

Studies

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

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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

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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-10³ 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 moratoria⁴ 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 expired⁵ 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 features⁸ 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 Macedonia⁹ 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 Survey¹² – 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 multi-stage 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.

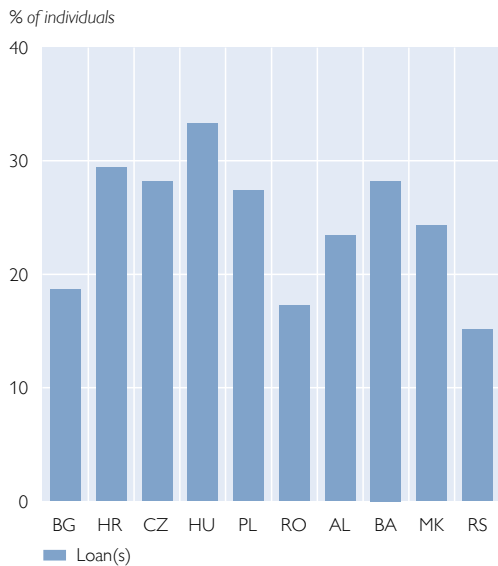
To cross-check our data, we compared them with the scarce publicly available data on moratorium use by households from national sources, EBA (2020) and EIB (2021, 2020). However, most of the available public evidence refers to moratorium use in terms of shares of portfolios rather than shares of borrowers, 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.

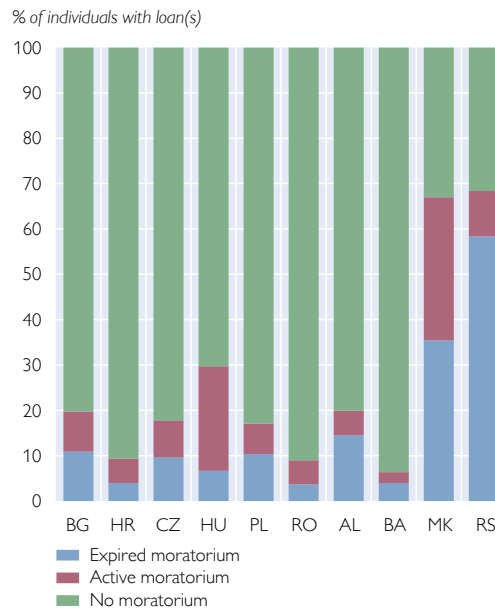
Chart 1

Loan and moratorium take-up

Prevalence of loans



Moratorium use



Source: OeNB Euro Survey 2020.

Note: Data are weighted.

different data populations (households versus individuals) and/or possibly under-sampled 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 ρ , 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 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.

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

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

As our outcome variable does not have a natural and undisputable ordering, we also estimate a multinomial 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 nonborrowers¹⁷ 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., 2012¹⁸) are not a significant determinant of moratorium use¹⁹ – 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

Dependent variable	Moratorium use		
	All countries	Opt-in countries	Opt-out countries
Female	0.015 (0.014)	0.028** (0.013)	-0.012 (0.021)
Size of household	-0.009 (0.008)	-0.017*** (0.005)	0.012 (0.023)
Manages household finances	0.041 (0.030)	0 (0.033)	0.151*** (0.003)
Unemployed	0.006 (0.052)	0.023 (0.040)	-0.068 (0.123)
Self-employed	0 (0.030)	0.035* (0.019)	-0.129*** (0.034)
Retired	-0.109*** (0.025)	-0.085* (0.043)	-0.137*** (0.034)
Income: refused answer	-0.003 (0.036)	0.038 (0.032)	-0.059 (0.067)
Income: low	-0.032 (0.043)	-0.01 (0.027)	-0.102 (0.150)
Income: medium	0.006 (0.018)	0 (0.023)	0.033 (0.028)
Condition of residence: poor	0.004 (0.029)	-0.054*** (0.021)	0.112*** (0.043)
Own secondary residence	-0.001 (0.012)	-0.007 (0.011)	0.014 (0.033)
Receives remittances	-0.049* (0.026)	-0.023 (0.025)	-0.119** (0.055)
No savings	0.044** (0.020)	0.048* (0.027)	0.054* (0.028)
Financial literacy=1	0.004 (0.018)	0.002 (0.016)	-0.002 (0.028)
Financial literacy=2	0.034 (0.031)	0.019 (0.027)	0.062 (0.083)
Financial literacy=3	-0.016 (0.033)	-0.03 (0.024)	0.03 (0.070)
Trust banks	-0.023 (0.023)	-0.018 (0.028)	-0.037 (0.062)
Risk-averse	-0.037** (0.017)	-0.039* (0.023)	-0.040** (0.016)
Mortgage	0.029 (0.020)	0.045** (0.021)	-0.002 (0.053)
Foreign currency loan	-0.019 (0.026)	0.017 (0.024)	-0.081*** (0.020)
2-3 further forms of debt	0.025 (0.030)	-0.013 (0.037)	0.096*** (0.028)
4 or more further forms of debt	0.093*** (0.023)	0.065** (0.026)	0.143*** (0.050)
Industry of occupation: public sector/ICT	-0.043*** (0.016)	-0.055*** (0.015)	-0.026 (0.018)
Industry of occupation: tourism, arts, personal services, other	0.028 (0.024)	-0.004 (0.026)	0.107*** (0.003)
Mitigating actions: low	0.046*** (0.008)	0.035*** (0.014)	0.078*** (0.016)
Mitigating actions: medium	0.093*** (0.024)	0.092*** (0.016)	0.071 (0.059)
Mitigating actions: high	0.131*** (0.034)	0.124*** (0.024)	0.131 (0.101)
Experienced income shock	0.088*** (0.023)	0.089*** (0.018)	0.089 (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 multinomial 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 (0.020)	-0.014 (0.017)	0.045*** (0.015)	-0.028 (0.018)	-0.02 (0.013)	0.048*** (0.018)
Foreign currency loan	0.021 (0.024)	-0.036*** (0.012)	0.014 (0.023)	0.021 (0.025)	-0.038*** (0.013)	0.017 (0.020)
2-3 further forms of debt	-0.026 (0.030)	0.008 (0.026)	0.019 (0.015)	-0.027 (0.026)	0.01 (0.010)	0.017 (0.016)
4 or more further forms of debt	-0.096*** (0.021)	0.028 (0.031)	0.069** (0.027)	-0.083*** (0.026)	0.031*** (0.010)	0.051*** (0.016)
Mitigating actions: low	-0.047*** (0.008)	0.031 (0.019)	0.016 (0.015)	-0.050*** (0.006)	0.022*** (0.003)	0.028*** (0.003)
Mitigating actions: medium	-0.092*** (0.027)	0.048*** (0.017)	0.044 (0.028)	-0.089*** (0.032)	0.037*** (0.013)	0.052*** (0.019)
Mitigating actions: high	-0.130*** (0.036)	0.059*** (0.020)	0.071*** (0.025)	-0.126*** (0.040)	0.050*** (0.016)	0.076*** (0.025)
Experienced income shock	-0.089*** (0.024)	0.039** (0.017)	0.050*** (0.014)	-0.083*** (0.026)	0.031*** (0.009)	0.052*** (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 available 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

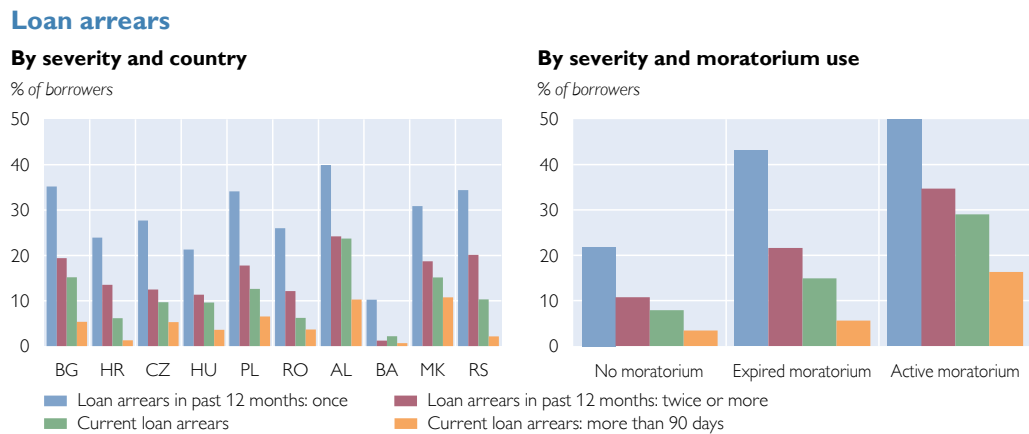
Don't know

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



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 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	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
Sample	Borrowers with no or expired moratorium				All borrowers			
Active moratorium					0.201*** (0.037)	0.165*** (0.034)	0.152*** (0.027)	0.083*** (0.023)
Expired moratorium	0.172*** (0.028)	0.072*** (0.025)	0.041 (0.025)	0.002 (0.013)	0.164*** (0.028)	0.064*** (0.024)	0.037 (0.023)	-0.002 (0.011)
Income shock	0.120*** (0.027)	0.062*** (0.013)	0.036*** (0.011)	0.004 (0.007)	0.130*** (0.026)	0.076*** (0.016)	0.051*** (0.011)	0.017** (0.008)
Mortgage	0.006 (0.034)	0.005 (0.018)	0.018 (0.018)	0.015 (0.010)	-0.002 (0.032)	0.007 (0.020)	0.019 (0.021)	0.016 (0.012)
Foreign currency loan	0.071*** (0.026)	-0.003 (0.015)	0.026* (0.015)	0.007 (0.009)	0.078*** (0.029)	-0.001 (0.015)	0.031* (0.017)	0.02 (0.013)
Debt payday, pawnshop, private, internet loan	0.232*** (0.025)	0.123*** (0.014)	0.072*** (0.015)	0.044*** (0.006)	0.217*** (0.035)	0.102*** (0.016)	0.076*** (0.019)	0.051*** (0.014)
Utility bill arrears	0.157*** (0.032)	0.088*** (0.023)	0.080*** (0.022)	0.030*** (0.012)	0.153*** (0.026)	0.093*** (0.025)	0.083*** (0.025)	0.041*** (0.015)
Owe money to family	0.063* (0.036)	0.050* (0.027)	0.023 (0.019)	0.012 (0.010)	0.066* (0.034)	0.053* (0.027)	0.025 (0.020)	0.024** (0.011)
Income: refused answer	-0.045* (0.027)	-0.019 (0.012)	-0.037** (0.017)	-0.019 (0.016)	-0.041 (0.025)	-0.004 (0.022)	-0.013 (0.025)	0.01 (0.020)
Income: low	0.075*** (0.024)	0.030* (0.018)	0.041** (0.017)	0.032** (0.016)	0.088*** (0.024)	0.050*** (0.018)	0.052*** (0.014)	0.040** (0.017)
Income: medium	0.034*** (0.013)	0.025*** (0.007)	0.028*** (0.011)	0.006 (0.007)	0.031** (0.013)	0.026*** (0.008)	0.036*** (0.013)	0.007 (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 multinomial logit results as a comparison, we are not too concerned by this fact. For the multinomial 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 profession is in (i) Tourism, accommodation, restaurant, café, bar, (ii) Arts, culture, entertainment and recreation, (iii) Personal services (hairstylist, beauty treatment, funeral, etc.), (iv) other sector, else zero.

Source: OeNB Euro Survey.

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 arrears	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)

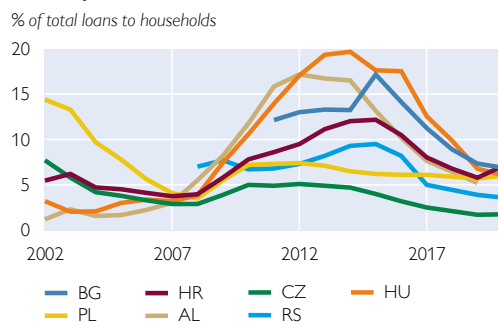
Source: Authors' compilation.

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



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

Data comparison

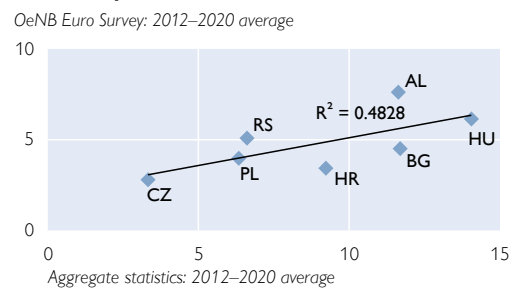


Table A4

Robustness: determinants of moratorium use

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

