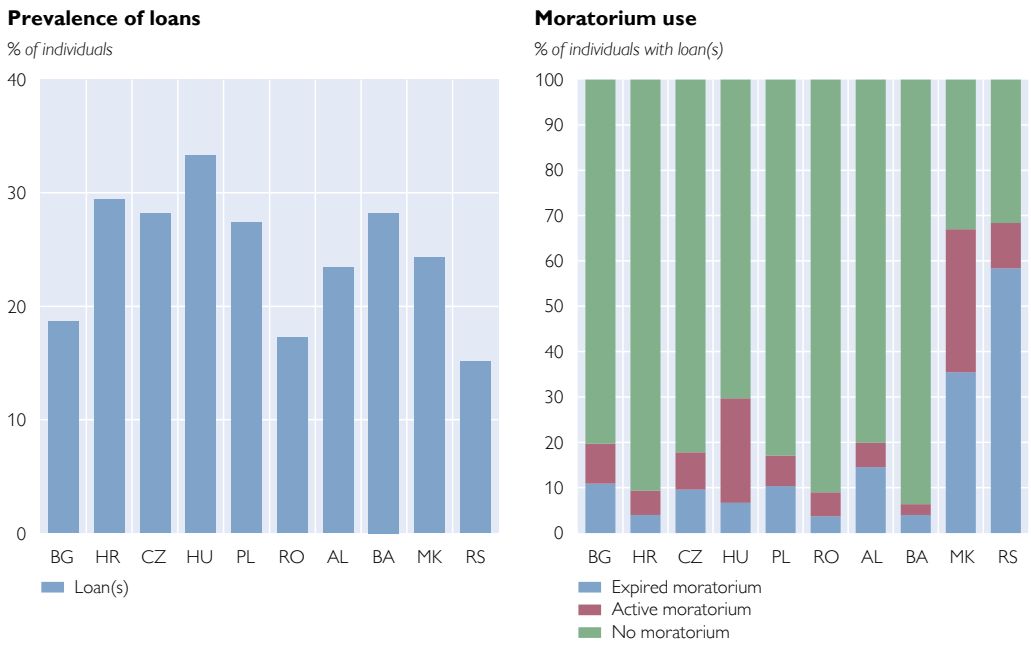
On average, every fourth individual in CESEE-10 had one or more loans outstanding at the time of the interview, but the respective percentages differ considerably across countries (chart 1, left panel). Among loan holders, the take-up of moratoria was particularly low in Bosnia and Herzegovina (~6%) and Romania and Croatia (~9%) (chart 1, right panel). In the other opt-in countries, it was around 16% in Poland, Bulgaria and Czechia and 19% in Albania. In the opt-out countries, the use of moratoria was highest in Serbia, reaching 68% of loan holders. The distribution between borrowers with active and expired moratoria was quite heterogeneous. The share of borrowers with active moratoria was by far the highest in Hungary (~80% of users) and the lowest in Serbia (~15% of users) and Albania (~30% of users), the two countries where applications for moratoria were no longer accepted at the time of the interviews. In the other countries, the share of borrowers with active moratoria ranged between 42% in Poland and 57% in North Macedonia. In section 4.2 of the study, we investigate differences between borrowers with active moratoria and borrowers with expired moratoria.

To cross-check our data, we compared them with the scarce publicly available data on moratorium use by households from national sources, EBA (2020) and EIB (2021, 2020). However, most of the available public evidence refers to moratorium use in terms of shares of portfolios rather than shares of borrowers, severely limiting comparability. Moreover, where information on the share of borrowers is available, the type of credit is often not disclosed. Whether the data include all credit products or just loans, all participating institutions or just (a selection of) banks, all moratoria or just EBA-compliant moratoria, makes a substantial difference in the reported shares. This also helps to explain the publication of seemingly conflicting evidence on moratorium use for individual countries (see table A3 in the annex). Overall, we find little evidence that would lead us to believe that there are grave and systematic errors in our data. The country where our data seem most out of sync with the available public data is Hungary – we cannot verify the reason, but

[14] *We have 4,442 indebted respondents in our sample, of which 2,556 state that they have at least one loan outstanding. The difference between the two figures is largely due to overdraft debt (829 respondents have overdraft debt, but no loan) and debt owed to family and friends (664 respondents have informal debt, but no loan), and to a much lesser extent other debt forms.*

Chart 1

Loan and moratorium take-up



Source: OeNB Euro Survey 2020.

Note: Data are weighted.

different data populations (households versus individuals) and/or possibly undersampled consumer loans, which were most affected by moratoria in Hungary (Hungarian National Bank, 2020 and 2021), could be a factor. Generally, credit registers, public authorities or banking associations can provide more precise and more granular (but often confidential) national data than the OeNB Euro Survey.[15] The strength of our data lies in the cross-country comparison and the combination with a rich microeconomic dataset, which allows us to tackle the research questions detailed in section 4.

4 Empirical strategy

The main aim of the econometric analysis we undertake is to model the determinants of moratorium use, in particular regarding the vulnerability of households and their affectedness by COVID-19 and the related containment measures. In a second step, we empirically analyze whether borrowers with expired moratoria differ from those with active moratoria. Finally, we model how moratorium use is associated with self-reported loan arrears and loan default.

We thus investigate three main questions in this study: (1) Which individual characteristics have the highest significant correlation with the use of moratoria? We are particularly interested in finding out whether sociodemographic characteristics and preferences, loan features or the degree of affectedness by the pandemic

[15] *In addition to comparing the survey results with data from EBA and national sources regarding moratorium use, chart A1 provides evidence on household nonperforming loans (NPLs) based on statistics from national central banks. The scatter plot shows that there is a positive correlation with OeNB Euro Survey results. However, the comparison is not straightforward as aggregate statistics show NPLs in terms of amounts while survey results show NPLs in terms of individuals with a loan.*

have the highest impact and whether differences can be traced back to moratorium design. (2) Are borrowers who benefited from moratoria during 2020 but had exited by fall different from those whose moratoria were still active in fall 2020? (3) How is moratorium use related to loan arrears and default? The combination of these questions is particularly interesting from a policy perspective. After all, we form our expectations regarding credit quality deteriorations over the next months partially from the evidence on whether moratorium users resumed repayment once their moratoria ended. If the characteristics of borrowers with active moratoria were to differ from those of borrowers with expired moratoria, then these extrapolations could be quite erroneous.

Our key dependent variable on moratorium use is filtered on borrowers with one or more loans outstanding from a bank or nonbank financial institution. Estimates that do not take into account that the selection into the credit market may be biased downward (Mocetti and Viviano, 2017). Therefore, we considered a Heckman (1979) model. In principle, we have variables available that are likely good instruments for dealing with selection bias, e.g. the distance to banks and bank concentration as well as some sociodemographic characteristics, such as age, being married, having children, owning a car. Regressions confirm previous research that these variables have a strong impact on the probability of having been granted a loan (Beckmann et al., 2012; Costa and Farinha, 2012; Nguyen, 2007), but no theoretical or statistical impact on moratorium use. However, the coefficient rho, which assesses selection bias, is insignificant in all our specifications and the coefficients of the Heckman probit and an ordinary probit model are almost indistinguishable – we therefore opted for simplicity and use a probit model for our estimation:

$$M = \begin{cases} 1 & \text{if } M^* > 0 \\ 0 & \text{otherwise} \end{cases}$$

$$\text{where } M^* = X\beta + \varepsilon \quad \text{and} \quad (\varepsilon | X) \sim N(0,1)$$

In this model, M is the observed outcome of moratorium use, which depends on M^*, the underlying, continuous variable determining the take-up of the moratorium. We might think of M^* as the utility the borrower gets from using the moratorium, e.g. in terms of alleviating his/her financial distress. M^* is determined by a set of variables X, that are derived from theoretical and empirical research (see also tables A1 and A2 in the annex). We split these into four subsets:

1 Impact of COVID-19: Following Cherry et al. (2021) these variables capture pandemic-induced financial vulnerability: *experienced income shock, mitigating actions* taken in response to the crisis (e.g. cutting daily expenditures, reducing savings, …), industry of occupation.
2 Loan characteristics: These variables are primarily informed by research on loan arrears (e.g. Mocetti and Viviano, 2017; Duygan-Bump and Grant, 2009) and proxy for the loan amounts (*mortgage*), loan conditions (*foreign currency loan*) and the extent of indebtedness (*further forms of debt*). As our dependent variable is not loan arrears but moratorium use, we do not include certain loan characteristics that have been shown to influence loan arrears, such as the remaining loan term, given the exogenous timing of the pandemic.

3 Socioeconomic characteristics: Based on the vast literature studying determinants of borrowing (see Guiso and Sodini, 2013, for an overview) we focus on those variables that are related to access to credit and creditworthiness: gender, size of household, manages household finances, labor market status, income, proxies for wealth (*condition of residence poor, own secondary residence, receives remittances, no savings*).
4 Personal beliefs and preferences: Similar to socioeconomic characteristics the choice of these control variables draws on a much larger literature. Lusardi and Tufano (2015) highlight the importance of financial literacy for overindebtedness (*financial literacy*), and trust and risk aversion have been shown to influence households' financial decisions in general (Guiso and Sodini, 2013). With regard to trust, we focus on *trust in banks* as trust in government or the central bank is likely endogenous with respect to moratorium use.

Especially with respect to socioeconomic characteristics as well as personal beliefs and preferences, there are many alternative specifications. To investigate possible multicollinearity issues, we compute pairwise correlations for our control variables. Taking into account that many of our control variables are binary we additionally compute polychoric correlations. Not surprisingly, we find a significant correlation between e.g. income and labor market status. Crucially, our variables are not highly correlated across the four subsets discussed above or do not exhibit high variance inflation factors when we run linear probability models.[16] As these are control variables rather than explanatory variables at the center of our analysis, we only present one specification in the main analysis and discuss alternative specifications in robustness checks.

To analyze how borrowers with expired moratoria differ from borrowers with active moratoria, we define three outcomes for our dependent variable: no moratorium, expired moratorium, active moratorium. Theoretically it is possible to view these outcomes as ordered, which would imply that if the underlying latent variable M^* is above a certain threshold, borrowers are more likely to have active moratoria rather than expired moratoria. We consider this a plausible assumption for those countries where application deadlines ran beyond the time of the survey. We therefore estimate a generalized ordered logit model (Williams, 2006), as the parallel regression assumption of the ordered logit model does not hold for all explanatory variables according to a Brant test and an approximate likelihood-ratio test (Brant, 1990; Wolfe, 1997; Long and Freese, 2014).

[16] *Running a linear probability model and computing the variance inflation factor shows that overall variance inflation is 1.67 for the baseline regression. Financial literacy shows the highest variance inflation factor at 2.5. Combining these results of correlations and variance inflation is adequate indication that an in-depth investigation of multicollinearity issues will not change our main results. We, therefore, decide to not to drop any of the baseline control variables, as interpretation of our key variables requires adjusting for their effects. Robustness analyses (see section 5.4) further support this approach.*

$$M = \begin{cases} 0 \text{ if } M^* \leq 0 \\ 1 \text{ if } 0 < M^* \leq \mu \\ 2 \text{ if } \mu < M^* \end{cases}$$

$$\text{where } M^* = X\beta + \varepsilon \quad \text{and} \quad (\varepsilon | X) \sim N(0,1)$$

As our outcome variable does not have a natural and undisputable ordering, we also estimate a multinominal logit – which assumes no ordering of outcomes. The resulting estimates are unbiased if possibly less efficient.

To assess the impact of moratorium use on loan repayment, we again estimate probit models where the dependent variable indicates whether borrowers are or have been in loan arrears. The explanatory variables are informed by previous research: socioeconomic characteristics, loan characteristics and adverse shocks (see Duygan-Bump and Grant, 2009; Guiso et al., 2013).

All regressions include country fixed effects and standard errors clustered at the country level.

5 Results

In the following, we discuss the results of our main estimations. We first present the results on the importance of individual variables (section 5.1.) and then proceed to discuss our findings on the difference between borrowers with active moratoria and users with expired moratoria at the time of the interview (section 5.2).

5.1 Determinants of moratorium use

Table 2 shows the results of our baseline specification for the full sample (column 1). Focusing on this column, we immediately see that the block of sociodemographic and preference variables is largely insignificant. In contrast to other crises where loan delinquencies increased with unemployment, unemployment does not have a significant impact on moratorium uptake. This is in line with results for the US (Cherry et al., 2021). Income does not have a significant impact on moratorium use. This could be the case because median income in general is higher among borrowers than nonborrowers[17] and because higher-income borrowers tend to take out larger loan amounts. However, being retired, receiving remittances, being risk averse and working in relatively lockdown-resilient sectors (public, ICT, financial or science/professional activity sector) significantly reduces the likelihood of moratorium take-up. The effect of retirement is particularly large; on average across countries, 10% of borrowers are retired (see table A2).

More important explanatory factors than sociodemographic variables are the number of loans and the degree of affectedness by the COVID crisis. Borrowers with more than four forms of debt (including nonbank and informal debts) are 9 percentage points more likely to have relied on moratoria than other borrowers. In CESEE-10, the probability of moratorium take-up increases with the number of mitigating actions borrowers had to take in response to the crisis (e.g. reduce consumption or savings). The probability of moratorium take-up is 13 percentage points higher among those who had to take more than five mitigating actions. Also, individuals who experienced an income shock are significantly more likely to take up

[17] *The difference on average across CESEE-10 countries is EUR 500 (PPP-adjusted).*

moratoria. It should be noted that the importance of sociodemographic variables barely changes if crisis variables are dropped. Results for the US also show that households who suffered from COVID-19-related shocks are more likely to use moratoria (Cherry et al., 2021).

In contrast to the US (Cherry et al. 2021), CESEE-10 borrowers who live in regions that were more affected economically by COVID-19 are not more likely to use moratoria: Local economic shocks (as proxied by nightlight following Henderson et al., 2012[18]) are not a significant determinant of moratorium use[19]– individual affectedness is the main determinant.

Column 2 and column 3 show the estimations for opt-in and opt-out countries separately. We split the sample, as the decision to take out repayment moratoria is likely governed by very different factors, depending on this fundamental difference in design. In line with the discussion in section 1 we expect that COVID-19 affectedness should be the strongest predictor in the opt-in countries, as moratoria were explicitly targeted towards these borrowers. In opt-out countries, where moratoria were not targeted to specific borrowers, we expect a more diverse set of determinants. These expectations are confirmed by our estimations. In the opt-in countries, the variables with the largest significant impact on the decision to use moratoria are indeed the COVID-affectedness variables.[20]

On the contrary, in the opt-out countries many affectedness variables are insignificant – this corresponds to our expectation that affectedness was less important than other factors and that moratoria reached a broad range of people with diverse motivations for take-up. It is interesting to note that the coefficient for those working in industries strongly affected by lockdowns, e.g. tourism, arts and personal services, is very high and significant in the opt-out countries. This could mean that beyond affectedness, these borrowers might also have had a precautionary motive to safeguard finances amidst income uncertainty.

Compared to opt-in countries, the number of debt instruments is more important among the opt-out countries. People with two or three different types of debt are almost 10 percentage points more likely to have taken up moratoria, while those with four or more forms of debt are 14 percentage points more likely. This makes sense as moratorium relief may have been a welcome opportunity for some borrowers for reasons of distress (if they were overindebted already before the pandemic) or for precautionary reasons (if they were unsure about the impact of the pandemic on their job and income). Borrowers with foreign currency loans are significantly less likely to have taken up moratoria. Generally, there are quite some differences to the opt-in countries in other sociodemographic variables as well – e.g. being self-employed reduces the likelihood of take-up by 13 percentage points in the opt-out countries, while increasing the probability in the opt-in countries, even though the coefficient is only mildly significant. Being in charge of household finances increases the probability by almost 16 percentage points in the opt-out

[18] *We use both annual nightlight data from 2019 and 2020 and monthly nightlight data from 2020 to investigate local economic shocks.*

[19] *We therefore omitted them from our baseline.*

[20] *In opt-in countries, self-selection clearly affects moratorium use. We do not observe who applied and was rejected or who was eligible and did not apply and, therefore, cannot empirically account for the possible selection bias. However, if self-selection was a serious concern, one driving factor would likely be financial literacy, which is insignificant in all specifications.*

Table 2

Determinants of moratorium use

Dependent variable	Moratorium use		
Sample	All countries	Opt-in countries	Opt-out countries
Female	0.015	0.028**	–0.012
	(0.014)	(0.013)	(0.021)
Size of household	–0.009	–0.017***	0.012
	(0.008)	(0.005)	(0.023)
Manages household finances	0.041	0	0.151***
	(0.030)	(0.033)	(0.003)
Unemployed	0.006	0.023	–0.068
	(0.052)	(0.040)	(0.123)
Self-employed	0	0.035*	–0.129***
	(0.030)	(0.019)	(0.034)
Retired	–0.109***	–0.085*	–0.137***
	(0.025)	(0.043)	(0.034)
Income: refused answer	–0.003	0.038	–0.059
	(0.036)	(0.032)	(0.067)
Income: low	–0.032	–0.01	–0.102
	(0.043)	(0.027)	(0.150)
Income: medium	0.006	0	0.033
	(0.018)	(0.023)	(0.028)
Condition of residence: poor	0.004	–0.054***	0.112***
	(0.029)	(0.021)	(0.043)
Own secondary residence	–0.001	–0.007	0.014
	(0.012)	(0.011)	(0.033)
Receives remittances	–0.049*	–0.023	–0.119**
	(0.026)	(0.025)	(0.055)
No savings	0.044**	0.048*	0.054*
	(0.020)	(0.027)	(0.028)
Financial literacy=1	0.004	0.002	–0.002
	(0.018)	(0.016)	(0.028)
Financial literacy=2	0.034	0.019	0.062
	(0.031)	(0.027)	(0.083)
Financial literacy=3	–0.016	–0.03	0.03
	(0.033)	(0.024)	(0.070)
Trust banks	–0.023	–0.018	–0.037
	(0.023)	(0.028)	(0.062)
Risk-averse	–0.037**	–0.039*	–0.040**
	(0.017)	(0.023)	(0.016)
Mortgage	0.029	0.045**	–0.002
	(0.020)	(0.021)	(0.053)
Foreign currency loan	–0.019	0.017	–0.081***
	(0.026)	(0.024)	(0.020)
2–3 further forms of debt	0.025	–0.013	0.096***
	(0.030)	(0.037)	(0.028)
4 or more further forms of debt	0.093***	0.065**	0.143***
	(0.023)	(0.026)	(0.050)
Industry of occupation: public sector/ICT	–0.043***	–0.055***	–0.026
	(0.016)	(0.015)	(0.018)
Industry of occupation: tourism, arts, personal services, other	0.028	–0.004	0.107***
	(0.024)	(0.026)	(0.003)
Mitigating actions: low	0.046***	0.035***	0.078***
	(0.008)	(0.014)	(0.016)
Mitigating actions: medium	0.093***	0.092***	0.071
	(0.024)	(0.016)	(0.059)
Mitigating actions: high	0.131***	0.124***	0.131
	(0.034)	(0.024)	(0.101)
Experienced income shock	0.088***	0.089***	0.089
	(0.023)	(0.018)	(0.065)
Country fixed effects	Yes	Yes	Yes
Log-L	–937.8	–490.2	–418.1
Pseudo-R2	0.23	0.17	0.15
N	2,206	1,498	708
P(DepVar=1)	0.24	0.13	0.47

Source: Authors' calculations.

*Note: Average marginal effects from probit regressions. Standard errors are clustered at the country level. *, ** and *** denote significance at the 10%, 5% and 1% level, respectively.*

countries. Similar to results from the US, where borrowers had to apply for moratoria (Cherry et al., 2021), mortgage holders in opt-in countries are significantly more likely to use moratoria than borrowers with consumption or car loans.

Finally, if we only look at countries with private moratoria (Bulgaria, Croatia and Poland),[21] findings are similar to opt-in countries with one notable exception: Trust in banks significantly increases the probability of moratorium use by 4 percentage points – highlighting that private moratoria often require renegotiation between borrowers and lenders.

Clearly, country-specific factors that may not be captured by country fixed effects could play an important role, and the results for country groupings may differ from results for individual countries. For example, a recent analysis by the Hungarian National Bank (2021) shows that in Hungary moratorium use is negatively correlated with income. However, due to low numbers of observations per country we do not present results at a more disaggregate level.[22]

5.2 Differences between borrowers with expired and active moratoria in fall 2020

Borrowers with active moratoria in fall 2020 may have been more affected by COVID-19 or may have had different debt portfolios than borrowers who had exited moratorium by then. As discussed in section 4, we estimate a generalized ordered logit, which is based on the assumption of a natural ordering in the dependent variable ("no moratorium," "expired moratorium" and "active moratorium"), and a multinominal logit model, which assumes no ordering.[23] Table 3 shows the results of both models for loan and indebtedness characteristics and indicators of crisis affectedness, which are particularly important explanatory variables for moratorium use (table 2). Regarding loan characteristics and indebtedness, many variables are insignificant. However, for respondents with four or more debt instruments, the generalized ordered logit suggests a higher impact on moratorium use for borrowers with active moratoria than for borrowers with expired moratoria. Similar to the US, borrowers who have a mortgage are less likely to have exited moratoria (Haughwout et al., 2020).

The increase in the probabilities for the crisis variables is generally higher for active moratoria than for expired moratoria. For instance, in columns 4 to 6, experience of a shock increases the probability of initial take-up by roughly 3 percentage points, while it increases the probability of ongoing moratorium use by 5 percentage points. As expected, when considering the efficiency of the multinomial logit and generalized ordered logit, the results are stronger when ordering is assumed in the model, but also hold in the non-ordered case for the crisis variables. Both Albania

[21] *Results available upon request from the authors.*

[22] *The number of observations per country ranges between 165 (Romania) and 347 (Hungary). Even if we run a more parsimonious specification (such as table A4), individual country results indicate collinearity issues with a large number of insignificant coefficients. As an alternative to splitting the sample into individual countries, we do not compute average marginal effects but compute marginal effects fixing the single country dummies at value 1. However, these marginal effects "at representative" values are very difficult to interpret as results are relative to the country which is the base category. Results are available upon request from the authors.*

[23] *We perform two alternative tests to examine the assumption of constancy of effects across categories for the alternative ordered logit model. The approximate likelihood-ratio test of proportionality of odds across response categories yields a Chi-squared statistic of 196 (p-value: 0.00). The Brant test shows several significant coefficients, e.g. for labor market status, mortgage and remittances as well as country fixed effects also indicating that the parallel regression assumption would be violated if we ran a simple ordered logit model.*

and Serbia have particularly high shares of moratorium users with expired moratorium (above 70%) (see chart 1). This is likely due to the design and expiration of the moratoria in these countries, as prolonging existing moratoria or applying for new moratoria was no longer an option. The absence of choice for borrowers dilutes the strength of our analysis in table 3. Repeating estimations without Albania and Serbia, the finding that a higher degree of affectedness by COVID-19 and higher debt volumes (indicated by the number of debts and type of loan) contribute to continued moratorium use is confirmed even more clearly.[24] This implies that the repayment behavior and vulnerability of borrowers with expired moratoria might not provide good guidance on what to expect once extended moratoria expire. Large-scale cliff-effects are likely mitigated by the fact that moratorium design largely included an extension of loan terms and no rise in post-moratorium installment rates. Nonetheless, for borrowers with post-pandemic solvency rather than liquidity issues, targeted solutions need to be found (e.g. in the form of loan restructurings) once moratoria expire to avoid the social and economic costs associated with sharply increasing borrower default rates.

Table 3

Determinants of moratorium use

Dependent variable	No moratorium	Expired moratorium	Active moratorium	No moratorium	Expired moratorium	Active moratorium
Sample	All countries					
Model	Multinomial logit			Generalized ordered logit		
Mortgage	–0.031	–0.014	0.045***	–0.028	–0.02	0.048***
	(0.020)	(0.017)	(0.015)	(0.018)	(0.013)	(0.018)
Foreign currency loan	0.021	–0.036***	0.014	0.021	–0.038***	0.017
	(0.024)	(0.012)	(0.023)	(0.025)	(0.013)	(0.020)
2–3 further forms of debt	–0,026	0,008	0,019	–0,027	0,01	0,017
	(0.030)	(0.026)	(0.015)	(0.026)	(0.010)	(0.016)
4 or more further forms of debt	–0.096***	0,028	0.069**	–0.083***	0.031***	0.051***
	(0.021)	(0.031)	(0.027)	(0.026)	(0.010)	(0.016)
Mitigating actions: low	–0.047***	0,031	0,016	–0.050***	0.022***	0.028***
	(0.008)	(0.019)	(0.015)	(0.006)	(0.003)	(0.003)
Mitigating actions: medium	–0.092***	0.048***	0,044	–0.089***	0.037***	0.052***
	(0.027)	(0.017)	(0.028)	(0.032)	(0.013)	(0.019)
Mitigating actions: high	–0.130***	0.059***	0.071***	–0.126***	0.050***	0.076***
	(0.036)	(0.020)	(0.025)	(0.040)	(0.016)	(0.025)
Experienced income shock	–0.089***	0.039**	0.050***	–0.083***	0.031***	0.052***
	(0.024)	(0.017)	(0.014)	(0.026)	(0.009)	(0.016)
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Additional controls as in table 2	Yes	Yes	Yes	Yes	Yes	Yes
Log-L	–1,237.5	–1,237.5	–1,237.5	–1,246.2	–1,246.2	–1,246.2
N	2,206	2,206	2,206	2,206	2,206	2,206

Source: Authors' calculations.

*Note: Average marginal effects from multinomial logit regression (columns 1–3) and generalized ordered logit regression (columns 4–6). Standard errors are clustered at the country level. *, ** and *** denote significance at the 10%, 5% and 1% level, respectively.*

[24] *Upon request, results are availble from the authors.*

5.3 Moratorium use and loan arrears

A central question is whether borrowers exiting moratoria will fall into loan arrears or will be able to resume repayment of loan instalments. To provide some preliminary evidence on repayment abilities of moratorium users, we use survey evidence on self-reported loan arrears. The survey question reads as follows:

Think of all the loans you have, either personally or together with your partner: Have you been in arrears on loan repayments once or more during the last 12 months on account of financial difficulties?

Yes, once
Yes, twice or more
No
Don't know
No answer

[ONLY IF RESPONDENT ANSWERS YES]
And currently: Are you late with your loan repayments; and if yes, is your repayment more than 3 months late, or less than 3 months late?

No
Yes, more than 3 months late
Yes, less than 3 months late
Don't know
No answer

It is beyond the scope of this paper to provide a full-fledged analysis of the determinants of loan arrears. Therefore, the following results should not be taken as a causal analysis and be interpreted with some caution: First, the number of observations the analysis is based on is low. Second, we do not attempt to model selection into the credit market and our analysis does not take into account supply affects. Finally, the analysis is based on self-reported moratorium use and self-reported arrears and may thus be subject to some measurement error. Many factors, e.g. cultural factors and the type of moratorium, likely influence whether borrowers think they are in arrears while actually having postponed payments in agreement with the lender. Most of these limitations, however, will bias estimates downward, which in turn lends some support to using the following results as some preliminary insights.

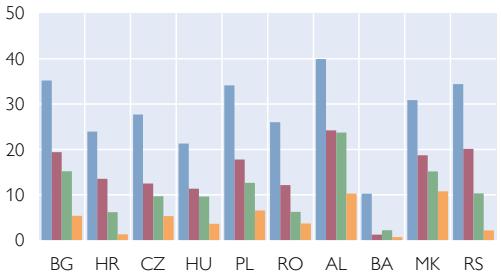
Over the 12 months preceding the survey, between 10% (Bosnia and Herzegovina) and 40% (Albania) of borrowers reported to have been in loan arrears at least once (chart 2, left panel). When comparing results from 2020 with previous survey waves on loan arrears, we find that the percentage of borrowers in arrears has, on average across countries, increased slightly – a finding which is in contrast to what Cherry et al. (2021) report for the US, where household delinquencies in 2020 are below pre-pandemic levels. Looking at loan arrears which would qualify as "nonperforming loans," i.e. more than 90 days overdue, the percentages are much lower than the percentages for loan arrears of less than 90 days overdue at 10% in North Macedonia and Albania and just above 1% in Croatia. Loan arrears are correlated with moratorium use (chart 2, right panel). Every second borrower with an active moratorium in fall 2020 reports having been in loan arrears at least

Chart 2

Loan arrears

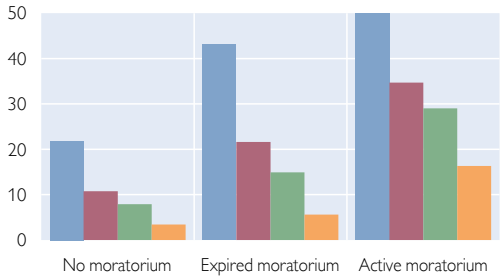
By severity and country

% of borrowers



By severity and moratorium use

% of borrowers



Loan arrears in past 12 months: once
Loan arrears in past 12 months: twice or more
Current loan arrears
Current loan arrears: more than 90 days

Source: OeNB Euro Survey 2020.

Note: All data are weighted.

once over the past 12 months. For those borrowers who never relied on moratoria the percentage is much lower at 22%.

It is important to remember that borrowers who were in loan arrears before the pandemic were not eligible for moratoria in most countries. Nevertheless, loan arrears are self-reported and it may well be the case that some (although clearly not all, as illustrated by chart 2, right panel) borrowers perceive using the moratorium as equivalent to being in loan arrears.

Table 4 presents selected results on the determinants of loan arrears and the degree of arrears.[25] In line with previous research on the determinants of arrears, income and adverse shocks are significant determinants of loan arrears (Duygan-Bump and Grant, 2009). We further confirm that owing debt to utility providers or nonbank private lenders such as payday lenders is also associated with a higher propensity of loan arrears (Gerardi et al., 2018; Allinger and Beckmann, 2021).

Turning to moratorium use and its association with loan arrears, we find a positive and significant correlation with previous but not with current arrears (columns 1 and 2, table 4). To partially address our concerns that moratoria may be perceived as equivalent to arrears, we first reduce the sample to borrowers without active moratoria (columns 1 to 4). However, including them in a second step does not change the results substantially. Compared to borrowers who never relied on moratoria, borrowers with expired moratoria are 16 percentage points more likely to have been in arrears once over the past 12 months and 6 percentage points more likely to have been in arrears twice or more over the past 12 months. But borrowers with expired moratoria were not more likely to be in arrears at the time of the survey than those who never took up moratoria. This may indicate that moratoria were indeed successful in tiding borrowers over the worst adverse shocks. For borrowers with expired moratoria there does not seem to be an indication that they are particularly prone to fall into loan arrears. However, the fact that we do not

[25] *In specifying the model on the determinants of arrears, we follow previous research. The control variables we include are gender, size of household, labor market status, the industrial sector in which an individual works or used to work, loan characteristics as well as indicators of wealth, income and indebtedness, plus adverse income or labor market shocks and risk aversion.*

know whether borrowers who did not use the moratorium option but are in arrears were eligible for moratoria or already in arrears before the pandemic is a serious caveat.

Indeed, the positive correlation between previous use of moratoria and past loan arrears could be of concern for policymakers and might be interpreted as a sign that moratoria were in fact not successful in preventing nonperforming loans that emerge due to temporary shocks. We investigated several possible economic explanations for the positive correlation. For example, borrowers may have several loans only some of which may be eligible for moratoria.[26] Based on these additional analyses we conclude that the positive correlation may be a survey response phenomenon, as respondents may perceive moratoria as being equivalent to loan arrears and as both categories are self-reported. Thus, the main message from table 3 seems to be that borrowers with COVID-19 moratoria did not fall into loan arrears when resuming payment after their moratoria had expired (columns 3, 4, 7 and 8).[27]

However, table 3 also indicates that borrowers who had exited moratoria significantly differ from those who continued to rely on moratoria in fall 2020. Thus, the outlook for loan arrear developments once moratoria expire for all borrowers may yet be less optimistic than the findings summarized in table 4 suggest. Our results are broadly in line with information released by several large banking groups active in CESEE, which noted in their earnings calls for Q4 2020 that default rates for loans exiting moratoria in their portfolios were very low (Seeking Alpha, 2021a, 2021b and 2021c). At the time of writing, to our knowledge, regional central banks had not released similar information yet, likely due to the fact that moratoria were still largely ongoing when the fall/winter financial stability reports were being drafted. While central banks only projected moderate increases in nonperforming loans, they highlighted uncertainties related to these projections (see e.g. Czech National Bank, 2020; Hungarian National Bank, 2020).

[26] *We run several regressions where we split the sample into borrowers with one loan and borrowers with several loans. The positive correlation for past loan arrears with past moratorium use remains significant. We also include further indicators of financial fragility, such as debt service-to-income ratios to control for financial vulnerability, which could serve as an indicator for possible strategic behavior. We do not find that any of these modifications change the findings significantly. Results are not shown but available from the authors upon request.*

[27] *Due to the low number of observations we cannot investigate whether there are any differences between opt-in and opt-out moratoria with respect to loan arrears.*

Table 4

Effect of moratoria on loan arrears

Dependent variable	Loan arreas in past 12 months: once	Loan arreas in past 12 months: twice or more	Current loan arrears	Current loan arrears: more than 90 days	Loan arreas in past 12 months: once	Loan arreas in past 12 months: twice or more	Current loan arrears	Current loan arrears: more than 90 days
Sample	Borrowers with no or expired moratorium				All borrowers			
Active moratorium					0.201***	0.165***	0.152***	0.083***
					(0.037)	(0.034)	(0.027)	(0.023)
Expired moratorium	0.172***	0.072***	0.041	0.002	0.164***	0.064***	0.037	–0.002
	(0.028)	(0.025)	(0.025)	(0.013)	(0.028)	(0.024)	(0.023)	(0.011)
Income shock	0.120***	0.062***	0.036***	0.004	0.130***	0.076***	0.051***	0.017**
	(0.027)	(0.013)	(0.011)	(0.007)	(0.026)	(0.016)	(0.011)	(0.008)
Mortgage	0.006	0.005	0.018	0.015	–0.002	0.007	0.019	0.016
	(0.034)	(0.018)	(0.018)	(0.010)	(0.032)	(0.020)	(0.021)	(0.012)
Foreign currency loan	0.071***	–0.003	0.026*	0.007	0.078***	–0.001	0.031*	0.02
	(0.026)	(0.015)	(0.015)	(0.009)	(0.029)	(0.015)	(0.017)	(0.013)
Debt payday, pawnshop, private, internet loan	0.232***	0.123***	0.072***	0.044***	0.217***	0.102***	0.076***	0.051***
	(0.025)	(0.014)	(0.015)	(0.006)	(0.035)	(0.016)	(0.019)	(0.014)
Utility bill arrears	0.157***	0.088***	0.080***	0.030***	0.153***	0.093***	0.083***	0.041***
	(0.032)	(0.023)	(0.022)	(0.012)	(0.026)	(0.025)	(0.025)	(0.015)
Owe money to family	0.063*	0.050*	0,023	0,012	0.066*	0.053*	0,025	0.024**
	(0.036)	(0.027)	(0.019)	(0.010)	(0.034)	(0.027)	(0.020)	(0.011)
Income: refused answer	–0.045*	–0,019	–0.037**	–0,019	–0,041	–0,004	–0,013	0,01
	(0.027)	(0.012)	(0.017)	(0.016)	(0.025)	(0.022)	(0.025)	(0.020)
Income: low	0.075***	0.030*	0.041**	0.032**	0.088***	0.050***	0.052***	0.040**
	(0.024)	(0.018)	(0.017)	(0.016)	(0.024)	(0.018)	(0.014)	(0.017)
Income: medium	0.034***	0.025***	0.028***	0,006	0.031**	0.026***	0.036***	0,007
	(0.013)	(0.007)	(0.011)	(0.007)	(0.013)	(0.008)	(0.013)	(0.008)
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sociodemographic controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Log-L	–856.5	–540.8	–398	–162.1	–999.2	–682.4	–540.1	–260.8
N	1,925	1,925	1,930	1,693	2,172	2,172	2,179	1,934
P(DepVar=1)	0.24	0.11	0.07	0.03	0.27	0.13	0.1	0.05

Source: Authors' calculations.

*Note: Average marginal effects from probit regressions. Standard errors are clustered at the country level. *, ** and *** denote significance at the 10%, 5% and 1% level, respectively.*

5.4 Robustness analyses

To investigate the reliability of our results from the three parts of the empirical analysis, we conduct several robustness analyses. First of all, we are dealing with a diverse set of countries and a diverse set of regulations regarding moratoria. To ensure results are not driven by a particular country, we repeat estimations dropping one country at a time, i.e. always using a sample of nine countries instead of ten. We do not find that results are driven by one particular country. We further repeat estimations clustering standard errors at the level of the primary sampling units instead of the countries. Again, results do not change substantially.

As pointed out above, we estimated all probit models also as Heckman probit models to check for selection bias. Using Heckman selection models, the magnitude and significance of sociodemographic variables is hardly affected. This also holds for the variables indicating affectedness by the crisis and experiencing adverse shocks. Regarding indicators of indebtedness, we find that results from a Heckman selection model indicate a slightly stronger and highly significant effect.

To focus on the main variables of interest, we only presented one specification for all models with respect to control variables. Some of these control variables are correlated and might introduce multicollinearity issues to our estimates. Table A4 in the annex presents a specification where we drop financial literacy, personal characteristics and beliefs and specify socioeconomic characteristics in a more parsimonious manner. In addition to the specification presented in table A4 we repeat estimations including only income or only labor market status as controls. Results for the variables on loan characteristics or the COVID-19 impact do not change in terms of sign or significance. In alternative specifications we also address the concern of network effects. Guiso et al. (2013) find that knowing people who defaulted strategically increases the propensity for strategic default. The question on moratoria allows us to control for network effects. We find that knowing other moratorium users increases borrowers' propensity to use moratoria by 19 percentage points. When we differentiate between active and expired moratoria (table 3), knowing other moratorium users increases the likelihood of reporting an "expired moratorium" by 6 percentage points and the likelihood of reporting an "active moratorium" by 9 percentage points. Controlling for network effects does not change our baseline results.[28] Network effects regarding moratoria do not have an effect on loan arrears.

Regarding our generalized logit estimation, some of the probabilities estimated are below zero. As this concerns few observations and we provide the multinominal logit results as a comparison, we are not too concerned by this fact. For the multinominal logit we tested the independence from irrelevant alternatives assumption (IIA) – the test developed by Weesie (2000) and the Small-Hsiao test (Small and Hsiao, 1985) do not reject the null hypothesis that the IIA assumption holds. The test by Hausman and McFadden (1984) also does not reject the null hypothesis, but has a negative test statistic for one outcome, which is not uncommon and likely the result of some shortcomings of this test. In either case, the similarity of the estimation results across the two models (and also the ordered logit) makes us confident that our conclusions regarding the difference between borrowers with active moratoria and borrowers with expired moratoria at the time of the interview are sound.

6 Conclusion

During the pandemic, the option to defer loan repayments for a certain period of time was available to borrowers in all CESEE-10 countries. Comparable data on the take-up of moratoria by individuals in the region are scarce, though, and little is therefore also known regarding who took up moratoria.

Our study aims to close this gap. We show evidence on moratorium use collected in the 2020 wave of the OeNB Euro Survey in the CESEE-10 countries. Our analytical results on moratorium use highlight substantial differences between the opt-in and opt-out countries. In opt-in countries, eligibility was often tied to pandemic-related constraints, so that being adversely affected by the crisis significantly increases moratorium use. In the opt-out countries, certain sociodemographic variables, such as the sector of employment, the condition of respondents' residence and the number of debt instruments held, are strong predictors, while the impact of the crisis on individual borrowers does not play a role. For the full

[28] *We do not include network effects in our baseline specification as these may be subject to reverse causality, i.e. the borrower may have been the one to tell the acquaintance and not vice versa.*

sample of countries, we further find that borrowers whose moratoria had expired by fall 2020 were able to resume loan repayments and did not fall into arrears. However, borrowers whose moratoria were still active in fall 2020 were more affected by the pandemic and also held more debt than borrowers with expired moratoria. This finding also indicates that the encouraging result of borrowers not developing repayment problems after exiting moratoria may not hold for those borrowers who relied on moratoria for an extended period of time.

Our results provide some preliminary insights for policymakers. It is reassuring that moratoria indeed reached borrowers who were more vulnerable and less resilient, contributing to reducing a surge in loan defaults during 2020. At the same time, ongoing moratorium use could be an indicator for solvency rather than liquidity issues. Thus, it would likely be overly optimistic to assume that results from borrowers who exited moratoria could be extended to borrowers with active moratoria. Going forward, banks' and policymakers' focus will need to shift from short-term liquidity support to sustainable restructuring solutions for struggling borrowers. Lessons from the global financial crisis of 2008 should be heeded. For instance, McCann et al. (2020) use the example of mortgage distress in Ireland after the global financial crisis to illustrate the importance of long-term sustainable restructurings rather than short-term fixes. They point toward a clearly positive correlation between deeper up-front repayment cuts and the likelihood of a successful restructuring. Amromin et al. (2020) reviewed the US experience after the global financial crisis and point out that there are many ways to ease borrower distress with differing costs to borrowers and lenders: reducing payment-to-income ratios, forbearance, loan refinancing and debt forgiveness. Besides, they also point out that borrower assistance should not be over-engineered and excessively complex, and that social safety nets and income support can be important complementary factors to ensure debt sustainability in the medium and long term.

Our results also point out some interesting avenues for future research: While valuable and a good starting point, our results strongly highlight the need for collecting further and more detailed evidence, for example, on debt overhang and especially on moratorium-induced debt overhang. Cross-country surveys might not be the ideal tool to collect hard data on debt overhang. However, survey data may provide insights on how moratoria affected the relationship between lenders and borrowers. Survey data may especially provide valuable insights into whether government-led debt relief intervention could have adverse effects going forward, such as creating moral hazard problems or inducing credit constraints. With a history of banking crises during transition in some of the CESEE-10 countries, government-led intervention in debt relief may have a strong impact on trust in banks. Our results also indicate that the country-specific differences in moratorium design matter as well. Future research may provide insights into whether opt-in or opt-out moratoria proved to be more successful in achieving the different policy goals related to borrower welfare and financial stability. Last but not least, unwinding will have to be country-specific and would benefit from case studies for individual countries.

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Annex

Table A1

Variable definitions

Variable	Definition
Female	Dummy variable that is 1 for female respondents, else zero.
Size of household	Number of household members permanently living in the household, including household members that are temporarily absent (e.g. students or persons doing military service).
Manages household finances	Dummy variable that is 1 for respondents who state they are either personally or together with someone else in charge of managing household finances.
Labor market status (employed, self-employed, unemployed, retired)	Dummy variable coded as 1 if respondent belongs to the selected occupational category. Omitted category: employed. Students are excluded from the sample.
Income (high, medium, low, refused answer)	Dummy variables that take the value 1 for each net household income tercile (high, medium, low). Sample values are used to construct terciles. For those respondents who did not give an answer, an additional dummy variable is defined (income refused).
Condition of residence: poor	Dummy variable defined by interviewer based on the answer to the following question "Could you describe the condition of the dwelling? Excellent and well maintained; good, needs some minor repairs; poor, needs major work; very poor, some walls, ceilings need replacement." Categories "poor, needs major work" and "very poor, some walls, ceilings need replacement" defined as 1, else zero.
Own secondary residence	Dummy variable that takes the value 1 if the respondent or someone living in the same household owns a secondary residence.
Financial literacy	Categorical variable ranging from 0 to 3 depending on the number of correct answers to the following 3 questions: (1) Suppose you had 100 [LOCAL CURRENCY] in a savings account and the interest rate was 2% per year. Disregarding any bank fees, how much do you think you would have in the account after 5 years if you left the money to grow: more than 102, exactly 102, less than 102 [LOCAL CURRENCY]? / Don't know / No answer. (2) Suppose that the interest rate on your savings account was 4% per year and inflation was 5% per year. Again disregarding any bank fees – after 1 year, would you be able to buy more than, exactly the same as, or less than today with the money in this account? / Don't know / No answer. (3) Suppose that you have taken a loan in EURO. Then the exchange rate of the [LOCAL CURRENCY] depreciates against the EURO. How does this change the amount of local currency you need to make your loan installments? The amount of local currency… increases / stays exactly the same / decreases / Don't know / No answer. "Don't know" responses are counted as incorrect answers, "No answer" responses missing.
Industry of occupation	Dummy variables based on a question regarding industry of occupation. The original question covers 16 industries, which we group into 3 categories that are little, moderately and highly affected by lockdowns. Industry of occupation: ICT, public sector: Dummy variable that takes the value 1 if respondent's profession is in (i) Banking, financial and insurance activities, (ii) Information and communication technology, (iii) Professional, scientific, technical, administrative and maintenance services, (iv) Education (kindergarten, school, university, etc.), (v) Human health care, nursing and social work activities, (vi) Public administration, justice, police, defence, trade unions, religious organizations, else zero. Industry of occupation: tourism, arts, personal services, other: Dummy variable that takes the value one if the respondent's profesison is in (i) Tourism, accommodation, restaurant, café, bar, (ii) Arts, culture, entertainment and recreation, (iii) Personal services (hairdresser, beauty treatment, funeral, etc.), (iv) other sector, else zero.

Source: OeNB Euro Survey.

Table A1 continued

Variable definitions

Variable	Definition
Receives remittances	Dummy variable that takes the value 1 if the respondent receives remittances from abroad.
No savings	Dummy variable that takes the value 1 if the respondent does not have any savings, zero if respondent has savings.
Trust banks	Dummy variable based on the following question "Please tell me how much trust you have in the following institutions: (…) domestically owned banks (…) foreign owned banks (...). For each of the institutions, please tell me if you tend to trust it or tend not to trust it. 1 means "I trust completely," 2 means "I somewhat trust," 3 means "I neither trust nor distrust," 4 means "I somewhat distrust" and 5 means "I do not trust at all." Answers 1 and 2 are coded as 1, else zero.
Risk averse	Dummy variable based on the following question "Please tell me whether you agree or disagree on a scale from 1 (strongly agree) to 6 (strongly disagree) with the following statement: "In financial matters, I prefer safe investments over risky investments." Answers "strongly agree" and "agree" are defined as "risk averse", else zero.
Mortgage	Dummy variable that takes the value 1 if the respondent has a mortgage, zero otherwise (consumption loan, loan for education or other purposes).
Foreign currency loan	Dummy variable that takes the value 1 if the respondent has a loan denominated in foreign currency, zero if respondent has a loan denominated in local currency.
# further forms of debt	Categorical variable ranging from 0 to 3 depending on the number of debts the respondent owes from the following list: overdraft, bank loan, credit card debt, purchase from a store or company using installment credit, leasing contract, a utility provider by delaying payment of bills, internet loan, payday loan, pawnshop, money owed to employer, money owed to family, relatives or friends, money owed to another private lender, other debt. Categories are defined as: 0 debt owed, 1 debt owed, 2-3 debts owed, 4 or more debts owed. Base category: 1 debt owed (Sample does not include respondents without debt).
Debt payday, pawnshop, private, internet loan	Dummy variable that takes the value 1 if respondent owes money to a payday lender, pawnshop, private lender or internet loan provider, else zero.
Utility bill arrears	Dummy variable that takes the value 1 if respondent owes money to a utility provider, else zero.
Owe money to family	Dummy variable that takes the value 1 if respondent owes money to family or friends, else zero.
Mitigating actions	Categorical variable ranging from 0 to 3 depending on the number of mitigating actions the respondent had to take from the following list: reduce amount spent on everyday expenses, reduce or postpone larger expenditures, reduce money set aside for savings, reduce help to friends or relatives whom I helped before, utilize savings or sold possessions, take out a loan from a bank, over-draft bank account, borrow money family and friends or from another source, delay payment of rent or other bills, forced to move. 1-2 mitigating actions are defined as "low"; 4 mitigating actions are defined as "medium"; 5 or more mitigating actions are defined as "high". Base category: zero mitigating actions.
Experienced income shock	Dummy variable that takes the value 1 if respondents had to reduce work hours and received a reduced salary, were laid off from a job or if households experienced an unexpected significant reduction of their income over the past 12 months; zero if none of the above apply.

Source: OeNB Euro Survey.

Table A2

Summary statistics

Variable	Minimum	Maximum	Mean					
			Borrowers	Moratorium users	Moratorium users: opt-in countries	Moratorium users: opt-out countries	Expired moratoria	Active moratoria
Female	0	1	0.49	0.53	0.54	0.52	0.53	0.51
Size of household	1	5	3.08	3.19	3.03	3.30	3.25	3.13
Manages household finances	0	1	0.88	0.89	0.88	0.90	0.90	0.88
Unemployed	0	1	0.10	0.11	0.13	0.09	0.10	0.13
Self-employed	0	1	0.11	0.11	0.17	0.06	0.09	0.13
Retired	0	1	0.11	0.05	0.04	0.06	0.05	0.06
Income: refused answer	0	1	0.22	0.22	0.18	0.24	0.22	0.19
Income: low	0	1	0.15	0.13	0.18	0.10	0.12	0.16
Income: medium	0	1	0.28	0.31	0.34	0.29	0.32	0.29
Condition of residence: poor	0	1	0.09	0.12	0.10	0.13	0.12	0.10
Own secondary residence	0	1	0.10	0.10	0.12	0.09	0.09	0.11
Financial literacy=1	0	1	0.20	0.18	0.18	0.19	0.19	0.18
Financial literacy=2	0	1	0.31	0.36	0.37	0.34	0.33	0.38
Financial literacy=3	0	1	0.34	0.33	0.26	0.38	0.34	0.30
Works in public sector/ICT	0	1	0.30	0.26	0.21	0.30	0.28	0.25
Works in tourism, arts, personal services, other	0	1	0.13	0.17	0.19	0.16	0.16	0.18
Receives remittances	0	1	0.09	0.06	0.09	0.05	0.05	0.08
No savings	0	1	0.53	0.61	0.56	0.65	0.63	0.61
Trust banks	0	1	0.34	0.31	0.30	0.32	0.33	0.28
Risk averse	0	1	0.66	0.66	0.58	0.72	0.68	0.65
Mortgage	0	1	0.48	0.48	0.49	0.47	0.44	0.55
Foreign currency loan	0	1	0.24	0.25	0.22	0.28	0.26	0.24
2–3 further forms of debt	0	1	0.43	0.44	0.39	0.47	0.47	0.40
4 or more further forms of debt	0	1	0.12	0.21	0.25	0.17	0.19	0.22
Debt payday, pawnshop, private, internet loan	0	1	0.10	0.13	0.19	0.08	0.10	0.17
Utility bill arears	0	1	0.07	0.14	0.10	0.16	0.15	0.13
Owe money to family	0	1	0.13	0.17	0.22	0.14	0.15	0.20
Mitigating actions: low	0	1	0.34	0.29	0.25	0.33	0.31	0.27
Mitigating actions: medium	0	1	0.28	0.35	0.37	0.34	0.37	0.34
Mitigating actions: high	0	1	0.15	0.26	0.32	0.22	0.23	0.30
Experienced income shock	0	1	0.41	0.57	0.74	0.46	0.56	0.60

Source: Authors' calculations.

Table A3

Public information on moratorium use by households in CESEE

Source	OeNB Euro Survey	EBA (2020)	EIB (2020)	EIB (2021)	Central banks and banking associations[1]
Indicator	% of respondents with loan	% of household loan portfolio	% of affected portfolio based on answers from banks in intervals – average = share of banks in interval multiplied with mid-point of interval		Varying
Period	Sept.-Oct. 2020	June 30, 2020	Sept./Oct. 2020	March/April 2021	Varying
Reporting entity	Individuals in CESEE	1–3 large banks per country	15 international banking groups and 85 (EIB, 2020)/ 90 (EIB, 2021) local subsidiaries/ banks (~ 50% of regional banking assets)		Varying
Bulgaria	19.7%	7% (mortgages: 7.6%)	Average: 10.1%	Average: 9%	
Czechia	17.8%	Not included	Average: 15%	Average: 10%	As of October 31, 2020: 15% of household loan portfolio (Czech National Bank, 2020)
Hungary	29.7%	21.9% (mortgages: 25.3%)	Average: 47.5%	Average: 41%	As of June 2020: 60% of households with loans, and ~50% of household loan portfolio (Hungarian National Bank, 2020)
Croatia	9.3%	7.1% (mortgages: 8.1%)	Average: 7%	Average: 5%	As of August 31, 2020: 6.7% of household loan portfolio (Croatian National Bank, 2020)
Poland	17.1%	8.5% (mortgages: 8.5%)	Average: 15%	Average: 18.5%	As of end Q3: 5% of household loan portfolio (Polish National Bank, 2020)
Romania	9%	13.0% (mortgages: 8.9%)	Average: 13.5%	Average: 13.7%	As of June 5, 2020: ~8% of households with loans (Romanian National Bank, 2020)
Albania	19.9%	Not included	Average: 22.5%	Average: 17.5%	
Bosnia and Herzegovina	6.3%	Not included	Average: 15.5%	Average: 5%	
North Macedonia	67%	Not included	Average: 21.5%	Average: 11.5%	As of August 2020: terms eased for 54.8% of household loan portfolio (mainly postponed repayment) (Republic of North Macedonia Ministry of Finance, 2021)
Serbia	68.4%	Not included	Average: 87%	Average: 70%	As of mid-August 2020: take-up of second moratorium: 82% of households (including moratoria on credit cards, overdrafts) (Association of Serbian Banks, 2020)

Source: Authors' compilation.

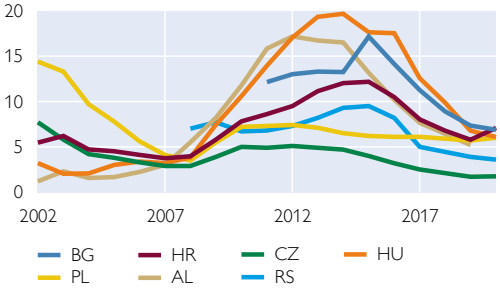
[1] Only information where household loans were reported separately and either as a percentage of a portfolio or a percentage of loan holders is included.

Chart A1

Loan arrears

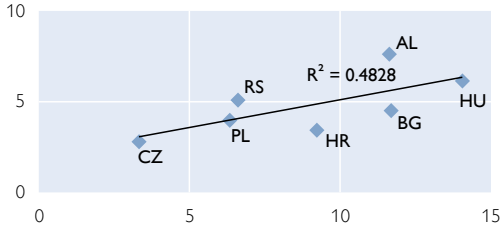
Development over time

% of total loans to households



Data comparison

OeNB Euro Survey: 2012–2020 average



Aggregate statistics: 2012–2020 average

Source: wiiw, national central banks and OeNB Euro Survey.

Table A4

Robustness: determinants of moratorium use

Dependent variable	Moratorium use		
Sample	All countries	Opt-in countries	Opt-out countries
Female	0.024	0.037**	–0.001
	(0.016)	(0.015)	(0.036)
Size of household	–0.005	–0.014**	0.01
	(0.008)	(0.007)	(0.027)
Manages household finances	0.024	–0.012	0.108***
	(0.029)	(0.031)	(0.011)
Employed	0.056*	0.031	0.113*
	(0.029)	(0.025)	(0.063)
Income: refused answer	0.005	0.049*	–0.066
	(0.038)	(0.026)	(0.069)
Income: low	–0.02	–0.002	–0.097
	(0.043)	(0.021)	(0.161)
Income: medium	0.009	0	0.033
	(0.017)	(0.020)	(0.032)
Condition of residence: poor	–0.006	–0.056**	0.093**
	(0.029)	(0.024)	(0.043)
No savings	0.051***	0.049**	0.062***
	(0.017)	(0.022)	(0.024)
Mortgage	0.034*	0.043**	0.016
	(0.018)	(0.017)	(0.055)
Foreign currency loan	–0.021	0.011	–0.075***
	(0.022)	(0.023)	(0.027)
2-3 further forms of debt	0.018	–0.011	0.084***
	(0.028)	(0.037)	(0.020)
4 or more further forms of debt	0.087***	0.068***	0.139***
	(0.023)	(0.024)	(0.048)
Industry of occupation: public sector/ICT	–0.042**	–0.056***	–0.025
	(0.017)	(0.016)	(0.028)
Industry of occupation: tourism, arts, personal services, other	0.034	0.005	0.096***
	(0.024)	(0.028)	(0.010)
Mitigating actions: low	0.051***	0.033**	0.096***
	(0.009)	(0.015)	(0.028)
Mitigating actions: medium	0.090***	0.089***	0.074
	(0.022)	(0.020)	(0.059)
Mitigating actions: high	0.145***	0.131***	0.146
	(0.030)	(0.019)	(0.103)
Experienced income shock	0.095***	0.099***	0.086
	(0.022)	(0.018)	(0.063)
Country fixed effects	Yes	Yes	Yes
Log-L	–1,000.1	–532.9	–441.8
Pseudo-R2	0.22	0.15	0.14
N	2,336	1,592	744
P(DepVar=1)	0.24	0.13	0.47

Source: Authors' calculations.

*Note: Average marginal effects from probit regressions. Standard errors are clustered at the country level. *, ** and *** denote significance at the 10%, 5% and 1% level, respectively.*

What do people in CESEE think about public debt?

Markus Eller, Branimir Jovanovic, Thomas Scheiber[1]

This paper investigates public attitudes toward public sector debt in ten Central, Eastern and Southeastern European (CESEE) countries. Unique data from a special module of the 2018 OeNB Euro Survey wave indicate that people in CESEE have, in general, negative attitudes toward public debt. Most respondents believe that higher public debt compromises the opportunities of future generations and implies higher taxes or lower social benefits in the future. Beliefs that higher public debt allows for higher investments today are also widespread but less common. Econometric analysis reveals that wealthier individuals and more disadvantaged societal groups (particularly people who have experienced economic hardship) tend to be most concerned about public debt. The finding that the worse off are more debt averse contrasts with existing studies for advanced economies that have found that it is primarily the better off who are more skeptical. This difference may be explained by the comparatively lower level of social spending and the predominance of regressive tax systems in CESEE, which could make disadvantaged groups of society believe that the burden of higher debt must eventually be shouldered by them.

JEL classification: C42, D78, E62, H63, P35
Keywords: public debt, public preferences, survey data, CESEE

Up to the mid-2000s, the size of public debt was a cause for concern only for some Central, Eastern and Southeastern European (CESEE) countries. However, the 2008–2009 global financial crisis, the repercussions of the 2012 sovereign debt crisis in the euro area and, more recently, the COVID-19 pandemic entailed a strong increase in public debt levels across the region.[2] Based on simple averages across the ten CESEE countries under review,[3] gross general government debt amounted to slightly more than 30% of GDP in 2007 and peaked at nearly 60% in the mid-2010s. In this period, the debt ratio rose especially strongly in Romania, where it tripled, and in Bosnia and Herzegovina, Croatia and Serbia, where it more than doubled. After reaching these peaks, most countries managed to bring their public debt levels down somewhat thanks to robust economic growth. In 2017, the year before the OeNB Euro Survey asked individuals about their attitudes toward public debt, the debt ratio reached a regional average of 50% (see chart 1). More recently, large-scale fiscal support measures to mitigate the impact of the COVID-19 pandemic brought about a renewed increase in debt ratios. On average

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[2] *It should be noted that within the EU, public debt ratios have deteriorated, on average, less strongly in CESEE than in non-CESEE member states. However, the tolerance threshold for public indebtedness might be lower for emerging economies than for advanced economies (Sturzenegger and Zettelmeyer, 2006).*

[3] *Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Czechia, Hungary, North Macedonia, Poland, Romania, and Serbia.*

Chart 1

General government gross debt

Source: European Commission (AMECO database, May 2021); data for Albania are IMF data (WEO database, April 2021) until 2009.

across the region, debt ratios widened by 10 percentage points in 2020, with the largest increase observed in Croatia, Hungary, Romania, Poland and North Macedonia. Croatia, Hungary and Albania are now confronted with debt ratios of around 80%, followed by Serbia and Poland with nearly 60%. On the other side of the spectrum, Bulgaria, Czechia and Bosnia and Herzegovina still have debt ratios below 40%.

Given the increased role of public indebtedness in the region (already before the COVID-19 pandemic), this paper studies how individuals tend to perceive public debt and whether their beliefs reflect their socioeconomic background, economic hardship experiences, financial literacy levels or political attitudes. Gaining such insights is important also from a macroeconomic perspective. After all, the profile of individuals who are more skeptical or supportive about public debt is meaningful information for policymakers, as the macroeconomic stabilization function of fiscal policy during a crisis or the political feasibility of post-crisis fiscal consolidation rely on people's trust in the government's capacity to manage taxpayer money conscientiously. This reasoning is backed by a series of papers that have studied household-level responses to fiscal policy shocks to improve our understanding of fiscal multipliers (e.g. Johnson et al., 2006; Shapiro and Slemrod, 2009; D'Acunto et al., 2018), that have identified support of individuals as an important factor for successful fiscal consolidation (e.g. Abbas et al., 2010; Ardanaz et al., 2020), or that have more generally studied the impact of public trust in government on macroeconomic outcome variables (e.g. Zak and Knack, 2001; Horvath, 2013; Sangnier, 2013).

The literature using household survey data to determine people's attitudes toward fiscal policy measures and public indebtedness has grown in recent years. The reviewed papers (see the next section) focus mainly on single countries rather than employing cross-country surveys. However, cross-country surveys are important to ensure measurement equivalence for a larger set of countries and to detect correlations with individual attitudes that go beyond country-specific institutional and

cultural factors. Therefore, the 2018 wave of the OeNB Euro Survey included a series of questions aimed at revealing people's attitudes toward public debt and public sector governance. The paper at hand builds on this survey information and investigates the views people shared about public debt[4] and its effects, addressing several individual-specific factors that are related to expressing such views. While country-specific factors are controlled for by fixed effects, we exploit information from the whole sample rather than focusing on the explanation of cross-country differences in this paper.[5]

The remainder of the paper is organized as follows: Section 1 reviews the literature on survey-based papers that examined individual perceptions of fiscal policies in general and public debt in particular. Section 2 introduces the data and provides a descriptive analysis of individuals' public debt attitudes. Section 3 guides through the econometric analysis, studying the background of people who expressed particular attitudes on debt. Finally, section 4 concludes and discusses some policy implications.

1 Related literature

One of the earliest studies on public attitudes toward public debt, and other fiscal issues, is Mueller (1963), who uses data from three nationwide US surveys, conducted in 1960 and 1961, with approximately 3,600 respondents. She finds no evidence that the existing federal debt causes great concern. However, to fund higher military spending, people prefer raising taxes and cutting other types of government spending rather than increasing debt. She also notes that deleveraging is less of a priority than expanding government spending programs, except for the highest-income families, who prefer deleveraging over expanding government spending.

Pitlik et al. (2011) investigate whether opinions on fiscal policy issues are driven more by ideology or self-interest, using a telephone survey of around 1,000 Austrian voters conducted in 2008. They find that perceived self-interest – the expectation that a proposed policy measure may have personally adverse consequences – is at least as important for the acceptance of policy measures as ideological conviction.

Stix (2013) investigates the determinants of preferences for public debt consolidation in Austria, using a survey conducted on 2,000 randomly selected voters in 2010. He investigates the relevance of several factors, including self-interest, intergenerational distributional preferences, preferences for distributional fairness among the current generation and the credibility of medium-term fiscal policy plans. He finds that all these factors matter, which has clear implications for the design of debt consolidation plans.

Heinemann and Henninghausen (2012) investigate determinants of public debt attitudes in Germany, using a representative survey of 1,000 respondents conducted in 2011. They consider several explanatory variables, such as individual credit constraints, intergenerational considerations (having children), ideology and

[4] *Survey participants were told that "public debt" was meant to refer to the outstanding total debt of all levels of government, including public institutions ("the state").*

[5] *Cross-country differences might be investigated by running the estimations for each country individually and then comparing the results. However, then the sample size for each estimation would be considerably smaller and – given the comparatively large set of individual-level regressors we are examining – overfitting and multicollinearity issues would become more severe.*

trust. They find that Ricardian motives and ideology and trust are important for explaining the individual heterogeneity of debt consolidation preferences.

Hayo and Neumeier (2019) investigate determinants of individual attitudes toward taxes, public debt and public spending in Germany, using a representative survey conducted on 2,000 respondents in 2013. They find that economic well-being, confidence in politicians, economic knowledge, and time and party preferences are all statistically significantly related to public finance preferences. According to these results, a stronger preference for fiscal consolidation can be identified for respondents that are particularly forward-looking, well informed about debt-related economic variables or better off financially.

Roth et al. (2020) examine how beliefs about the government debt-to-GDP ratio affect people's attitudes toward government spending and taxation, using a series of experiments on more than 4,000 respondents from the USA. They find that most people underestimate the debt ratio and turn less supportive about government spending once they are made aware of the actual amount of debt, but do not substantially alter their attitudes toward taxation.

If we expand our focus, we can also refer to a large related body of the recent political economy literature. One group of literature focused on the impact of fiscal austerity on public opinion and voting choices, providing evidence mostly for advanced economies (e.g. Arias and Stasavage, 2019; Hübscher et al., 2020; Kalbhenn and Stracca, 2020; Bansak et al., 2021) and only rarely for emerging market economies (e.g. Ardanaz et al., 2020, for Latin American economies). Another group of studies investigated the acceptance of fiscal rules by politicians (incumbents versus opposition) using survey methods; several of them focus on Germany (e.g. Heinemann et al., 2020; or Blesse et al., 2021). This type of literature is of interest for our research question in so far as it can be expected that people who support debt rules are also more likely to express debt-averse perceptions.

While it is obvious that there is already some literature on public attitudes toward public sector debt, most of the existing studies refer to advanced economies. However, to the best of our knowledge, no study has so far investigated this issue for CESEE countries. Our study aims to fill this gap. Moreover, the cross-country sample we study is larger than that of the reviewed papers, as it includes respondents from ten different countries and a variety of survey questions, allowing us to investigate a broad set of factors that are potentially related to individual public finance attitudes.

2 Data and variables

Our analysis is based on data from the 2018 wave of the OeNB Euro Survey, which has been conducted on a regular basis since 2007 as a repeated cross-sectional survey of individuals in the ten CESEE countries mentioned above. In each country, a multi-stage stratified random sampling procedure is applied that targets residents aged 18 years or older and generates a representative sample of 1,000 individual interviews per country. The interviews are carried out face to face at respondents' homes. Data weighting is used to ensure a nationally representative sample for each country; sampling weights use census population statistics on gender, age and region and, where available, education as well as ethnicity (separately for each country).[6]

[6] *For more information and technical details on the OeNB Euro Survey, see https://www.oenb.at/en/Monetary-Policy/Surveys/OeNB-Euro-Survey.html.*

The survey questionnaire elicits a rich set of information on socioeconomic characteristics, indicators of wealth and finances, individual beliefs, expectations and trust. The questionnaire is composed of a core set of questions regarding the extent of euroization and individuals' loan and saving decisions. In the 2018 survey wave, we added a special module of questions aimed at capturing individual attitudes toward public sector governance, respondents' knowledge and perception of public debt, and their preferences with regard to public spending priorities (building on Hayo and Neumeier, 2019; and Stix, 2013). Lastly, we extended the survey data by merging satellite nightlight data at the level of the primary sampling unit as a proxy for local economic activity (Henderson et al., 2012).

The key variable for our analysis, which captures individuals' views of public debt and its impact, is based on the following survey question:

We will now move on to another topic, namely to some questions about your attitudes toward debt and spending of the government and public institutions.
Governments and public institutions may incur debt, just like individuals. The outstanding total debt of governments and public institutions is generally referred to as "public debt."
Let me read out some statements reflecting the different views people tend to have about public debt and its effects. Please indicate your own judgment on a scale from 1 (strongly agree) to 6 (strongly disagree).

Strongly agree	*1*
Agree	*2*
Somewhat agree	*3*
Somewhat disagree	*4*
Disagree	*5*
Strongly disagree	*6*
Don't know	
No answer	

a) Higher public debt levels diminish the chances of future generations.
b) Higher public debt levels make it possible to conduct necessary investments today (e.g. into public infrastructure like schools and streets).
c) Higher public debt levels imply that I will have to pay more taxes in the future.
d) Higher public debt levels imply that I will receive lower state pensions and/or lower welfare benefits in the future.

The idea behind the question is to find out to what extent respondents agree with different statements about the implications of public debt. The first two statements expressing the belief that higher public debt compromises the chances of future generations and allows for higher investments today address the more general impact of public debt, while the views that higher debt implies higher taxes and lower pensions/benefits in the future (third and fourth statement) capture individual-level affectedness. People's perception about the benefit-related impact is also relevant for considering the role of *implicit* public debt, i.e. obligations for future government expenditures resulting from current regulations. As a caveat, the four statements are not well-balanced in the sense that positive and negative statements are represented equally strongly: With reference to debt, only one statement put to respondents in the survey carries a positive connotation ("makes it possible to conduct necessary investments today"), while the other three statements are framed negatively. This may prime respondents to adopt a more critical position on public debt. However, before confronting interviewees with these statements, the

survey introduced an analogy between public debt and individual debt (see above). Moreover, not all the negatively framed items are blocked together. Finally, the six-point Likert response scale is intended to reduce the likelihood of choosing neutral options and thus encourage respondents to make a clear choice between agreeing and disagreeing.

Chart 2 shows the (weighted) percentage of respondents who agree or strongly agree with the four statements on public debt and its effects. Based on unconditional averages across all observations in the sample (see the "CESEE" bars), nearly 70% of respondents agreed that higher public debt compromises the opportunities of future generations (north-west panel). In contrast, only about 40% of respondents agreed that higher public debt levels allow for higher investments today, ranging from a share of 30% in Croatia to 55% in North Macedonia (north-east panel). Finally, roughly 60% of respondents agree that higher public debt implies paying more taxes and receiving lower social benefits in the future (southern panels). The three panels with the skeptical views on public debt exhibit a similar ranking of countries: The countries with the lowest shares of skepticism are Czechia and Albania, while the highest shares can be found in Bulgaria, Croatia, Romania and North Macedonia.[7]

Interestingly but not surprisingly, knowledge of the size of public debt as a percentage of GDP is rather limited in the investigated CESEE countries (see chart 3). On average, 36% of respondents provide a "don't know" answer, ranging from 16% in Albania to even around 60% in Bulgaria and Romania. The share of respondents giving appropriate answers about the debt ratio varies from 17% in Hungary and Albania to about 40% in Croatia and North Macedonia (indicated by the patterned bar sections in the chart).[8]

When quality-checking the investigated survey data, we noticed some straight-lining of answers, i.e. a certain tendency among respondents to provide the same answers in blocks of questions, or a certain failure to adequately differentiate between different items in the questionnaire. In the case of the four questions on public debt attitudes shown in chart 2, straight-liners accounted for nearly 25% of respondents. The prevalence of straight-lining introduces some measurement errors. However, the background analysis provided in an online supplement shows that this is an issue predominantly in Albania and, to a lesser extent, in Hungary, where we identified some major cases of multiple straight-lining.[9] For an analysis

[7] *Note that for the broader definition of agreement, which also includes the category "somewhat agree," the extent of agreement increases even further, yet the cross-country differences become less pronounced (shown in the online supplement).*

[8] *Since the global financial crisis, all the EU countries in our sample have been subject either to an excessive deficit or a significant deviation procedure, which may have increased public awareness due to related media coverage. But there is no systematic difference concerning the knowledge of the debt ratio in EU countries as compared to the non-EU countries in our sample. Obviously, other factors may also be important for explaining cross-country differences in debt knowledge, e.g. existence and characteristics of fiscal councils, but such an empirical investigation is beyond the scope of the present paper.*

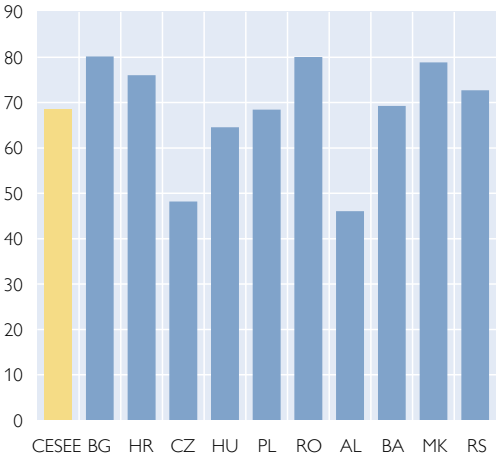
[9] *Using paradata from the OeNB Euro Survey, we find evidence that straight-lining in our sample is associated in general with rushing through the interview and with individual characteristics such as error-preventing behavior, older age, a preference to keep certain information private and particularly with low financial literacy scores. Interviewer characteristics turned out insignificant, and country fixed effects only play a minor role. Major cases of straight-lining appear to be associated with (1) individual characteristics such as risk-loving behavior (proxy for pronounced views), younger age and low financial literacy, and (2) with Albania. A closer look suggests some impact of interviewers on the respondents' response style in Albania.*

Chart 2

Attitudes toward public debt

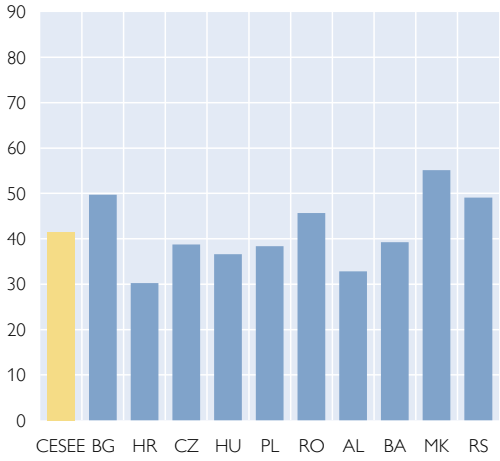
Higher debt compromises opportunities of future generations

% of individuals who agree or strongly agree



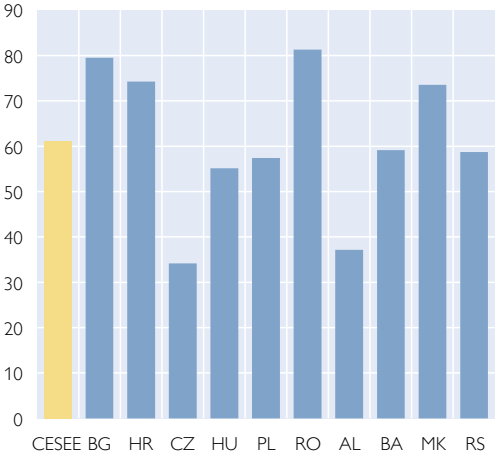
Higher debt allows for higher investments today

% of individuals who agree or strongly agree



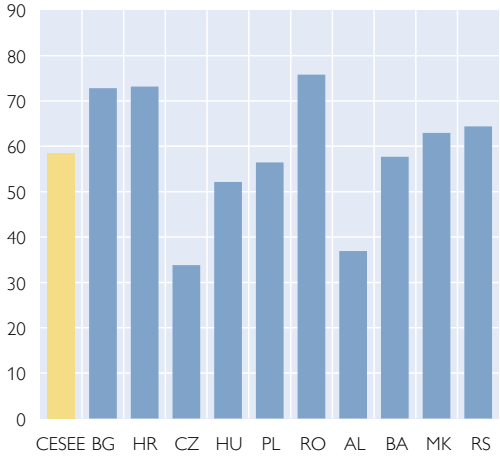
Higher debt implies higher future taxes

% of individuals who agree or strongly agree



Higher debt implies lower future pensions and welfare benefits

% of individuals who agree or strongly agree



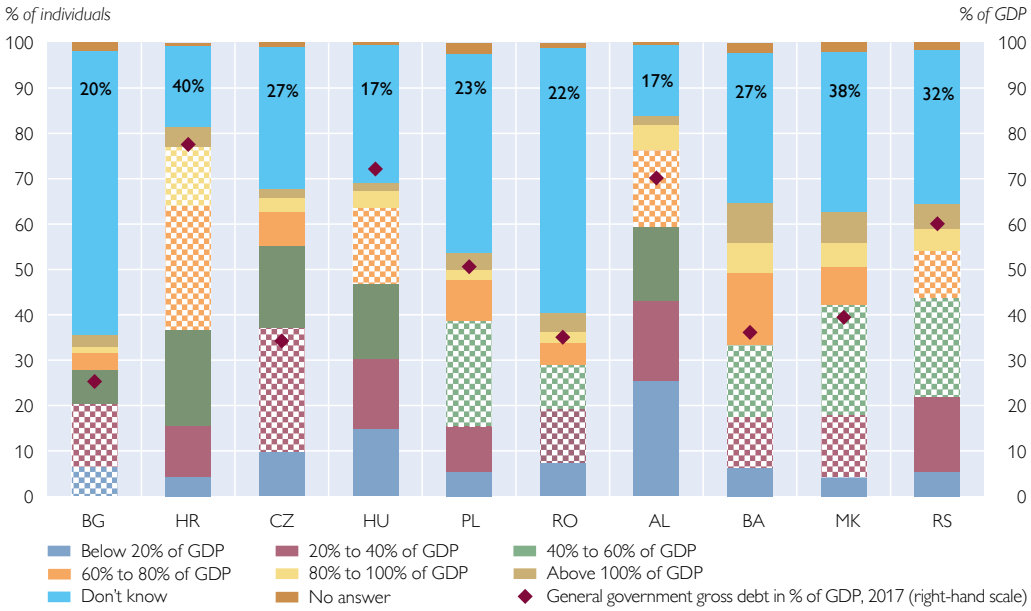
Source: OeNB Euro Survey 2018.

Note: Respondents were asked whether they agree or disagree with the respective statements on a 6-point Likert scale. The weighted values represent the share of respondents who picked "strongly agree" or "agree." Excluding respondents who answered "don't know" or did not provide an answer (averaging between 7% and 9% of all respondents across all countries). Weights are calibrated on census population statistics for age, gender, region, and, where available, on education and ethnicity (separately for each country). The CESEE averages are unconditional averages across all observations, using individual weights not adjusted for population size.

of the extent to which our results are affected by the inclusion of (major) straight-lining cases, see the robustness analysis (section 3.3).

Chart 3

Knowledge about the size of public debt



Source: OeNB Euro Survey 2018, European Commission (AMECO database, May 2021).

Note: Respondents were asked to indicate the public debt-to-GDP ratio for their country for 2017. Specifically, they were given six brackets ranging from "below 20% of GDP" to "above 100% of GDP" and asked to choose the appropriate bracket for their country. Weighted percentages; using weights that are calibrated on census population statistics for age, gender, region, and, where available, on education and ethnicity (separately for each country). Patterned areas highlight the appropriate bracket(s), and figures indicate the share of respondents who selected the appropriate bracket(s).

3 Econometric analysis of factors associated with people's attitudes toward public debt

3.1 Econometric set-up and research hypotheses

The purpose of our empirical analysis is to explore the background of individuals that expressed particular attitudes toward public debt as highlighted in the previous section. Since agreement with the statements is rather high, we focus on those respondents who have rather strong views. To this end, we map the responses to the four statements into four binary dependent variables which equal 1 if respondents agreed or strongly agreed with the respective statement (recall chart 2); and 0 if respondents somewhat agreed, somewhat disagreed, disagreed or strongly disagreed. Respondents answering "don't know" or who refused to answer are excluded. Since these dependent variables ($\boldsymbol{Y_i}$) are defined as dummies, we apply a probit estimator with country fixed effects ($\boldsymbol{A_c}$) using robust standard errors adjusted for clustering at the primary-sampling-unit (PSU) level. As part of the robustness checks, we will also experiment with a broader definition of agreement (i.e. including also the "somewhat agreed" answers) and apply an ordered probit estimator using all six response categories (see section 3.3).

As for the explanatory variables, we follow the literature overviewed in section 1 and include several groups of variables.[10] The first group refers to general sociodemographic and socioeconomic characteristics of individuals and households ($\boldsymbol{X_{Soc}}$).

[10] *In the results section below, we provide some more details on the empirical definition of the investigated regressors. Table A1 in the annex contains all the necessary details about how the variables were constructed. Moreover, the online supplement contains the corresponding summary statistics and bivariate correlations among the investigated explanatory variables.*

Some of these characteristics are standard controls used in the related literature. It is noteworthy that we also include wealth indicators here to test the hypothesis whether wealthier individuals have a more critical view of public debt as they might fear – in a Ricardian manner – that their assets will be negatively affected in the future by higher debt levels, e.g. via higher taxes, higher inflation or a sovereign debt crisis.

The second group of variables captures individuals' general attitudes (X_{Gen}) that are usually included as explanatory variables in a debt-related context. Following Heinemann and Henninghausen (2012), Stix (2013), or Hayo and Neumeier (2019) for instance, we include variables that measure time preference, discomfort about owing money, and general trust in institutions, expecting that those who have a stronger preference for the present, who are willing to incur debt themselves or are generally more trustworthy are also more inclined to see public debt in a positive light.

The third class of explanatory variables captures economic hardship experiences (X_{Per}). Here, the basic hypothesis would be that those who are/were subject to economic hardship are likely more skeptical with regard to the crisis mitigation capacities of government (see Denisova et al., 2010; Eller and Scheiber, 2020) and therefore are also more critical in their assessment of public debt. In line with existing literature (e.g. Heinemann and Henninghausen, 2012; Stix, 2013; Hayo and Neumeier, 2019; Roth et al., 2020), we include as economic hardship variables unemployment, the necessity of basic consumption cutbacks in the past, net household income, local economic activity, respondents' health status and access to emergency borrowing.

The fourth group of variables measures financial literacy and knowledge of public debt (X_{Finlit}). There is already a broad literature showing that financial literacy influences the borrowing behavior of individuals (e.g. Beckmann and Stix, 2015; or Lusardi and Tufano, 2015). Analogously, financial literacy might also be relevant for people's views about public debt. Persons who understand, or are better informed about, the cost of public indebtedness may also be more skeptical as regards the future burden of public debt (as argued for public spending preferences in Hayo and Neumeier, 2019). As empirical proxies, we include interest in politics, a financial literacy dummy, knowledge of the size of public debt, and backward-oriented debt concerns.

The fifth and final group of variables captures individuals' general political attitudes (X_{Pol}), as included in several of the surveyed studies. In essence, a more positive view of current policies can be expected to be correlated positively with tolerance for public debt. This view would be backed by political economy approaches that point to rent-seeking, self-interested behavior of politicians eventually undermining trust and questioning a government's capacity of managing taxpayer money diligently (for respective overviews, see Alesina et al., 1997; or Persson and Tabellini, 2000). As empirical proxies, we include variables capturing individuals' satisfaction with public services, trust in government, the belief that the state is wasting taxpayer money, and preference for redistribution.

For choosing the concrete combination of regressors in the individual specifications, we face the following tradeoff: Basically, we attempt to include as many explanatory variables as possible in order to exploit the rich survey information at hand and to identify interesting profiles of individuals expressing skeptical versus

trustful views about public debt. At the same time, by including a large set of regressors, we face econometric challenges such as multicollinearity and overfitting. To address these issues at least to some extent, we opted for a *specific-to-general approach*, starting from the following parsimonious specification of the baseline model:

$$\Pr(Y_i = 1) = F(\boldsymbol{A_c}, \boldsymbol{X_{Soc}}, \boldsymbol{X_{Gen}}, \boldsymbol{X_{Per}}) \quad (1)$$

Our baseline model incorporates (1) the basic sociodemographic and socioeconomic characteristics $\boldsymbol{X_{soc}}$, which we expand by adding block-wise (2) individuals' debt-relevant general attitudes $\boldsymbol{X_{Gen}}$ and (3) economic hardship experiences $\boldsymbol{X_{Per}}$. We then estimate two extended models. The first extension adds the variables on financial literacy or debt knowledge $\boldsymbol{X_{Finlit}}$. The second extension enhances the baseline model by adding, one by one, the variables capturing political attitudes $\boldsymbol{X_{Pol}}$.

$$\Pr(Y_i = 1) = F(\boldsymbol{A_c}, \boldsymbol{X_{Soc}}, \boldsymbol{X_{Gen}}, \boldsymbol{X_{Per}}, \boldsymbol{X_{Finlit}}) \quad (2.1)$$

$$\Pr(Y_i = 1) = F(\boldsymbol{A_c}, \boldsymbol{X_{Soc}}, \boldsymbol{X_{Gen}}, \boldsymbol{X_{Per}}, \boldsymbol{X_{Pol}}) \quad (2.2)$$

Potential multicollinearity issues were addressed by theoretical considerations as well as consulting bivariate correlations (see online supplement). Model selection is based on statistics of model fit and explanatory power. The selection of the presented models is supported unanimously by three different measures: the Schwarz criterion, or Bayesian information criterion (BIC); McFadden's adjusted pseudo R^2; and Tjur's D (coefficient of discrimination).

3.2 Basic results

In this section, we discuss the estimation results along the four different dependent variables and the block-wise expansion of explanatory variables introduced in the previous section. As a caveat right at the beginning, we do not claim in this section that the estimated effects represent causal effects, given the likely endogeneity of several regressors. Therefore, the results shown below should be interpreted as conditional correlations.

The estimated average marginal effects for the baseline specification are shown in table 1. Among the variables capturing *sociodemographic and socioeconomic characteristics*, wealth indicators indeed turn out to be important. We include two related indicators: one that captures real wealth in the form of the condition of respondents' homes and another that captures financial wealth in the form of savings. Compared to individuals who live in a dwelling that was assessed by the interviewer to be of medium condition, individuals living in dwellings *both* of poor and excellent condition[11] are more likely to associate higher debt levels with higher investments today as well as with negative effects for the future. The positive connotation of public debt for poorer individuals regarding investment benefits may stem from the belief that public investment can improve public infrastructure and thus their living standards, too. Turning to financial wealth, respondents who

[11] *The share of individuals living in dwellings of excellent condition amounts to 30% versus 12% for dwellings of poor condition.*

possess savings are more concerned about the future impact of public debt than those without savings. This finding, together with the previous one on individuals living in dwellings of excellent condition, would be in accordance with the existing literature for advanced economies and corroborate Ricardian arguments.[12] Finally, to control to some extent for per capita wealth, we also include household size. Larger households apparently are less likely to believe that higher public debt allows for higher investments today, probably because they are confronted with cramped living conditions and would therefore support more (residential) investment.[13]

Besides the explanatory variables discussed so far, we add in a second step individuals' *debt-relevant general attitudes* (see medium panel in table 1). Our results indicate that people who have a present bias (i.e. are either impatient or impulsive or both; constituting 45% of the sample) express a positive connotation of public debt across all the specifications. This is as expected, given that these respondents are less likely to identify themselves with future repayment obligations. In contrast, respondents who are more debt averse themselves, i.e. those that feel uncomfortable if they owe money to others, have very strong concerns about the possible future negative effects of higher public debt. Finally, general trust in institutions (an index excluding government) matters as well: Those who are in general more trustful also see public debt in a more positive light.[14]

In a third step, we include additional explanatory variables that capture *economic hardship* respondents may have experienced (see lower panel in table 1).[15] First, respondents that were unemployed at the time of the survey tend to agree that public debt compromises the opportunities of future generations and implies lower social benefits in the future. This can probably be explained by the fact that the unemployed are more vulnerable and, due to this, do not believe that the system offers sufficient solidarity. Second, people who had to cut back on basic consumption during 2008–2018 hold skeptical views about public debt across all the four specifications. Having to cut down basic consumption is well remembered even after several years and thus an indicator for severe economic hardship (see EBRD, 2006; Denisova et al., 2010). These people's negative views of public debt might be due to a loss of trust in the crisis mitigation capacities of public institutions (see Eller and Scheiber, 2020) and/or the fear that higher public debt levels could make them to go through a similar hardship experience again. Unemployment and past basic consumption cuts, alongside the explanatory variables mentioned above, constitute the "baseline controls" referred to in the remainder of this section.[16] Third, we add other variables step by step that might be related to the attitudes of people

[12] *For some CESEE countries where holding savings is not that widespread (below 25% of individuals in Bosnia and Herzegovina, Romania and Serbia; roughly one-third in Bulgaria, Hungary and North Macedonia; around one-half in Croatia and Poland; compared with nearly 80% in Czechia), savings can be interpreted as a proxy for economic well-being.*

[13] *We experimented with using finer categories of household size and including a dummy for having children. However, the results for different definitions of household size remain very similar and the children dummy remains statistically insignificant.*

[14] *The index on general trust in institutions is constructed as the average trust score across five institutions: police, domestically owned banks, foreign owned banks, the European Union, the national central bank. For details, see annex table A1.*

[15] *The inclusion of* $\boldsymbol{X_{Per}}$ *leaves the results for* $\boldsymbol{X_{Soc}}$ *and* $\boldsymbol{X_{Gen}}$ *qualitatively unchanged (for comparison, see the online supplement for a specification with* $\boldsymbol{X_{Soc}}$ *and* $\boldsymbol{X_{Gen}}$ *only).*

[16] *The results for unemployment and consumption cuts remain unchanged if we include them separately in the regressions.*

who suffer(ed) economic hardship (only specifications where these variables are statistically significant are reported). Similarly to the results for housing conditions, individuals who belong to *both* low- or high-income households are more likely to agree that higher public debt compromises the opportunities of future generations.[17] At the same time, respondents are more likely to support the view that higher debt allows for higher investments today if they live outside the capital city (probably due to the thinner infrastructure there) but also in a neighborhood characterized by comparatively stronger economic activity (proxied by nightlight intensity), or assess their personal health status as favorable (to control also for a less economically oriented hardship variable). Finally, access to liquidity in an emergency situation dampens people's skeptical debt views: these individuals are less likely to think that they have to pay higher taxes and will receive lower social benefits in the future as a result of higher public debt today.

To provide a first summary picture, chart 4 depicts the relative importance of the most important baseline regressors by comparing for each dependent variable the estimated average marginal effects of these regressors. Interestingly, individuals' public debt attitudes are strongly associated with other personal attitudes; especially aversion to incurring personal debt appears crucial with the by far largest average marginal effects in the three specifications indicating "debt skepticism" (i.e., to reiterate, the understanding that public debt compromises the opportunities of future generations, implies higher taxes, and implies lower pensions and benefits). Finally, belonging to more disadvantaged groups of society (poor dwelling conditions, unemployed, experience of basic consumption cutbacks) also yields very significant effects in most specifications.

In a fourth step, we expand the baseline specification by variables capturing *financial literacy levels or debt knowledge* (in line with equation 2.1). Table 2 shows that the financial literacy dummy[18] is related positively to the first three dependent variables, suggesting that people who understand the basic concepts related to finance tend to be more skeptical about the future impact of higher public debt, while agreeing that higher debt levels allow for higher investments today (conditional on that these respondents are not concerned about debt dynamics). Respondents who are concerned about public debt dynamics during the past ten years have similar views (with a substantially larger average marginal effect) as financially literate persons. They weigh potential future drawbacks of public debt more heavily but also agree – despite their backward-oriented concerns – that higher public debt levels allow for higher investments today. Including an interaction term between the two variables reveals that individuals who are both financially literate *and* concerned about past debt dynamics are less likely to see public debt positively as a catalyst for investment, compared with respondents who are not financially literate and unconcerned about the debt history, turning the positive view into a skeptical one. This brings us to studying the role of debt knowledge more closely. Financial literacy and debt knowledge correlate only slightly, and their correlation with debt attitudes differs as well. Knowing (or guessing) the size of public debt is related

[17] *For the other dependent variables, net household income did not matter in a statistically significant manner. For the given context, the other chosen economic hardship variables are apparently more specific and informative.*

[18] *Dummy equals 1 if respondents score 3 or 4 on the financial literacy index; 0 otherwise. The financial literacy index is based on answers to four questions, regarding real interest rates, exchange rates, inflation and risk diversification. For details, see annex table A1.*

Table 1

Baseline estimation: main factors associated with attitudes toward public debt

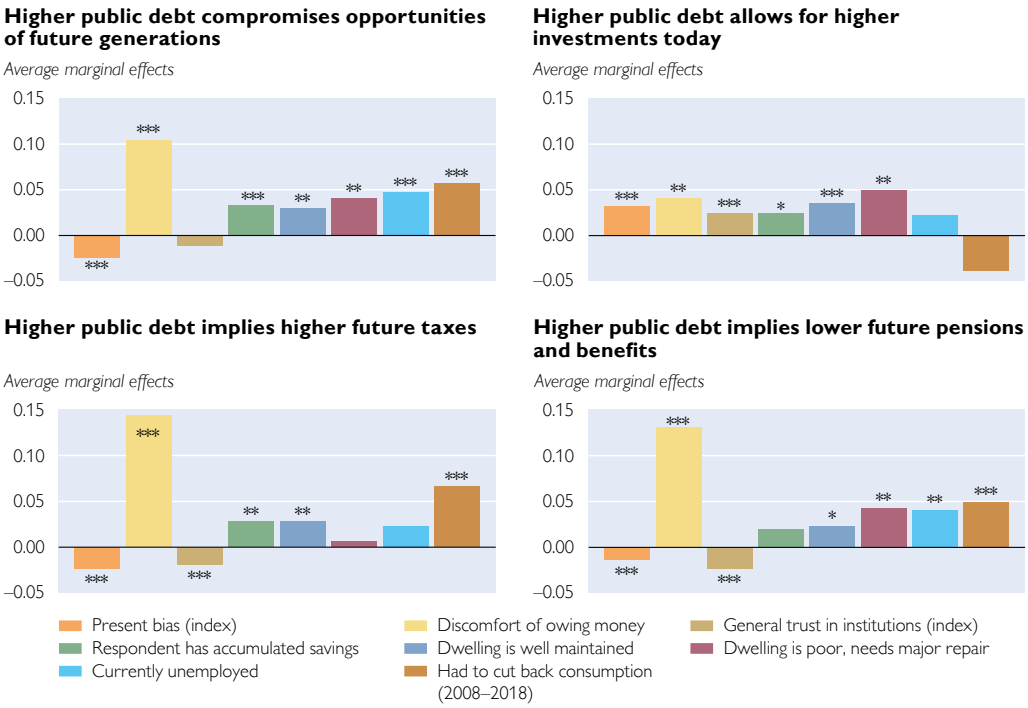
Outcome variable: agreement with statement (0/1)	Binary dependent variables								
	Higher public debt compromises opportunities of future generations		Higher public debt allows for higher investments today			Higher public debt implies higher future taxes		Higher public debt implies lower future pensions and benefits	
	1	2	3	4	5	6	7	8	9
	Average marginal effects								
Respondents' sociodemographic and socioeconomic characteristics									
Aged 19 to 34 years	–0.004	–0.007	–0.007	–0.005	–0.012	0.003	–0.000	–0.004	–0.005
	(0.013)	(0.012)	(0.013)	(0.013)	(0.013)	(0.013)	(0.012)	(0.013)	(0.013)
Aged 55+ years	–0.004	–0.002	–0.002	0.001	0.011	–0.011	–0.012	–0.021	–0.024*
	(0.013)	(0.013)	(0.014)	(0.014)	(0.014)	(0.013)	(0.013)	(0.014)	(0.013)
Female	–0.017*	–0.008	–0.004	–0.001	0.001	0.003	0.004	–0.007	–0.002
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.009)	(0.010)	(0.009)
Dwelling is well maintained	0.030**	0.024*	0.035***	0.032**	0.029**	0.028**		0.023*	
	(0.012)	(0.012)	(0.013)	(0.013)	(0.013)	(0.013)		(0.013)	
Dwelling is poor, needs major repair	0.041**	0.053***	0.050**	0.048**	0.054***	0.006		0.043**	
	(0.018)	(0.017)	(0.020)	(0.019)	(0.019)	(0.018)		(0.019)	
Respondent has accumulated savings	0.033***	0.026**	0.024*	0.025*	0.024*	0.028**		0,020	
	(0.012)	(0.012)	(0.014)	(0.014)	(0.014)	(0.013)		(0.013)	
Refused to reveal extent of savings	–0.025	–0.016	–0.026	–0.024	–0.016	0.008		–0.012	
	(0.032)	(0.031)	(0.039)	(0.037)	(0.038)	(0.032)		(0.034)	
2-person household	–0.020	–0.006	–0.042**	–0.039**	–0.042**	–0.036**	–0.032*	–0.012	–0.017
	(0.016)	(0.017)	(0.018)	(0.018)	(0.018)	(0.017)	(0.017)	(0.017)	(0.017)
3-plus-person household	–0.033*	–0.016	–0.051***	–0.043**	–0.050***	–0.043**	–0.034**	–0.022	–0.019
	(0.017)	(0.018)	(0.018)	(0.018)	(0.018)	(0.017)	(0.017)	(0.017)	(0.017)
Respondents' general attitudes									
Present bias (index)	–0.025***	–0.026***	0.032***	0.031***	0.031***	–0.024***	–0.023***	–0.014***	–0.013**
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Discomfort of owing money	0.105***	0.106***	0.041**	0.033*	0.034*	0.144***	0.153***	0.131***	0.137***
	(0.016)	(0.016)	(0.018)	(0.018)	(0.018)	(0.017)	(0.016)	(0.017)	(0.016)
General trust in institutions (index)	–0.011	–0.012*	0.024***	0.028***	0.024***	–0.019***	–0.016**	–0.023***	–0.021***
	(0.007)	(0.007)	(0.008)	(0.008)	(0.008)	(0.007)	(0.007)	(0.007)	(0.007)
Respondents' economic hardship experiences									
Currently unemployed	0.047***		0.022			0.023		0.041**	
	(0.015)		(0.016)			(0.016)		(0.016)	
Had to cut back consumption (2008–2018)	0.057***		–0.039***			0.066***		0.049***	
	(0.013)		(0.014)			(0.013)		(0.013)	
Household net income: 1st quartile		0.037**							
		(0.015)							
Household net income: 4th quartile		0.033**							
		(0.015)							
Capital city resident				–0.066**					
				(0.033)					
Local economic activity (nightlight brightness)				0.016*					
				(0.009)					
Self-reported health status (index)					0.024***				
					(0.008)				
Access to emergency borrowing (index)							–0.111***		–0.091**
							(0.040)		(0.041)
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Log likelihood	–5,200.3	–5,458.0	–5,732.2	–6,000.4	–5,976.6	–5,278.8	–5,537.5	–5,446.8	–5,705.2
Pseudo R-squared (McFadden)	0.07	0.06	0.03	0.03	0.03	0.10	0.10	0.07	0.07
Pseudo R-squared (McKelvey & Zavoina)	0.13	0.12	0.06	0.06	0.06	0.19	0.18	0.14	0.14
Probability > Chi squared (df_m)	345.42 (23)	314.09 (24)	182.54 (23)	182.56 (23)	187.20 (22)	507.24 (23)	471.12 (18)	406.43 (23)	362.63 (18)
Number of observations	8,907	9,315	8,687	9,086	9,046	8,765	9,155	8,652	9,038
BIC	10,618.9	11,144.6	11,682.00	12,219.5	12,162.8	10,775.6	11,248.3	11,111.3	11,583.5
Adjusted pseudo R-squared (McFadden)	0.06	0.06	0.02	0.02	0.02	0.09	0.09	0.07	0.07
Tjur's D	0.09	0.08	0.04	0.04	0.04	0.12	0.12	0.09	0.09
P(DepVar=1)	0.68	0.68	0.41	0.42	0.42	0.61	0.61	0.59	0.59

Source: Authors' calculations based on OeNB Euro Survey 2018.

*Note: Average marginal effects estimated with probit regressions with country fixed effects, using data from the OeNB Euro Survey 2018; robust standard errors are adjusted for clustering at the PSU level and reported in parentheses. ***, **, * denote that the average marginal effect is statistically different from zero at the 1%, 5% and 10% level, respectively. For a definition of the variables, see annex table A1. P(DepVar=1) denotes the unconditional sample probability of the respective dependent variable. By construction, positive (negative) average marginal effects imply that respondents are more (less) likely to agree with the statements underlying the dependent variables. Base categories are: 35 to 54 years old; main residence is good, only needs minor repair; reports to have no savings; 1-person household; Czech resident. For specification 2, the base category consists of the 2nd and 3rd household net income quartile. The additional dummy for refusing to report household net income is not shown. The sample comprises all ten OeNB Euro Survey countries.*

Chart 4

Baseline estimation: main factors associated with attitudes toward public debt



Source: Authors' calculations based on OeNB Euro Survey 2018.

*Note: Columns represent average marginal effects estimated with probit regressions with country fixed effects; standard errors are adjusted for clustering at the PSU level. ***, **, * denote that the average marginal effect is statistically different from zero at the 1%, 5% and 10% level, respectively. By construction, a positive (negative) average marginal effects implies that a respondent is more (less) likely to agree with the statement. Additional dummy variables control for age, gender and household size (not shown). The results refer to the baseline specifications for the ten surveyed CESEE countries, i.e. columns (1), (3), (6) and (8) in table 1.*

negatively to the dependent variables, albeit not in a highly statistically significant manner. The most convincing case can be made for debt knowledge being associated with a less pronounced belief that there is a nexus between today's public debt level and the future tax burden. However, knowing the current debt level *and* being at the same time concerned about past debt developments (see the results for the respective interaction terms) amplifies both skeptical views about the future impact of public debt and the belief that higher debt allows for higher investments today. Finally, we include in table 2 also self-assessed interest in politics to capture individuals that are likely better-informed about public finance issues: they also share the positive view that higher public debt levels allow for higher investments today.[19]

In a fifth and final step, we expand the baseline specification by *several attitudes about politics* (in line with equation 2.2). However, the issue of endogenous regressors applies particularly to these political preference variables, and the interpretation in the sense of conditional correlations should therefore be reiterated. We cover four different attitudes about politics and include each of them in a separate regression.

[19] *Different levels of educational attainment were added as an alternative to financial literacy and debt knowledge but did not turn out to be statistically significant (results available upon request). Apparently, for the given context, financial literacy and debt knowledge are more specific and informative than general degrees of educational attainment.*

Accordingly, table 3 shows how each dependent variable is associated with political preferences. The following observations can be made. First, people who are more satisfied with the delivery of public services are more confident about higher public debt – very consistently across the four specifications. The same holds true for individuals who think that the state manages tax revenues conscientiously (except for the specification depicting public debt as a catalyst for investment, where the relation is insignificant). Second, people who believe that the state should reduce income differences between the rich and the poor are less likely to agree that higher public debt compromises the opportunities of future generations or implies higher future taxes. Thus, people who support income redistribution by the state tend to be less skeptical about the future impact of public debt, possibly because

Table 2

Extension 1: association of attitudes toward public debt with financial knowledge

	Binary dependent variables							
Outcome variable: agreement with statement (0/1)	Higher public debt compromises opportunities of future generations		Higher public debt allows for higher investments today		Higher public debt implies higher future taxes		Higher public debt implies lower future pensions and benefits	
	1	2	3	4	5	6	7	8
	Average marginal effects							
Respondents' financial literacy level and debt knowledge								
Interested in politics	0.005	0.007	0.051***	0.047***	0.009	0.013	–0.001	0.006
	(0.012)	(0.012)	(0.013)	(0.013)	(0.012)	(0.012)	(0.013)	(0.013)
Financially literate	0.090***		0.099***		0.086***		0.042	
	(0.031)		(0.035)		(0.032)		(0.033)	
Concerned about development of public debt	0.189***	0.146***	0.177***	0.084***	0.237***	0.176***	0.230***	0.201***
	(0.020)	(0.016)	(0.024)	(0.019)	(0.020)	(0.017)	(0.021)	(0.017)
Interaction: financially literate AND concerned about development of public debt	0.007		–0.123***		–0.038		0.008	
	(0.032)		(0.037)		(0.034)		(0.035)	
Correctly identified size of public debt		–0.031		–0.055*		–0.072**		–0.061*
		(0.029)		(0.032)		(0.032)		(0.033)
Failed to identify size of public debt		0.037***		–0.030*		0.026*		0.011
		(0.014)		(0.016)		(0.015)		(0.015)
Interaction: correctly identified size of public debt AND concerned about its development		0.083***		0.068**		0.084**		0.052
		(0.031)		(0.034)		(0.033)		(0.034)
Other baseline controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Log likelihood	–4,716.0	–5,014.3	–5,351.7	–5,612.3	–4,796.9	–5,071.7	–4,956.7	–5,226.5
Pseudo R-squared (McFadden)	0.10	0.09	0.04	0.04	0.13	0.12	0.10	0.10
Pseudo R-squared (McKelvey & Zavoina)	0.18	0.17	0.03	0.03	0.12	0.12	0.10	0.09
Probability > Chi squared (df_m)	531.27(27)	494.14(28)	249.82(27)	241.93(28)	689.10(27)	674.40(28)	601.19(27)	608.72(28)
Number of observations	8,381	8,788	8,206	8,579	8,276	8,661	8,166	8,543
BIC	9,685.0	10,292.0	10,955.8	11,487.3	9,846.4	10,406.3	10,165.6	10,715.5
Adjusted pseudo R-squared (McFadden)	0.09	0.08	0.08	0.07	0.24	0.23	0.19	0.19
Tjur's D	0.13	0.11	0.05	0.05	0.16	0.15	0.13	0.13
P(DepVar=1)	0.68	0.68	0.41	0.41	0.62	0.62	0.60	0.59

Source: Authors' calculations based on OeNB Euro Survey 2018.

*Note: Average marginal effects estimated with probit regressions with country fixed effects, using data from the OeNB Euro Survey 2018; robust standard errors are adjusted for clustering at the PSU level and reported in parentheses. ***, **, * denote that the average marginal effect is statistically different from zero at the 1%, 5% and 10% level, respectively. For a definition of the variables, see annex table A1. P(DepVar=1) denotes the unconditional sample probability of the respective dependent variable. By construction, positive (negative) average marginal effects imply that respondents are more (less) likely to agree with the statements underlying the dependent variables. Base categories are: 35 to 54 years old; main residence is good, only needs minor repair; reports to have no savings; 1-person household; Czech resident. The sample comprises all ten OeNB Euro Survey countries.*

Table 3

Extension 2: association of attitudes toward public debt with political attitudes

	Specifications for attitudes toward politics			
	Satisfaction with public services (index)	State is wasting taxpayer money	Preference for income redistribution	Trust in central government
	1	2	3	4
	Average marginal effects			
Dependent variable: higher public debt compromises opportunities of future generations				
General trust in institutions (index)	0.001	–0.001	–0.013*	–0.000
	(0.007)	(0.007)	(0.007)	(0.007)
Respective political attitudes	–0.045***	0.114***	–0.029**	–0.045***
	(0.010)	(0.013)	(0.013)	(0.015)
Other baseline controls	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes
Log likelihood	–5,082.5	–5,046.7	–5,128.2	–5,149.8
Pseudo R-squared (McFadden)	0.07	0.08	0.07	0.07
Pseudo R-squared (McKelvey & Zavoina)	0.14	0.15	0.13	0.13
Probability > Chi squared (df_m)	353.87(24)	425.62(24)	352.94(24)	345.93(24)
Number of observations	8,710	8,716	8,795	8,822
BIC	10,391.7	10,320.1	10,483.4	10,526.8
Adjusted pseudo R-squared (McFadden)	0.07	0.08	0.07	0.06
Tjur's D	0.09	0.10	0.09	0.09
P(DepVar=1)	0.68	0.68	0.68	0.68
Dependent variable: higher public debt allows for higher investments today				
General trust in institutions (index)	0.013	0.024***	0.024***	0.018**
	(0.008)	(0.008)	(0.008)	(0.008)
Respective political attitudes	0.048***	0.011	0.022	0.030*
	(0.011)	(0.014)	(0.015)	(0.016)
Other baseline controls	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes
Log likelihood	–5,590.4	–5,604.9	–5,659.2	–5,677.7
Pseudo R-squared (McFadden)	0.03	0.03	0.03	0.03
Pseudo R-squared (McKelvey & Zavoina)	0.06	0.06	0.06	0.06
Probability > Chi squared (df_m)	196.41(24)	186.10(24)	184.74(24)	183.58(24)
Number of observations	8,491	8,501	8,580	8,608
BIC	11,407.0	11,435.9	11,544.8	11,581.9
Adjusted pseudo R-squared (McFadden)	0.03	0.02	0.02	0.02
Tjur's D	0.04	0.04	0.04	0.04
P(DepVar=1)	0.42	0.41	0.41	0.41

Source: Authors' calculations based on OeNB Euro Survey 2018.

*Note: Average marginal effects estimated with probit regressions with country fixed effects, using data from the OeNB Euro Survey 2018; robust standard errors are adjusted for clustering at the PSU level and reported in parentheses. ***, **, * denote that the average marginal effect is statistically different from zero at the 1%, 5% and 10% level, respectively. For a definition of the variables, see annex table A1. P(DepVar=1) denotes the unconditional sample probability of the respective dependent variable. By construction, positive (negative) average marginal effects imply that respondents are more (less) likely to agree with the statements underlying the dependent variables. The sample comprises all ten OeNB Euro Survey countries.*

they have in mind that public spending enabled by higher debt would benefit the poor relatively more. Finally, people who have greater trust in government tend to be more confident about higher public debt levels, too.[20]

[20] *The baseline regressors remain robust when we add either financial literacy or debt knowledge or political attitudes. Therefore, we do not show the average marginal effects for the baseline controls in tables 2 and 3 – except for general trust in institutions in table 3. The estimated average marginal effect for general trust in institutions (recall table 1) decreases and loosens statistical significance in most specifications of extension 2, reflecting also the partly high bivariate correlation with some of the political attitude variables. At the same time, dropping general trust completely leaves the results for the political attitude regressors qualitatively unchanged.*

Table 3 continued

Extension 2: association of attitudes toward public debt with political attitudes

	Specifications for attitudes toward politics			
	Satisfaction with public services (index)	State is wasting taxpayer money	Preference for income redistribution	Trust in central government
	1	2	3	4
	Average marginal effects			
Dependent variable: higher public debt implies higher future taxes				
General trust in institutions (index)	–0.010	–0.010	–0.021***	–0.001
	(0.007)	(0.007)	(0.007)	(0.008)
Respective political attitudes	–0.043***	0.121***	–0.028**	–0.081***
	(0.011)	(0.013)	(0.013)	(0.015)
Other baseline controls	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes
Log likelihood	–5,164.5	–5,104.1	–5,206.2	–5,206.6
Pseudo R-squared (McFadden)	0.10	0.11	0.10	0.10
Pseudo R-squared (McKelvey & Zavoina)	0.19	0.21	0.19	0.19
Probability > Chi squared (df_m)	503.17(24)	609.56(24)	513.88(24)	532.70(24)
Number of observations	8,578	8,573	8,655	8,681
BIC	10,555.5	10,434.5	10,639.1	10,640.0
Adjusted pseudo R-squared (McFadden)	0.09	0.10	0.09	0.10
Tjur's D	0.13	0.14	0.13	0.13
P(DepVar=1)	0.61	0.61	0.61	0.62
Dependent variable: higher public debt implies lower future pensions and benefits				
General trust in institutions (index)	–0.013*	–0.014*	–0.024***	–0.003
	(0.007)	(0.007)	(0.007)	(0.008)
Respective political attitudes	–0.042***	0.107***	–0.013	–0.083***
	(0.011)	(0.014)	(0.014)	(0.015)
Other baseline controls	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes
Log likelihood	–5,333.8	–5,289.2	–5,380.9	–5,369.4
Pseudo R-squared (McFadden)	0.07	0.08	0.07	0.07
Pseudo R-squared (McKelvey & Zavoina)	0.14	0.16	0.14	0.15
Probability > Chi squared (df_m)	399.03(24)	478.73(24)	405.63(24)	434.69(24)
Number of observations	8,464	8,464	8,545	8,569
BIC	10,893.7	10,804.5	10,988.1	10,965.2
Adjusted pseudo R-squared (McFadden)	0.07	0.07	0.07	0.07
Tjur's D	0.09	0.10	0.09	0.10
P(DepVar=1)	0.59	0.59	0.59	0.59

Source: Authors' calculations based on OeNB Euro Survey 2018.

*Note: Average marginal effects estimated with probit regressions with country fixed effects, using data from the OeNB Euro Survey 2018; robust standard errors are adjusted for clustering at the PSU level and reported in parentheses. ***, **, * denote that the average marginal effect is statistically different from zero at the 1%, 5% and 10% level, respectively. For a definition of the variables, see annex table A1. P(DepVar=1) denotes the unconditional sample probability of the respective dependent variable. By construction, positive (negative) average marginal effects imply that respondents are more (less) likely to agree with the statements underlying the dependent variables. The sample comprises all ten OeNB Euro Survey countries.*

3.3 Robustness analysis

To emphasize the robustness of the basic results presented in the previous section, we run several checks. Most of them are documented in the online supplement; if not, they are available from the authors upon request. The main robustness checks can be summarized as follows.

First, the prevalence of highly-significant country fixed effects in all specifications indicates that cross-country differences in the various institutional and economic backgrounds are important for determining individual public debt perceptions.

Therefore, we execute a type of jackknife test, re-estimating the baseline specifications and the extensions by excluding one country at a time. The main effects of the regressors on general attitudes, economic hardship, financial literacy and political attitudes are robust with respect to the exclusion of individual countries. Yet, we identify some robustness issues regarding the marginal effects of the regressors capturing real wealth, savings and knowledge about the size of public debt. For the baseline model and extension 2, the reported highly significant average marginal effects of wealth and savings turn out to be robust, while the less significant average marginal effects of the wealth and savings regressors vary with the inclusion of some countries, and they lose significance if Albania is excluded. For extension 1, the category dwelling well-maintained turns out robust, while the poor-wealth and savings dummies vary with the inclusion of some countries. Moreover, the average marginal effects on savings, general trust in institutions or unemployment occasionally even increase and become more significant if particular countries are excluded. Finally, the household-size regressors turn out to be sensitive with respect to the inclusion of Czechia, Poland and sometimes of Albania.

Second, the analysis of the correlates of straight-lining (see online supplement) concludes that nondifferentiation is mainly influenced by individual characteristics and rushing through the interview, while the rather few cases of multiple straight-lining pile up mainly in Albania and appear to be influenced by interviewer effects on response styles, too. To assess the impact of straight-lining on the robustness of the presented results, we re-estimate the baseline specification and the extensions by dropping (a) all respondents who straight-lined at least once, (b) all respondents who straight-lined their responses on the dependent variables and (c) by dropping only the major cases of multiple straight-lining (see the results for the latter in the online supplement). Excluding all cases with straight-lining (or only with respect to the dependent variables) shrinks the sample size by 58% (or 24%) and would presumably exclude many (some) respondents who simply have pronounced views on the specific topic of public debt. Regression results show for all specifications that the exclusion of all straight-lining respondents leads to insignificant average marginal effects of the regressors for wealth, savings and household size; but confirm the robustness of the effects of all other explanatory variables.[21] This implies that the majority of straight-lining cases are *not* measurement errors but rather assemble respondents with pronounced views associated with relatively richer and poorer respondents. Excluding the *major* cases of multiple straight-lining (i.e. 4% of the sample size, mostly concentrated on Albania and Hungary) yields smaller and less significant average marginal effects only for the poor-wealth dummy, confirming the robustness of all other regressors.[22]

Third, given that the binary dependent variables used thus far are derived from naturally ordered raw data, we alternatively apply an *ordered* probit and a *generalized ordered* probit estimator. The results confirm the main findings concerning excellent housing conditions, general attitudes and economic hardship (see online

[21] *By contrast, rerunning the regressions relying only on the 58% straight-lining respondents yields the opposite picture: larger average marginal effects for wealth and household-size regressors, and robust results for the remaining factors.*

[22] *Conversely, rerunning the regressions including only the 4% major straight-lining cases yields significant effects only for wealth, general trust, consumption cuts and most importantly for the dummy for not revealing whether the respondent has any savings. This reinforces the impression that personality characteristics and interviewer effects may have introduced some measurement errors, yet the attenuated average marginal effects are mostly limited to this subsample.*

supplement for the baseline and further econometric details). But the regressors for poor housing condition and savings turn out insignificant for all the four dependent variables. The average marginal effects as well as the threshold parameters change sign between the categories "strongly agree" and "agree" for the statement that higher debt compromises the opportunities of future generations, and between "somewhat agree" and "agree" in the other cases – substantiating the coding rule for the binary dependent variables. As another robustness check with respect to defining the dependent variable, we rerun the probit regressions with the broader definition of agreement (i.e. including also "somewhat agree"). The main results survive, but the detected effects are partly smaller and statistically less significant.

Fourth, as a robustness check with respect to model selection, we apply the least absolute shrinkage and selection operator (LASSO) method, i.e. a machine-driven selection of explanatory variables from a larger set of candidate variables. The LASSO results largely confirm the preferred probit baseline specification, whereby a few variables that lacked robustness or were not highly significant in the probit estimations were selected by LASSO (results are shown in the online supplement).

Finally, concerning the estimation technique, the significance of results turns out robust if standard errors are clustered at the regional level or if we use Huber-White robust standard errors.

4 Conclusion

In the aftermath of the global financial crisis most countries in CESEE experienced a considerable increase in their public debt levels. Despite some consolidation until 2019, this development has most recently been reinforced by the fallout from the COVID-19 pandemic, as countries have launched sizable government stimulus packages. Even if refinancing costs were to remain low for a prolonged period of time, elevated public debt ratios could potentially pose risks to debt sustainability for a few countries. For these reasons, policymakers from CESEE countries could benefit from insights into people's attitudes toward public debt for designing and implementing successful stabilization strategies during the ongoing crisis and successful consolidation strategies thereafter. This seems even more important as the COVID-19 pandemic has shifted public support in favor of higher social spending (see Ferragina and Zola, 2020), which is why post-pandemic consolidation might meet greater resistance.

This paper has sought to contribute accordingly, by analyzing people's attitudes toward public debt incurrence in ten CESEE countries, using unique survey data collected in the fall of 2018 through the OeNB Euro Survey. A stylized fact from our analysis is that CESEE residents have, in general, negative views about public debt, with a big majority believing that higher public debt levels compromise the opportunities of future generations and that there is a link between higher debt incurrence and the perspective of higher taxes and lower social benefits. The belief that higher public debt levels allow for higher investments today is also widespread but less common. There are cross-country differences, with individuals in some CESEE countries being more skeptical than in others, but the overall conclusion refers to all countries.

Turning to the profile of individuals that expressed certain attitudes toward public debt, our econometric analysis stresses the importance of several groups of factors. First, a more skeptical view of public debt is strongly affected by personal debt-related attitudes, in particular aversion to incurring personal debt. Second,

economic well-being matters. Individuals who belong to more disadvantaged societal groups (particularly individuals who have experienced economic hardship) tend to be most concerned about public debt. Conversely, this does not uniformly imply that better-off individuals are more debt tolerant. For instance, we provided some evidence that wealthier individuals also express comparatively more skepticism about higher public debt levels, pointing to the existence of Ricardian considerations in our sample. Third, people who are more financially literate tend to be more skeptical about the future impact of higher public debt, but also agree that higher public debt levels allow for higher investments today. Fourth, we have also learned that individuals' general attitudes about politics underpin their public debt attitudes: A more confident view of public debt is associated with satisfaction with public services, preference for income distribution by the state, the perception that the state is managing taxpayer money diligently, and trust in government.

The finding that worse-off societal groups are more skeptical toward higher levels of public debt contrasts with several existing studies for advanced economies that found that it is *primarily* the better off who tend to be more skeptical and prefer deleveraging. The skepticism of disadvantaged (or disappointed) societal groups in CESEE may be explained by the comparatively lower level of social spending and the predominance of regressive tax systems in the region, which could make worse-off individuals believe that the burden of higher debt must eventually be shouldered by them. Thus, to gain people's support for temporarily higher public debt levels – as e.g. needed during the current crisis situation – our results would call for channeling increased government spending to the more disadvantaged groups of society (Eller and Scheiber, 2020) and strengthening the progressivity of tax systems (as recently emphasized by Gaspar et al., 2021).

Our descriptive analysis pointed to notable cross-country differences in individuals' perception of public debt. As parts of future research efforts, the reasons for these differences across countries could be explored – e.g. by adding country-specific regressors to the model (instead of country fixed effects) and moving toward multilevel modeling to account for the hierarchical structure of the data. In line with our reasoning above, it would be interesting to examine whether a different perception of public debt across countries is indeed related to differences in public spending intensity and composition (e.g. the share of social expenditure) or the degree of progressivity of the taxation system. In addition, besides obvious macroeconomic factors, it would be interesting to investigate several institutional factors that could explain local variation in individuals' debt attitudes and fiscal knowledge, such as the way fiscal topics (e.g. fiscal council recommendations) are covered by public media, a country's past track record in complying with fiscal rules or meeting fiscal targets, or more generally the quality of public sector governance – to mention only a few.

Once the dust of the COVID-19 pandemic settles, it will be of interest to examine whether people's attitudes toward public debt have changed significantly compared to the pre-crisis survey data presented in this paper. Therefore, in future waves of the OeNB Euro Survey, we will attempt to repeat parts of the survey presented here and realign the answers in order to uncover post-crisis debt consolidation preferences of individuals in CESEE (e.g. analogously to Stix, 2013; or Hayo and Neumeier, 2017) and to investigate how these preferences change once consolidation measures are in fact taken (e.g. building on Kalbhenn and Stracca, 2020).

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Annex

Table A1

Definitions of variables

Label	Description
Respondents' attitudes toward public debt (dependent variables in the regressions)	
Higher public debt compromises opportunities of future generations	Dummy equals 1 if respondents agreed/strongly agreed with the statement "higher public debt levels diminish the chances of future generations"; 0 if they somewhat agreed/somewhat disagreed/disagreed/strongly disagreed (6-point Likert scale). Excluding respondents who answered "don't know" or did not provide an answer.
Higher public debt allows for higher investments today	Dummy equals 1 if respondents agreed/strongly agreed with the statement "higher public debt levels make it possible to conduct necessary investments today (e.g. into public infrastructure like schools and streets)"; 0 if they somewhat agreed/somewhat disagreed/disagreed/strongly disagreed (6-point Likert scale). Excluding respondents who answered "don't know" or did not provide an answer.
Higher public debt implies higher future taxes	Dummy equals 1 if respondents agreed/strongly agreed with the statement "higher public debt levels imply that I will have to pay more taxes in the future"; 0 if they somewhat agreed/somewhat disagreed/disagreed/strongly disagreed with the statement (6-point Likert scale). Excluding respondents who answered "don't know" or did not provide an answer.
Higher public debt implies lower future pensions and benefits	Dummy equals 1 if respondents agreed/strongly agreed with the statement "higher public debt levels imply that I will receive lower state pensions and/or lower welfare benefits in the future"; 0 if they somewhat agreed/somewhat disagreed/disagreed/strongly disagreed (6-point Likert scale). Excluding respondents who answered "don't know" or did not provide an answer.
Respondents' sociodemographic and socioeconomic (household) characteristics	
Age	Dummy variables for three age groups: 19 to 34 years, 45 to 54 years (base category) and 55 and more years.
Female	Dummy variable that takes the value 1 if respondents were female, 0 otherwise (base category).
Condition of respondents' home	Dummy variables: interviewer assessment whether respondents' home is "excellent and well-maintained"; "good, needs some minor repairs" (base category); or "poor, needs major work/very poor, some walls or ceilings need replacement."
Savings	Dummy variables: respondents have savings (themselves or together with their partners), refused to answer or were not able to provide an answer. Base category: have no savings.
Household size	Dummy variables for the number of persons living permanently in a given household (two individuals; three and more individuals). Base category: 1-person household.
Respondents' general attitudes	
Present bias (index)	Index is constructed as the average score of agreement on a 6-point Likert scale using the following two statements: "I tend to live for today and let tomorrow take care of itself" and "I am impulsive and tend to buy things even when I cannot really afford them." Excluding respondents who answered "don't know" or did not provide an answer.
Discomfort of owing money	Dummy equals 1 if respondents rather/strongly agreed with the statement "Owing money to somebody, even if it is just a small amount, makes me feel uncomfortable"; 0 otherwise (6-point-Likert scale). Excluding respondents who answered "don't know" or did not provide an answer.
General trust in institutions (index)	Index constructed as the average trust score across five institutions: police, domestically owned banks, foreign-owned banks, the EU, the national central bank. Respondents were asked about how much they trust these five institutions on a 5-point Likert scale. Respondents answering "don't know" were re-assigned to category 3 "I neither trust nor distrust." Excluding respondents who did not provide an answer.

Source: Authors' compilation.

Table A1 continued

Definitions of variables

Label	Description
Respondents' economic hardship experiences	
Currently unemployed	Dummy equals 1 if respondents are currently unemployed; 0 otherwise (base category). Excluding respondents who did not provide an answer.
Cut back consumption	Dummy equals 1 if respondents had to cut back on basic consumption in the period from 2008 to 2018; 0 otherwise. Excluding respondents who answered "don't know" or did not provide an answer.
Household net income	Dummy variables for the level of total household income after taxes (1st quartile, 2nd and 3rd quartile, 4th quartile, don't know/no answer). Base category: 2nd and 3rd quartile.
Capital city resident	Dummy equals 1 if respondents' main residence happened to be in the capital city; 0 otherwise (base category).
Local economic activity	Natural logarithm of visible infrared imaging radiometer suite (VIIRS) nightlight data for a radius of 10km around the primary sampling unit (PSU) serving as a proxy for local economic activity. The nightlight data refer to 2018 (annual averages) and were cleaned by a contractor according to Beyer et al. (2018).
Access to emergency borrowing (index)	Index constructed as the average of reported probabilities. The index is based on respondents' self-assessment of being able to borrow a given amount (representing four times the average monthly wage in their country) in an emergency from five different sources: banks; their employer; payday lenders, pawnshops or internet loan providers; family, relatives or friends; or other private lenders. The responses were coded as ordinal categories, and the following numerical probabilities were assigned to the set of verbal categories, as identified: very likely = 0.9, likely = 0.65, don't know = 0.5, unlikely = 0.35 and very unlikely = 0.1.
Self-reported health status (index)	Based on the answer to the question "All in all, how would you describe your current state of health? Would you say it is very good/good/fair/poor." Index ranges from 1 (poor) to 4 (very good). Excluding respondents who answered "don't know" or did not provide an answer.
Respondents' financial literacy level and debt knowledge	
Very interested in politics	Dummy equals 1 if respondents rather/strongly agreed with the statement "I am very interested in politics"; 0 otherwise (6-point Likert scale). Excluding respondents who did not provide an answer.
Concerned about the development of public debt	Dummy equals 1 if respondents rather/strongly agreed with the statement "The development of public debt [in my country] over the past 10 years is worrisome"; 0 otherwise (6-point Likert scale). Excluding respondents who did not provide an answer.
Financial literacy	Dummy equals 1 if respondents scored 3 or 4 on the financial literacy index; 0 otherwise (base category). The financial literacy index is based on answers to four questions, relating to real interest rates, exchange rates, inflation, and risk diversification. The index varies between 0 (= item non-response) and 4 (= all questions regarding financial literacy were answered correctly).
Interaction: financially literate AND concerned about development of public debt	Interaction term: dummy equals 1 if the financial literacy dummy equals 1 AND respondents indicated to rather/strongly agree with the statement "The development of public debt [in my country] over the past 10 years is worrisome"; 0 otherwise. Excluding respondents who did not provide an answer.
Correctly identified size of public debt	Dummy variables: correctly identified size of public debt or answered "don't know." Base category: failed to identify size of public debt, including item non-response. The original variable captures respondents' actual answers: they were given six brackets (ranging from "below 20% of GDP" up to "above 100% of GDP") and asked to indicate the appropriate bracket for their country. The debt ratios for Albania, Czechia, Hungary and Poland broadly corresponded to bracket midpoints, so that the respective brackets constituted the only appropriate answer. The ratios for all other countries broadly corresponded to two out of the six brackets, so that both brackets were counted as appropriate. The respective tolerance margin turns out to be +/–3 percentage points.
Interaction: correctly identified size of public debt AND concerned about its development	Interaction term: dummy equals 1 if respondents correctly identifed the size of public debt AND rather/strongly agreed with the statement "The development of public debt [in my country] over the past 10 years is worrisome"; 0 otherwise. Excluding respondents who did not provide an answer.
Respondents' political attitudes	
Satisfaction with public services (index)	Index constructed as the average degree of satisfaction with the delivery of public services as reported for six areas: social security; public infrastructure; education; health; defense and public safety; and economic development. Answers range from "very satisfied (4)" to "very dissatisfied (1)." Excluding respondents who answered "don't know" or did not provide an answer.
State is wasting taxpayer money	Dummy equals 1 if respondents rather/strongly agreed with the statement "the state is wasting taxpayer money"; 0 if they rather/strongly agreed with the statement "the state manages tax revenues conscientiously," or if they indicated no preference, or considered both statements to be somewhat true, or answered "don't know." Excluding respondents who did not provide an answer.
Preference for income redistribution	Dummy equals 1 if respondents rather/strongly agreed with the statement "the state should reduce income differences between those with higher incomes and those with lower incomes, e.g. via taxation or public benefits"; 0 if they rather/strongly agreed with the statement "the state should not reduce income differences," or if they indicated no preference, or considered both statements to be somewhat true, or answered "don't know." Excluding respondents who did not provide an answer.
Trust in central government	Dummy equals 1 if respondents reported to somewhat or completely trust the central government/cabinet of ministers; 0 if they indicated complete/some distrust or picked neither trust nor distrust (5-point Likert scale). Excluding respondents who answered "don't know" or did not provide an answer.

Source: Authors' compilation.

European banks in Russia: developments and perspectives from 2017 through the COVID-19 pandemic (2020/2021)

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Russia's recent economic growth has been supported by the country's banking sector, including the European banks operating in the market. While Russia's pre-pandemic GDP growth had suffered from a weak investment climate, oil price volatility and sanctions, the strong financial buffers built up in recent years were an asset for the country and its banking system during the pandemic-triggered recession. The European banks that qualify as significant institutions (Raiffeisenbank Russia, Rosbank/Société Générale and UniCredit Bank Russia), while pursuing different strategies, have remained committed to the Russian market. During the crisis, banking and economic activity were supported by temporary regulatory forbearance with respect to asset (loan) valuation and provisioning as well as the central bank's key rate cuts and targeted government subsidies. European banks in Russia nevertheless keep facing exogenous risks, such as sustained compliance with sanctions regimes in a situation that remains volatile and sensitive to adverse geopolitical developments. Foreign currency fluctuations and the depreciation of the ruble require adequate risk management, and climate risk represents an emerging challenge. There is also strong competition driven by the digital transformation of banking. In March and April 2021, Russia's central bank raised its key policy rate again amid rising inflationary pressures and signs of incipient economic recovery. Once regulatory lenience and lending subsidies expire, the banking sector would in general appear sufficiently capitalized to cover a potential increase of loan losses and provisioning needs. This goes especially for the European banks in Russia, which tend to have better-than-average asset quality and a sound capital base, although their market environment is expected to remain challenging. Besides, generous reserves remain at the disposal of the authorities should financial problems emerge, a scenario whose implications remain untested in the case of European banks due to their resilient performance.

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How have the European banks that qualify as significant institutions in the Russian banking market[2] been performing in the past five years, including the first year of the COVID-19 pandemic? This article discusses the top trends observed in the period between 2017 and early 2021 and updates the review of recent developments in the Russian banking sector provided by Barisitz (2018). Trends which occurred before and during the crisis triggered by the COVID-19 pandemic are highlighted separately, in light of the magnitude of this crisis. Its wide-ranging

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[2] *These banks are referred to as "the European banks" in the article to facilitate reading.*

impacts on the Russian and global economy represent a major challenge for European banks in Russia. Section 1 presents the macroeconomic background and discusses the overall development of Russia's banking sector ahead of the COVID-19 crisis from 2017 to March 2020. Section 2 explores how European banks in Russia fared in this period. Section 3 analyzes the main COVID-19 pandemic impacts on the economy and the banking sector since March 2020, with section 4 focusing on the effects on the European banks operating in Russia. Section 5 gives an assessment of current Russian banking risks and shock-absorbing factors, particularly as far as the European banks are concerned, as the crisis has put their market presence and strategy into question. Finally, section 6 wraps up with an outlook.

1 Pre-pandemic macroeconomic conditions and banking sector developments (2017 to March 2020)

1.1 Macroeconomic developments: modest growth amid sanctions, accompanied by the build-up of sizable financial buffers

For an emerging market, the Russian economy was growing at a modest rate of about 2% year on year on average (see table 1) from 2017 to the first quarter of 2020. This modest growth performance can be explained by a combination of factors: well-known long-standing structural weaknesses (difficult business climate, weak rule of law, vulnerabilities to corruption, large economic footprint of government) on top of Western sanctions and persistently tight fiscal and monetary policies. The government pursued prudent macroeconomic policies aimed at building up financial buffers to better protect the oil export-dependent economy from external shocks, including oil price gyrations and sanctions. Russia's fiscal rule[3] was instrumental in decoupling the exchange rate of the ruble from oil price changes. While Western economic sanctions imposed in 2014[4] increased uncertainty, weighed on the ruble and affected FDI inflows into Russia, the accumulation of substantial buffers over the years also bolstered the economy's shock resilience.

In recent years, Russian GDP growth was driven by domestic demand, mostly by private consumption and to a lesser degree by gross fixed capital formation. On the production side of GDP, growth continued to be fueled by resource extraction, manufacturing (notably automobile production), agriculture, and to a lesser degree by retail trade. Russia's unemployment rate (ILO definition) steadily declined to a post-Soviet historical low of 4.5% in early 2020. Monetary policy (inflation targeting since late 2014) remained cautious, also against the backdrop of high inflation expectations. The key policy rate of the Central Bank of Russia (CBR) – the one-week repo rate – was reduced from 7¾% in late 2017 to 6% in March 2020 – with a temporary upward correction by half a percentage point in late 2018 and early 2019 against the backdrop of intermittent ruble depreciation pressures. CPI inflation fell

[3] *Introduced in 2017, the fiscal rule applies a baseline Urals oil price assumption. When prices are above this assumption (e.g. USD 40/barrel in 2017 and USD 42/barrel in 2020), excess oil and gas revenue is transferred to the National Wealth Fund (NWF), which is primarily used to support the pension system. If oil prices are below the assumption, NWF drawdowns may be used to replace the government's revenue shortfall (subject to a drawdown cap of 5% of GDP below which the NWF's liquid assets must not fall).*

[4] *The strongest restrictive measures imposed include tight limits on access to EU and US capital markets and bank loans for large Russian state-owned banks and firms. As a consequence, many Russian banks and firms have been effectively cut off from financing on Western markets.*

from a peak of above 5% in early 2019 (due also to housing and communal tariff adjustments and a VAT increase) to 2.5% at end-March 2020 – substantially below the CBR's 4% target. Greater confidence in the Russian currency contributed to further de-dollarization.

Improved tax administration and pension reform (adjustment of retirement age) contributed to low budget deficits (2017) or budget surpluses (2018 and 2019). The latter held down government debt exposure and contributed to replenishing the National Wealth Fund, which expanded from about 4% of GDP at end-2017 to 11% of GDP at end-March 2020 (table 1). The Finance Ministry's forex purchase program carried out by the CBR in order to (further) strengthen the country's international reserve position helped keeping the ruble's exchange rate "competitive." This gave Russian oil and gas corporations, which operate on a ruble basis and whose revenues are (mostly) earned in US dollars, some advantages in terms of profitability over some of their competitors. Tight macroeconomic policies and the weak ruble caused the current account balance to remain in surplus, notwithstanding oil price volatility. The resulting twin surpluses – fiscal and current account, from 2018 to the first quarter of 2020 – as well as Western sanctions contributed to reining in gross external indebtedness, which declined from 31% of GDP in 2017 to 27% of GDP at end-March 2020. Meanwhile, gross international reserves (including gold) grew from 28% of GDP to 33%.

Table 1

Russia: selected macroeconomic indicators

	2017	2018	2019	End-March 2020	End-June 2020	2020	End-March 2021[3]
	%						
Real GDP growth (annual change)	1.8	2.8	2.0	1.4	–3.4	–3.0	–0.7
Inflation (CPI, end of period, year on year)	2.5	4.3	3.0	2.5	3.2	4.9	5.8
Unemployment rate (ILO definition, average)	5.2	4.8	4.6	4.7	5.4	5.8	5.8
Budget balance (general government, ratio to GDP)	–1.5	2.9	1.9	2.5	–1.7	–4.0	2.5
National Wealth Fund (end of period, ratio to GDP)[1]	4.1	3.9	6.9	11.3	10.7	11.7	11.8
General government gross debt (end of period, ratio to GDP)	12.6	12.0	12.3	13.8	14.0	16.0	16.2
Current account balance (ratio to GDP)	2.3	6.9	3.8	5.5	3.1	2.1	3.7
Net private capital flows (end of period, ratio to GDP)	–2.0	–3.8	–1.6	–4.3	–4.1	–3.1	–2.7
Gross external debt (end of period, ratio to GDP)	31.1	28.1	28.9	26.8	29.8	30.0	29.9
Gross international reserves (incl. gold, end of period, ratio to GDP)	27.5	28.5	32.6	33.0	35.1	38.2	37.6
CBR key rate[2] (end of period)	7.75	7.75	6.25	6.0	4.5	4.25	4.5
	Period average in USD or RUB						
Urals grade crude oil price (USD/barrel)	53.0	70.0	63.6	48.2	39.7	41.7	59.8
RUB per 1 USD	58.33	62.54	64.73	66.10	69.13	71.94	74.34
RUB per 1 EUR	65.87	73.87	72.51	72.90	76.20	82.04	89.70

Source: Rosstat, Central Bank of Russia, Ministry of Finance.

[1] *The predominant part of this fund is also included in Russia's gross international reserves.*
[2] *The central bank's one–week repo rate.*
[3] *Preliminary data.*

1.2 Continued banking sector stabilization and strengthening after the 2014/2015 crisis

Following the contraction of credit in 2015 and 2016 triggered by plunging oil prices and sanctions, lending to resident sectors, excluding the interbank sector, re-emerged as a driver of growth as the lending business expanded in 2017 and accelerated in 2018 through early 2020 (to +6.7% year on year, in real terms and exchange rate-adjusted, see table 2). The recovery was largely driven by retail loans, whose growth rate increased from 10% in 2017 to 15% in 2019 and the first quarter of 2020 (year on year, in real terms and exchange rate-adjusted). Across the lending spectrum, mortgage loans continued to meet high pent-up demand for housing but slowed down somewhat, partly due to CBR regulatory intervention. As a share of total household loans, mortgage loans, which had previously been expanding strongly from a relatively low base, hovered between 42% and 44% in the pre-pandemic years. Unsecured consumer lending, also subject to CBR regulatory intervention, expanded most strongly up to mid-2019. While the growth of unsecured consumer loans levelled off thereafter, such loans continued to make up about 50% of total retail credit in late 2019. Corporate loans, in contrast, moved from stagnation in 2017 (–1%) to modest growth in the following years (+3% in the first quarter of 2020, year on year). For households, foreign exchange risk is not really an issue, given that forex lending to households remains below 1% of retail lending. For enterprises, foreign exchange risk has been easing somewhat. In recent years, corporates have reportedly improved their forex risk-hedging capabilities (Fitzgeorge-Parker, 2020), and enterprises' forex lending exposure has declined slightly (to below one-fifth of loans).

Benefiting from high post-crisis real interest rates, deposits expanded markedly initially (+10% in 2017 in real terms and exchange rate-adjusted). Subsequently though, deposit expansion lost some steam (+4% at end-March 2020 year on year) in view of slowly declining real interest rates. With some variations due to exchange rate volatility, the share of forex deposits in total deposits remained slightly below one-quarter in this period (table 2), and the respective share in retail deposits hovered around one-fifth. In a remarkable development, government agencies stocked up their funds held at commercial banks from 5% to 8% of total deposits. The modest economic revival and the recovery of credit growth contributed to a drop in the ratio of nonperforming loans, from 10% (narrow definition) respectively 18% (broader definition, including doubtful loans)[5] at end-2017 to 9% respectively 16% at end-March 2020. Loan loss provisions have continued to be somewhat smaller than the volume of nonperforming loans when defined narrowly and continued to follow the latter's gentle decline. Thus, the loan loss provisions remain at slightly more than half the level of nonperforming loans when broadly defined.

Other areas also displayed stability or improvements over the pre-pandemic years. The banking sector's liquidity remained stable in 2017 and up to early 2020 (highly liquid assets to total assets at around 11%). The ratio of large exposures to total sector assets remained on a declining trend and shrank from about 25% to 20%. Not least due to sanctions and continuous deleveraging, banks' net external assets further rose to a record of 7.5% of total assets at end-March 2020 (table 2).

[5] *For details about the narrow and broader definitions of nonperforming loans, see explanations in footnotes 2 and 3 of table 2. For a more elaborate discussion of these matters, see Barisitz (2019), pp. 64, 70.*

After some banking turbulences, which had put pressure on profitability in 2017 (Barisitz, 2018, p. 61–64), banks' profits recovered again and grew dynamically in the following years, mainly driven by the largest banks, and buoyed by credit expansion and rising confidence. Thus, return on assets (ROA) as well as return on equity (ROE) approximately doubled from 2017 to 2019 (to 2.0%, respectively 19.5%). Meanwhile, banks' aggregate capital adequacy ratio remained above 12%.[6] At the same time, the modest share of (majority) foreign-owned credit institutions in banks' total assets slightly declined further (from 12% to 10%) in the above period.

1.3 Regulatory and other central bank measures to bolster banking sector recovery

As shown in table 2, the market share of directly or indirectly (majority) state-owned credit institutions (in total banking sector assets) rose from an already relatively high level of 62% in 2017 to 68% in 2018 and 69% in 2019 (Raiffeisen Research, 2020). The lion's share of assets is held by the three biggest banks (Sberbank, VTB and Gazprombank). They are followed by privately-owned banks (like Alfabank, Tinkoff Bank and Sovcombank) as well as other state-owned credit institutions. The jump to 68% in 2018 is related to public bailouts of medium-sized players in response to the turbulences of 2017. Thus, the CBR had acquired transitory ownership of failed Otkrytie Bank (which, in turn, had taken over failed B&N Bank in 2017)[7]; moreover, Promsvyazbank (that had also encountered serious difficulties in 2017) was nationalized. Since 2018, Otkrytie Bank has been recapitalized and restructured with money from the CBR's Banking Sector Consolidation Fund with the aim of later privatization. Promsvyaz has been converted into a specialized public credit institution servicing the defense industry and state procurement. Altogether, in 2017–2018, the CBR reportedly spent about USD 11 billion on recapitalizing failed system-relevant entities (Raiffeisen Research, 2019, p. 45).

Although household debt in Russia remains relatively low compared to other countries when measured as a ratio of GDP (about 16% in mid-2019), vigorous retail lending, notably mortgage loans and (up to mid-2019) unsecured consumer loans, substantially lifted households' debt burden in proportion to disposable income, which prompted the CBR to raise risk weights several times in 2018–2019. The CBR furthermore introduced surcharges to the respective risk coefficients from October 2019. This appears to have (temporarily) reined in the swift expansion of lending activity in the mortgage and consumer loan segments. Meanwhile, the CBR continued its cleanup of the banking sector (removing mostly smaller players featuring nonviable business models or fraudulent practices). Accordingly, the total number of operating credit institutions further declined from 561 at end-2017 to 434 at end-March 2020 (table 2). Moreover, in 2018, 149 banks with less than RUB 1 billion in terms of capital were relicensed with a more restrictive license under which they are prohibited from most foreign operations but subject to simplified regulatory requirements. Finally, the CBR phased in Basel III macroprudential buffers, gradually raising the capital surcharge for systemically important

[6] *The regulatory minimum capital adequacy ratio (N1.0) for credit institutions in Russia is 8.0% (CBR instruction no. 139-I).*

[7] *The merger of the two banks was completed in January 2019 (King, 2020).*

Table 2

Russia: selected banking sector stability indicators

	End-2017	End-2018	End-2019	End-March 2020	End-June 2020	End-Sept. 2020	End-2020
	%						
Credit risk							
Total loans (annual real growth, exchange rate-adjusted)[1]	+1.8	+6.2	+6.3	+6.7	+4.8	+4.7	+3.8
Loans to households (share in total loans)	31.1	33.6	36.9	36.4	36.6	36.9	37.7
Nonperforming loans (share of total loans, narrow definition)[2,7]	10.0	10.1	9.3	9.4	9.5	9.3	9.0
Nonperforming loans (share of total loans, broader definition)[3,7]	17.5	16.7	16.0	16.1	16.7	16.3	16.3
Market and exchange rate risk							
Foreign currency loans (share in total loans)	14.5	12.7	10.6	12.4	11.1	12.2	11.7
Foreign currency deposits (share in total deposits)	23.5	24.1	21.2	24.7	21.5	23.2	22.7
Liquidity risk							
Total deposits (annual real growth, exchange rate-adjusted)[4]	+10.1	+6.4	+5.3	+3.9	+2.4	+0.9	+1.7
Loan-to-deposit ratio	95.2	93.2	95.2	95.8	96.0	95.7	95.5
Banks' external assets (share in total assets)[5]	11.0	12.2	11.2	11.9	11.0	12.2	11.4
Banks' external liabilities (share in total liabilities)[6]	5.7	5.6	4.3	4.4	3.9	4.6	4.2
Profitability							
Return on assets	1.0	1.2	2.0	2.0	1.7	1.7	1.7
Return on equity	8.3	11.5	19.5	19.0	15.9	16.0	15.7
Shock-absorbing factors							
Capital adequacy ratio (capital to risk-weighted assets)[7]	12.1	12.2	12.3	12.2	12.8	12.7	12.5
Tier 1 capital ratio (Basel III)[7]	8.5	8.9	9.3	10.1	10.5	10.4	9.7
Loan loss provisions (ratio to total loans)[7]	9.3	9.1	8.7	8.8	9.0	9.0	8.9
Memorandum items							
Total banking sector assets (ratio to GDP)	92.8	90.6	88.4	94.6	96.1	103.5	105.5
Share of majority state-owned banks in total banking assets	61.5	68.0	68.6	.	.	.	.
Share of majority foreign-owned banks in total banking assets	12.3	9.6	9.5	10.2	10.0	9.8	.
Total number of operating credit institutions	561	484	442	434	427	417	406

Source: Central Bank of Russia, Raiffeisen Research, OeNB calculations.

[1] *Loans and other placements with nonfinancial organizations, government agencies and individuals (resident sectors, excluding interbank transactions). Annual credit growth adjusted for exchange rate effects by applying the same exchange rate to consecutive year-end balances. As the US dollar accounts for the lion's share of the foreign exchange credit portfolio, we use the USD/RUB exchange for the entire volume to simplify the calculation.*

[2] *Share of problem loans (category IV) and loss loans (category V) in total loans including interbank loans (according to CBR regulation no. 254).*

[3] *Share of doubtful (category III), problem (category IV) and loss loans (category V) in total loans including interbank loans (according to CBR regulation no. 254).*

[4] *Deposits and other funds of nonfinancial organizations, government agencies and individuals (resident sectors, excluding interbank transactions). Annual deposit growth adjusted for exchange rate effects by applying the same exchange rate to consecutive year-end balances. As the US dollar accounts for the lion's share of all foreign exchange deposits, we use the USD/RUB exchange for the entire volume to simplify the calculation.*

[5] *Funds placed with nonresidents, including loans and deposits, correspondent accounts with banks, securities acquired.*

[6] *Funds raised from nonresidents, including loans from foreign banks, deposits of legal entities and individuals.*

[7] *Some data starting in April 2020 may not be fully comparable with previous data due to the application of temporary regulatory forbearance measures aimed at cushioning the economic impact of the COVID-19 pandemic.*

banks between 2017 and end-2019 (from 0.35% to 1%) and the capital conservation buffer (from 1.25% to 2.5%).[8]

2 Pre-pandemic development of European banks in Russia (2017 to 2019)

2.1 Slightly increasing market presence, with differing underlying trajectories

In a market dominated by state-owned banks, European banks[9] slightly increased their footprint in Russia between 2017 and 2019 from 4.1% to 4.4% of sector

[8] *The CBR also introduced a countercyclical capital buffer, which however has been held at 0% of risk-weighted assets since its inception.*

[9] *Data used in the study for the European banks come from banks' regulatory reports subject to local Russian reporting standards unless specified otherwise. In other words, the data are not directly comparable with data based on IFRS or European reporting principles.*

assets[10] while many foreign peers strongly decreased their exposures and cross-border lending after the 2014 Crimea crisis. In these three years, the total assets of European banks grew by 20% in local currency (by 9% to EUR 53 billion[11] – see table 3), and their loan book by 22% (by 10% to EUR 33 billion). The share of non-ruble loans declined gradually from 32% to 20%, to the equivalent of EUR 6.4 billion, in line with de-dollarization patterns observed in Russia since the 2014 crisis. The three leading European banks covered in the study, which are the only foreign banks recognized as significant institutions in Russia,[12] remained committed to the market, accounting for around 70% of foreign banks' exposures.[13] One is Austrian (Raiffeisenbank Russia), one is French (Rosbank/Société Générale) and the other one is Italian (UniCredit Bank Russia). Notably, while being universal banks, these institutions have a different business mix and different business models. They also developed with different dynamics in the period. The external ratings with which they entered the COVID-19 crisis were similar to or slightly superior to those of most local market leaders.

2.2 Dynamic revenue growth, but profitability ratios facing some pressure

Ahead of the COVID-19 pandemic, the net interest income of European banks in Russia grew at a dynamic rate of 24% on a local currency basis from 2017 to 2019 (by 13% to EUR 2 billion when converted into euro). Their net fee and commission income grew at an even faster pace, namely 38% (or by 25% to EUR 630 million), representing 22% of the operating income of the European banks as of end-2019, with a slightly increasing trend. At the same time, however, European banks' net income declined by 3% in local currency terms (or by 12% to EUR 800 million), on the back of higher impairments, so that their share in profits generated by the Russian banking system gradually declined from 13% to 3%. At the same time, their cost-to-income ratio deteriorated slightly, from 50% to 52%, with strong disparities among the individual banks. Unlike their Russian peers and despite initial better performance, the European banks operating in Russia have seen their profitability ratios go down. On average, their ROE gradually declined by 2 percentage points to 13% in 2017–2019, subject to heterogeneity among individual banks, whereas for the banking system as a whole, ROE measures actually increased strongly on average, by 11 percentage points to 19%. In the same vein, the European banks' average ROA declined from 2.1% to 1.7%, while the system-wide ROA grew by 1 percentage point to 2.0%. Regarding liquidity, European financial institutions had a higher share of highly liquid assets out of total assets (25% on average) than state-owned banks (15%) or the banking system as a whole (20%).

[10] *This figure does not include head office financing of Russian corporates by holdings, which increases their total exposures to Russia.*

[11] *For the European banks, we use average yearly (not year-end) exchange rates to provide the euro equivalent for ruble-denominated amounts.*

[12] *As per the local methodology set by CBR ordinance no. 3737-U (July 2015). Based on 2020 data, 12 banks qualified as systemically important financial institutions, accounting for about 75% of total assets of the Russian banking sector.*

[13] *An international American bank (Citi) also maintained its activities. While its business is of a material size, its footprint is smaller than the one of the European banks, and it does not qualify as a significant institution in Russia. In 2021, Citi Bank announced plans to abandon its retail activities in in a number of other countries, including Russia, amid of a group-wide restructuring, signalling a misalignment of retail profitability with its new strategy.*

2.3 Improving credit quality, compliance with capital requirements ensured

Local currency impairment balances were mounting at the European banks in Russia ahead of the COVID-19 crisis (+80% to EUR 400 million during the 2017–2019 period when converted into euro), but developments were mixed (e.g. releases were required in different years by different banks), which makes comparisons between banks more difficult. Based on year-end loans, the cost of risk went from 82 basis points to 113 basis points on average, which was below the levels measured for state-owned banks (195 basis points in 2019) and the banking sector as a whole (258 basis points), reflecting a lower degree of risk-taking at European banks in Russia than among their domestic peers. Specific IFRS 9 impacts appeared in the financial statements for 2019 for the first time, with an overall positive impact on profit or loss for the European banks. Overdue installments were also on a decreasing trend, from 5% to 3% of loans on average in 2017–2019. Nonperforming loan levels continued to broadly decrease during the period for the European banks disclosing this information, yet with different trends regarding the coverage ratios for nonperforming loans.

As outlined above, capital requirements were tightened by the Central Bank of Russia in the years ahead of the crisis. Subject to new requirements phased in from January 2016 onward, capital buffers had to be applied additionally to minimum capital ratios for significant institutions, while minimum requirements were kept constant.[14] The European banks operating in Russia complied with the capital requirements and kept their capital ratios[15] broadly stable from 2017 to 2019.

3 Macroeconomic and banking sector developments during the COVID-19 crisis

3.1 Rather mild recession on the back of comparatively small service sector, limited restrictive measures and targeted fiscal stimulus

After continued weak growth in the first quarter of 2020 turned into a steep decline in the second quarter (–7.8% year on year due to tight lockdowns and sharply contracting oil prices), Russia's COVID-triggered recession softened somewhat in the third and fourth quarters of 2020. Overall, annual GDP declined by 3.0% (table 1), putting Russia into a quite mild recession compared to many other countries. According to preliminary data, the Russian economy contracted another 0.7% in the first quarter of 2021 (year on year). The relative mildness of this recession can be explained by Russia's comparatively small service sector (since services are much more vulnerable to lockdowns than industry or agriculture), the rather moderate restrictions imposed in the fall of 2020 (in contrast to other countries re-imposing lockdowns), and a forceful fiscal policy response of about 4.5% of GDP (including tax and social security benefits, debt guarantees and capital injections) (IMF, 2021, p. 6). Nonetheless, the sharp drop of the oil price (–34% on average in 2020, followed by an offsetting increase of 24% in the first quarter of 2021, year on year) and the OPEC+ production ceiling agreement in force from May 2020 constituted important recessionary factors, even if the OPEC+ agreement contributed to the

[14] *4.5% for the CET1 ratio (that is, for the CBR's equivalent, N1.1), 6% for the tier 1 ratio (N1.2), and 8% for the total capital adequacy ratio (N1.0).*

[15] *For the European banks disclosing capital ratios with different standards, capital ratios tend to be higher using international (IFRS with Basel III methodology) standards compared with local Russian ones, in a context where risk-weighted assets are also defined differently.*

subsequent partial recovery of the oil price and even if the decline was cushioned by the exchange rate flexibility of the ruble. Overall, shrinking private consumption was the driving force of economic contraction, whereas fixed investment also shrank substantially.

On average, the ruble lost 11% of its value against the US dollar and 13% against the euro in 2020 compared to 2019. This slide, combined with price spikes for some food items, pushed CPI inflation up to 4.9% in December 2020 and 5.5% in April 2021 (year on year), clearly exceeding the CBR's target. Lending priority to combating the deep crisis, the CBR then cut the key rate further from 6% to 4¼% in the summer of 2020 (a post-Soviet historic low). In March and April 2021, the CBR raised the rate again in two steps to 5%, citing continuing elevated inflation expectations, signs of swifter-than-expected domestic economic recovery in early 2021, and lingering geopolitical uncertainties. After years of fiscal surpluses, the general government budget deficit reached 4% of GDP in 2020. The shortfall was financed with new domestic debt rather than by tapping the National Welfare Fund (NWF). The NWF funds amounted to 12% of GDP at end-March 2021 (see table 1), with liquid assets accounting for two-thirds thereof.

The much lower prices and quantities of oil and gas exports cut into Russia's current account surplus, which was more than offset by rising private net capital outflows, reflecting stepped-up deleveraging by banks and corporations. While Russia's gross foreign debt consequently declined to EUR 391 billion at end-March 2021, this corresponded to an increase of 3 percentage points of GDP to 30% (year on year) – given the sharp drop of the ruble; at the same time, the country's substantially larger international reserves remained more or less stable at EUR 491 billion, reflecting an increase of 5 percentage points of GDP to 38%.

3.2 Banking sector enters regime of regulatory forbearance and remains a pillar of growth

In response to the crisis, the CBR provided measures of temporary regulatory forbearance and encouraged credit institutions to use any capital buffers built up since early 2020 (see above). A new regime of regulatory lenience on asset (loan) valuation and provisioning, introduced at end-March 2020, allowed banks to delay reclassifying restructured loans and to postpone the build-up of provisions for potential loan losses until April 1, 2021 (for corporate loans) or July 1, 2021 (for retail loans and loans to SMEs). The goal is, among other things, to facilitate credit restructuring for debtors under stress, given the crisis circumstances. Apart from the encouragement to use available capital buffers, the CBR reduced risk weight add-ons on pre-crisis mortgages to zero, while retaining risk weight add-ons for new mortgages. Furthermore, regulatory changes restricted the use of dividends in 2020 and imposed a 15% income tax rate for dividends transferred out of Russia. Meanwhile, the CBR also continued its cleanup policy, ridding the sector of poor-quality banks: by the end of 2020, the number of operating credit institutions had further dropped to 406 (table 2).[16]

Overall annual credit growth in 2020 eased yet remained at a pace of 4% year on year (in real terms and exchange rate-adjusted). This continued robust growth

[16] *Bank mergers have so far been quite rare. According to President Putin, about 300 banks are regarded as sufficient to service the Russian economy (Pugsley, 2020).*

amid the recession was supported by further falling interest rates and by targeted government subsidies. Loans were also needed as tide-over credits to close (temporary) cash flow gaps during the pandemic, and credit demand was not dampened at all by the forbearance regime. While retail loans continued to grow dynamically on balance, having just lost some momentum, mortgage loan growth re-accelerated to a rate of 16% in 2020 and expanded even faster in the first quarter of 2021 (year on year). Mortgage credit is supported by a preferential state program providing interest rate subsides that cap loan rates at 6.5%.[17] Despite the recession, property prices have been rising on the back of low interest rates and growing demand for residential property. Given the unrelenting acceleration of mortgage lending, the CBR decided in mid-May 2021 to increase surcharges to the respective risk coefficients from August 2021 (once the preferential state program expires). Loans to some strategically important companies also benefited from state-subsidized interest rates (featuring a rate cap of 5%), and other support schemes shored up lending to SMEs in distressed sectors of the economy. Other factors underpinning the continued growth of banking assets were expanding investments in securities (+28% in 2020, in real terms) notably government bonds, which contributed to financing the 2020 budget shortfall, and the depreciation of the ruble over the year.

In contrast to lending, bank deposit growth slowed down markedly to 2% (table 2), and in the case of household deposits to 1%, in 2020 (in real terms and exchange rate-adjusted). In this respect, the impact of forced saving through lockdowns and restrictions has apparently been more than offset by a combination of factors, including reduced incomes and increasing joblessness, dwindling interest rates amid rising inflation, a new savings tax to help fund the government's response to the pandemic[18] and the growing attractiveness of alternative investments in the Russian stock market.[19] Forex deposits (mainly denominated in US dollars, and a smaller share in euro) have been losing their attractiveness because of nominal interest rates in those currencies approaching zero and because of heightened uncertainty. Meanwhile, government agencies' share of total deposits slightly declined to 7% (fully ruble-denominated, at end- 2020).

Given the CBR's temporary forbearance regime from Q2/2020, the transmission of credit losses to banks' prudential ratios has been limited since then; therefore, while nonperforming loans as well as provisions were largely reported stable through end-2020, these indicators may become less and less reliable the more time passes by. Likewise, as depicted in table 2, reported capital adequacy and the tier 1 capital ratio remained more or less unchanged, and reported ROE and ROA almost upheld their high levels of late 2019. As of late 2020, restructured loans came to about 12% of total loans (IMF, 2021, p. 16). The real extent of problem loans on banks' balance sheets can be expected to start emerging in mid-2021, when remaining forbearance measures are to be lifted.

[17] *The goal of this program, launched in April 2020 and due to expire in July 2021, is to support home buyers and the residential construction industry through the crisis. Required down-payments have been cut to 15%.*

[18] *This is a 13% tax on interest from bank accounts or dividends from securities if the respective balances exceed RUB 1 million (EUR 11,000 at end-2020). The tax was introduced in April 2020.*

[19] *Many individual depositors seized the lucrative but partly risky opportunity to reshuffle funds, which triggered a surge in stock market investments by the general public (Kuznetsov, 2020). Thus, the number of Russian individuals with investment accounts for trading stocks on the Moscow stock exchange more than doubled in the course of 2020 to 8.8 million (BOFIT, 2021). The number reportedly further grew to around 11 million by early April 2021 (Fitzgeorge-Parker, 2021).*

4 Focus on main COVID-19 pandemic crisis impacts on European banks in 2020

4.1 COVID crisis stopped European banks' lending expansion

European banks in Russia saw their assets grow by 10% in 2020 in local currency, which corresponds to a decline of 3% to EUR 51 billion. Their share of banking system assets was overall unchanged, with a slight decline to 4.2%. After years of dynamic growth, their (corporate and retail) loan book did not expand but declined by 1% in domestic currency (decreasing by 13% to EUR 29 billion), while domestic peers continued to report broadly modest loan growth. This trend may be driven by different risk appetites and a niche-player position, implying more conservative risk-taking by some European banks, and less reliance overall on certain volume-driven products like mortgages. European banks were able to access support measures defined by the Central Bank of Russia during the pandemic, including lending-related ones like specific moratoria mechanisms targeting certain categories of borrowers. The share of foreign currency loans also tended to increase in 2020, reaching 24% after years of gradual decline (+4 percentage points, primarily through corporate loans).

4.2 Moderate crisis-related profitability contraction driven by provisioning

In the pandemic crisis, European banks in Russia saw their net interest income dry up. Interest income declined by 11% and interest expenses by 22% in 2020, causing the cost-to-income ratio to decline further by 1 percentage point (to 51%) and net interest income to decrease by 13% to EUR 1.8 billion (while remaining stable in ruble terms). Net fee and commission income declined by 9% to EUR 735 million (while growing by 4% in ruble terms). The main driver is impairments, which exhibited a rather mild increase of 27% in local currency, with some European banks provisioning less than their peers. Between them, the European banks in Russia continued to account for just 4% of the profits generated in Russia's banking system. Masking continued strong disparities between the individual European banks, their average ROE declined just 1 percentage point to 12% even during the crisis but stayed below the system-wide total of 16%. Their ROA reached 1.6%, broadly unaffected by the crisis but continuing its declining path, slightly below the system-wide average of 1.7%. The liquidity of the European banks was not put at risk by the crisis, either; the average share of highly liquid assets in total assets increased by 6 percentage points to 31%, while remaining stable for state-owned banks and the banking system as a whole. Loan-to-deposit ratios tended to decline strongly in 2020 (by 12 percentage points to 79%[20]).

Expressed in local currency, the impairments of European banks increased by 27% in 2020, compared with an 11% increase to EUR 440 million. As a share of year-end loans, their cost of risk moderately increased from 113 basis points to 161 basis points on average.[21] The capacity to generate a lower cost of risks than the market leaders may be supported by the niche player positioning. Additionally, while the impact of IFRS 9 on profit or loss was positive in 2019, the tendency

[20] *The loan-to-deposit ratio of the European banks declined in a stronger manner than the banking system total, therefore increasing the gap with the 93% banking system average (which was fairly stable over time).*

[21] *This 0.5 percentage point risk cost increase (to 161 basis points) highlights that the European banks tended to generate lower levels of provisions than the state-owned banks (270 basis points, +0.8 percentage point) and the Russian banking system as a whole (313 basis points, +0.5 percentage point) in 2020.*

Table 3

Russia: selected indicators for European banks

	End-2017	End-2018	End-2019	End-2020
Total assets (liabilities) of European banks	*Billion*			
Total assets measured in RUB	3,211.6	3,868.2	3,853.0	4,254.2
Total assets measured in EUR (yearly average exchange rate) (memo)	48.6	52.4	52.9	51.2
	%			
Annual growth measured in RUB	-	20.4	–0.4	10.4
Annual growth measured in EUR	-	7.8	1.0	–3.3
Share in banking system assets	4.1	4.5	4.4	4.2
Total loans	*Billion*			
Lending measured in RUB	1,987.5	2,388.0	2,417.8	2,399.9
Lending measured in EUR (yearly average exchange rate) (memo)	30.1	32.4	33.2	28.9
	%			
Share in total Russian banking sector loans	5.1	5.4	5.1	4.5
Annual growthmeasured in RUB	-	20.2	1.2	–0.7
Annual growth measured in EUR	-	7.5	2.7	–13.1
Corporate loans	*Billion*			
Lending measured in RUB	1,210.3	1,499.1	1,389.0	1,376.3
Lending measured in EUR (yearly average exchange rate) (memo)	18.3	20.3	19.1	16.6
	%			
Share in total Russian banking sector loans to enterprises	4.7	5.3	4.7	4.3
Retail loans	*Billion*			
Lending measured in RUB	763.1	873.6	1,007.3	1,004.3
Lending measured in EUR (yearly average exchange rate) (memo)	11.6	11.8	13.8	12.1
	%			
Share in total Russian banking sector loans to households	6.3	5.9	5.7	5.0
Foreign currency loans	*Billion*			
Lending measured in RUB billion	639.1	664.8	469.1	566.2
Lending measured in EUR (yearly average exchange rate) (memo)	9.7	9.0	6.4	6.8
	%			
Share in total loans of European banks	31.8	26.9	19.6	24.5
Share in total foreign currency loans of Russian banking sector	11.3	11.8	9.3	9.1
Total impairments	*Billion*			
Impairments measured in RUB[1]	(14.7)	(39.4)	(29.0)	(36.6)
Impairments measured in EUR (yearly average exchange rate) (memo)	(0.2)	(0.5)	(0.4)	(0.4)
Average ratios	%			
Loan-to-deposit ratio	94.0	91.1	91.2	79.1
Share of highly liquid assets	22.7	26.4	25.0	31.1
Return on average equity	14.5	14.1	12.8	12.0
Return on average assets	2.1	1.8	1.7	1.6
CET1 equivalent (N1.1) (minimum ratio = 4.5%)	11.1	10.4	11.3	12.9
Tier 1 equivalent (N1.2) (minimum ratio = 6%)	11.3	10.9	11.9	13.7
TCR equivalent (N1.0) (minimum ratio = 8%)	14.8	14.1	14.8	16.6

Source: Banks' regulatory reporting to the Central Bank of Russia (adapted by Fitch).

Note: Reporting does not follow IFRS/European reporting standards but is subject to local Russian reporting standards, which limits data comparability.

[1] Reflecting not only loan loss provisions but also other types of impairments.

reversed in 2020 given the sensitivity of the IFRS 9 framework to crisis environments. For credit quality, no strong impacts can be seen in terms of overdue installments, which remained at a level of between 3% and 4% despite the economic downturn. The capital situation of the European banks improved in 2020, with an

increase of 2 percentage points on average, as they all increased their capital levels even amid the crisis. Besides, some signs of additional restrictions on capital outflows from Russia were visible in 2020,[22] the treatment of such flows being a sensitive topic for European banks.

5 Assessment of current banking risks and shock-absorbing factors with particular focus on European banks

5.1 Credit risk remaining a central risk driver as crisis-related measures end

With an uneven recovery, one can expect credit risk considerations to continue looming large in 2021.[23] Nonperforming loans remain relatively high for the banking sector as a whole (see above), while reliable information on credit quality is more difficult to come by since the introduction of regulatory lenience at end-March 2020. As for mortgage loans, the government stimulus program appears to have been efficient as an anti-crisis measure, yet in some regions, house price rises seem to have offset the positive impact of the program, which may imply risks of overheating in the housing market. Mortgage lending as well as unsecured consumer lending remain potential hot spots of risk, having since prompted the CBR to intervene to counter acceleration tendencies.

Regarding credit risk in the nonretail area, the CBR observed an increasing concentration risk trend for significant Russian banks in the studied period (CBR, 2019), as banks are financing a number of large nonfinancial corporations which are gradually increasing their debt levels. Having conducted industry surveys, the CBR announced that it was considering the introduction of macroprudential tools to limit concentration risk, focusing on highly indebted companies and stressing heterogeneous risk measurement methodologies used by banks.

Overall, according to CBR assessments in mid-February 2021, the peak of loan restructuring has passed, and 20% to 30% of restructured loans might become bad loans. Therefore, additional provisions of 2% to 3% of banks' total loan portfolio may become necessary in the CBR's view to strengthen financial buffers against credit losses (Golubkova and Ostroukh, 2021; World Bank Group, 2021, p. 28). Taking total loans at end-2020, the need for additional provisions would thus amount to about USD 15 billion to 25 billion.

5.2 Ruble volatility, a risk to mitigate

Regarding foreign currency lending, both Russian households and companies have become less dependent on dollar financing in the past few years. The de-dollarization of the Russian economy has been strong since the 2014 crisis. The European banks followed this overall trend, but while the share of their foreign currency loans gradually decreased from 32% to 20% in the 2017–2019 period, it increased to 24% in 2020 (partly due to exchange rate effects). Like in the banking sector more generally, retail lending by European banks is almost ruble-only business, but a significant share of their corporate financing is still made in other currencies (mainly USD and EUR). While exchange rate and liquidity risks are therefore less

[22] *See tax on dividends reported above.*

[23] *A longer-standing issue relates to the legal framework of connected lending, which apparently still allows for related-party transactions on more favorable terms than corresponding transactions with nonrelated partners; moreover, some regulatory weaknesses likely persist with respect to requirements pertaining to external auditors' independence and professional standards (IMF, 2019, p. 16).*

important than credit risk (for the Russian banking sector in general as well as for the European banks), the volatility of the oil price and of the ruble exchange rate as well as uneven liquidity across the sector may give rise to temporary instability. Besides, foreign currency risks need to be adequately managed and anticipated at the parent company level with hedging strategies, which have an economic cost.

5.3 Sanctions risk still one of the major risks in the Russian context

Sanctions-related restrained access to Western financial markets for large Russian enterprises and banks appears to have a lesser impact now than a couple of years ago, given that the Russian economy has built up sizable financial buffers and seems to have pragmatically "adjusted" to the sanctions. Yet, sanctions risks still represent one of the biggest risks European banks operating in Russia are facing. Even when banks have adequate internal control frameworks, the issue is not to be underestimated as sanctions regimes are complex and require monitoring of a large number of transactions. Sanctions concern many systemically relevant companies in Russia but with specific restrictions and sometimes a limited scope. Banks need to continuously adapt their systems and keep up their sanctions expertise, given that the environment is subject to constant change, as highlighted by the sanctions-related pressures triggering the postponement of the Nord Stream II pipeline completion as well as by the latest US waiver of sanctions against the pipeline. Incentives are strong for financial institutions to comply with all the rules, especially in light of potential fines for breaches and reputation risk. The sanctions risk therefore remains elevated for the future as the situation continues to be volatile and sensitive to geopolitical developments, as illustrated by the escalation step taken by US authorities in April 2021, further limiting access for Russian bond issuers to international markets.

5.4 Climate risk as upcoming challenge

The need to reduce exposure to climate risk in light of its potential impacts on financial stability has been acknowledged by the central bank (CBR, 2020) and will increasingly impact banks. In general, Russia may be perceived as having potential to do more (Simola, 2020). For European banks active in Russia, risk mitigation measures related to climate risk and based on environmental, social, and governance (ESG) criteria will also depend on standards implemented by their parent companies. Some of them will be calibrated in order to reflect guidelines defined at the European level, a process also driven by the European Central Bank, which published a new guidance on climate-related and environmental risks in November 2020.

5.5 Bank capital and financial profile among shock-absorbing factors

Shock-absorbing factors have remained rather strong in recent years and even during the COVID-triggered recession, albeit not without pockets of weakness. Loan loss provisions (almost) cover nonperforming loans when narrowly defined. The banking sector appears well-capitalized and positioned to absorb potential credit losses, and that is particularly the case for the European banks in Russia, which strengthened their capital base in 2020. According to IMF estimates, credit institutions' total amount of capital available to cover a potential increase of loan losses (not including new profit generation) comes to about RUB 6.2 trillion (or USD 80 billion to USD 85 billion, which is about 5.6% of GDP) (IMF, 2021, p. 16). While

on the aggregate level, it seems that loan losses are manageable – even in the case of a longer (drawn-out) crisis – the loss absorption capacity is not evenly distributed among banks, and some smaller players might suffer. The European banks moderately increased their impairment balances overall in 2020, which tend to be proportionately lower than those of state-owned banks, with the capacity to make further provisions should the risk situation in Russia deteriorate.

The overall loan-to-deposit ratio (96% at end-2020) is fairly moderate, and depositors remain confident, even if relatively low or negative real interest rates have persuaded some to move funds to stock market investments. Noticeably, the European banks decreased their loan-to-deposit ratio in 2020 to rather low levels (about 80%) compared with local peers. Another factor providing a cushion are credit institutions' net external assets, which have remained at over 7% of total assets. The fact that state-owned banks account for the majority of Russian banking assets (about two thirds) implies that the authorities are directly responsible for the survival of most of the largest players, which may uphold confidence in uncertain times. If necessary, the CBR is equipped with ample liquidity for recapitalization measures (Banking Sector Consolidation Fund). Russia's international reserves (including gold) expanded by about 40% from end-2017 to late May 2021 and have attained a new historic record level (EUR 496 billion or 40% of GDP – in absolute terms the fourth-largest reserves of the world), outstripping the country's gross international debt by almost a third.

While current account and budget data deteriorated markedly under the impact of the COVID-19 crisis and crisis-response measures (as mentioned above), total public liabilities remain very modest – about 18% of GDP at end-2020 – even if pronounced deficit financing in 2020 had pushed up the ratio by 4 to 5 percentage points. Meanwhile, Russia's comfortable net positive international investment position expanded to 34% of GDP (at end-2020), and the country's budget balance reverted to surplus (in early 2021, see table 1). Overall, the authorities could mobilize substantial funds should banking problems emerge, a scenario whose implications remain untested in the case of European banks due to their resilient performance.

6 Outlook for Russia's banking sector and European banks in Russia after the crisis

Like across the globe, the development of Russia's banking sector and economy will depend on or be strongly influenced by the further development of the COVID-19 pandemic and the effectiveness of vaccines used. While infection rates have declined from early 2021, as of May 2021, they were still stagnating at an elevated level, while vaccination is only progressing hesitantly. Meanwhile, Russia (notably Moscow) had already lifted some of its few remaining lockdown restrictions in early 2021, so that perspectives for economic and banking recovery may substantiate themselves, provided that current tendencies carry on. This, however, is by no means certain given the most recent emergence of new aggressive virus variants.

The second half of 2021 may well be a test for the market, as regulatory forbearance for asset (loan) valuation and provisioning is slated to expire. The government support program for housing and residential construction is also planned to end in mid-2021. Therefore, the real extent of problem loans on banks' balance sheets should start to re-emerge in mid-2021. Nonperforming loans will likely go up by some margin. Given banks' available financial buffers, the sector should be

able to bear that. In any case, against the backdrop of the recent (subsidized) re-acceleration of mortgage lending growth, the mortgage and housing markets warrant careful monitoring, as confirmed by the CBR's most recently announced regulatory changes. The same goes for consumer loans. Regarding prospective dis-investment of banks nationalized in 2017–2018, the authorities seem to be sticking to their plans to sell the rescued outfits (notably the largest, Otkrytie), but are currently confronted with uncertain market conditions. Unless highly unexpected events intervene (like a major worsening of the pandemic, a – possibly connected – deep and durable decline of the oil price, or a severe escalation of geopolitical tensions and sanctions), economic recovery should stabilize the expansion of banking activity and have a countervailing impact on deteriorating credit quality, which, in turn, would confirm Russia's role as an important profit source for European banks. That said, the still weak overall investment climate may rein in the potential extent of the recovery. The prospect of continued oil price and ruble volatility, persisting sanctions risks and moderate recovery trends would still provide a challenging environment for European banks active in Russia.

Regarding internal models allowing banks to use their own risk parameters and estimates to calculate capital requirements in the future, the CBR was reported as planning to ease capital buffer requirements for banks using internal ratings-based (IRB) models, and speed up this transition in the crisis context. In early 2020, IRB models were used only by Raiffeisenbank Russia (for corporates) and Sberbank. All the other significant institutions were encouraged by the CBR to gradually shift to IRB over a five-year horizon, with local lender Alfa bank planning to be one of the first banks ready to switch to IRB. As such, the transition to IRB will have additional impacts for Russian banks and the competitive landscape. This situation illustrates that the European banks in Russia can benefit from the advantages of such regulatory-driven tools like the domestic players. More broadly, the European banks were not found to be in an unfavorable position compared to their local peers regarding the regulatory regime.

Finally, dynamic digital transformation trends in the Russian banking market bring both risks and opportunities, as banks need to modernize in a competitive environment – in a context where market leader Sberbank rebranded itself as "Sber" in 2020, unveiling a new conglomerate-like business model with a broad range of nonbank services (e-commerce, food delivery, mobility, etc.). The pandemic served as a real test for the digital capacity of financial institutions, with the Russian market being perceived as advanced within the CESEE area. Even if branch activities were among the types of services maintained during the lockdown, online banking is on an increasing trend. In this regard, the European banks active in Russia pursue different strategies. Société Générale (SocGen) has reduced its branch infrastructure but nevertheless retains a large physical network spread all over the country. UniCredit's corporate-driven business model makes it less reliant on branches servicing retail customers. Raiffeisenbank Russia communicated to investors in 2019 a strategy to close around 25% of its branches by 2020 and to put further focus on the Moscow and Saint-Petersburg areas, reducing its geographical footprint in favor of digital networks leveraging on nationwide trends. Summing up, the European banks operating in Russia, with various degrees of profitability, will have to contend with the medium-term perspective of not only sustained sanctions risks and limited economic growth, but also intensified competition. To be

prepared for these challenges, they can be expected to go digital with more services, embrace cost discipline with restructuring measures and the like (mergers among SocGen subsidiaries being a case in point) and engage in selective risk-taking to preserve asset quality in the aftermath of the pandemic.

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