

Support measures in the banking sector: loan moratoria

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Abstract

This article presents a detailed analysis of the loan moratoria. The first part of the article describes the characteristics of the five types of moratoria and how the numbers of applications made and moratoria granted have evolved to date. It then outlines the status of the existing moratoria and the classification of loans whose moratoria have expired. In the second part of the article, an econometric analysis is performed to determine the impact of borrower and bank characteristics on the probability of loans being subject to moratoria, on the type and duration of the moratoria and on the classification of loans when the moratoria have expired. The results suggest that vulnerable households, those in regions most affected by the pandemic and lower income households are generally subject to legislative moratoria for longer or are more likely to transfer to non-legislative moratoria when the former expire. They also suggest that, when the moratoria expire, these households' loans are more likely to be classified as Stage 2 (a significant increase in credit risk) or non-performing.

1 Introduction

One year on from the onset of the COVID-19 pandemic, it is still having a very significant contractionary impact in Spain (and worldwide). In an endeavour to mitigate, insofar as possible, this negative shock, from both an economic and a social standpoint, various support measures were introduced in Spain for firms, workers, households and vulnerable groups. Loan moratoria – which suspend repayment of principal or payment of interest on various types of loans for a specific period – are one such measure.

In particular, loan moratoria have enabled individuals to defer their loan payment commitments. They have also provided additional support for the productive sectors most sensitive to the pandemic – by way of the tourism and transport sector moratoria – and have thus helped mitigate economic agents' liquidity problems. Yet the positive effects of the loan moratoria should not be allowed to mask other possible side effects of their implementation: they could undermine the payment culture, give rise to moral hazard or hold default rates at artificially low levels. For this reason, moratoria must be used prudently, and how they evolve and the effects they produce must be subject to continuous oversight and monitoring.

To date, five different types of loan moratoria have been approved, applicable to different types of loans and borrowers, according to the requirements and conditions set out in the corresponding Royal Decree-Laws (hereafter, RDLs).

The first, RDL 8/2020 on extraordinary urgent measures to address the economic and social impact of COVID-19, approved on 17 March 2020, introduced the legislative moratorium for mortgage loans for individuals.¹ It was followed, on 31 March 2020, by RDL 11/2020 adopting supplementary urgent economic and social measures to address the impact of COVID-19, which introduced the moratorium for non-mortgage loans (including consumer credit). Essentially, the two moratoria have the same conditions and effects, but they apply to different types of loans. The debtors eligible for these moratoria were individuals whose pre-pandemic income was below a certain threshold and who subsequently became economically vulnerable as a consequence of the health crisis that began in March 2020.

Specifically, pursuant to Article 16 of RDL 11/2020, in order to be considered economically vulnerable, all of the following conditions must be met: i) debtors must be unemployed or, in the case of entrepreneurs, have lost at least 40% of their income; ii) household income, in the month previous to applying for the moratorium, must be no more than three times (with some exceptions) the IPREM (a Spanish public income indicator); iii) mortgage payments plus essential expenses and utility costs must exceed 35% of net household income; and iv) households' economic circumstances must have changed significantly as a result of the health crisis, such that their mortgage payments have multiplied by at least 1.3 as a proportion of their household income.

Regarding the effects of these measures, during the duration of the legislative moratoria (a maximum of three months)² the lending bank cannot demand any mortgage payments, nor any part thereof (repayment of capital or payment of interest), neither in full nor in part, and no interest is accrued. As a result of this temporary suspension of payment obligations, the loan maturity is extended by the duration of the moratorium.

Subsequently, in May 2020, in addition to the two legislative moratoria described above, a special regime was established for banking sector framework agreements, through the banking associations,³ on the deferral of loans of customers affected by the COVID-19 crisis. These framework agreements instigated by associations representing banks, savings banks, cooperative banks and specialised lending

1 Initially, this moratorium applied only to main residence mortgages, but Article 19 of RDL 11/2020 of 31 March 2020 subsequently extended the scope to include property used by self-employed professionals and entrepreneurs for their economic activity, and also rented housing other than the main residence in cases in which the mortgagor/lessor ceased to receive rent payments by application of the measures introduced to assist tenants as a consequence of the state of alert.

2 RDL 3/2021 of 2 February 2021, adopting measures to narrow the gender gap and on other Social Security and economic matters, extended the duration of the moratoria to nine months.

3 RDL 19/2020 of 26 May 2020 adopting supplementary measures in the agricultural, scientific, economic, employment and social security and taxation sphere to alleviate the effects of COVID-19.

institutions⁴ extended the scope of the moratoria from both a subjective and an objective standpoint.

From a subjective standpoint, because individuals applying for these moratoria do not need to meet the eligibility requirements established in Article 16 of RDL 11/2020 for the legislative moratoria. Rather, any individual borrowers with loans that had not previously been in default and who have been economically affected by the COVID-19 crisis – becoming unemployed or subject to furlough schemes (ERTEs by their Spanish acronym), or facing the suspension of or restrictions on their economic activity, or other equivalent circumstances – are eligible for these banking sector moratoria.

From an objective standpoint, because the new moratoria can last longer than the legislative ones. Specifically, the maximum duration is 12 months for the mortgage loan moratorium and six months for the personal loan moratorium.⁵ As regards their effects, unlike the legislative moratoria, the banking sector moratoria only suspend repayment of principal, while interest payments continue to fall due throughout.

Lastly, in early July, two further moratoria were introduced, in this case not only for individuals but also for legal entities. These moratoria apply to loans granted to the tourism sector⁶ and to the public transport of goods and charter bus sector.⁷

Most European countries have introduced moratorium schemes as an integral part of their support policies in response to the crisis. In this respect, the European Banking Authority (EBA) approved a series of conditions that loans had to satisfy in order for the moratoria to have a more flexible prudential treatment. These conditions included a deadline for application of the moratoria, which has been extended in successive Guidelines⁸ (first up to 30 September 2020 and subsequently up to 31 March 2021) owing to the uncertainty surrounding economic activity and its potential recovery.

For all five types of moratoria, lenders must report data to the Banco de España on the number of moratorium applications submitted by borrowers, the number of moratoria granted, the number of beneficiaries and whether they are wage-earners or self-employed, the outstanding amount of loans subject to moratoria and, for the

4 Spanish Banking Association (AEB) framework agreement (2020), Spanish Confederation of Savings Banks (CECA) framework agreement (2020), Spanish Association of Credit Cooperatives (UNACC) framework agreement (2020) and Spanish Association of Specialised Lending Institutions (ASNEF) framework agreement (2020).

5 In the case of banking sector moratoria that are a follow-on from legislative moratoria, this maximum duration includes the effective duration of the latter. Accordingly, if the three-month term of the legislative moratorium had expired, the remaining duration would be either nine months (mortgage loan moratorium) or three months (personal loan moratorium).

6 RDL 25/2020 of 3 July 2020 on urgent measures to support economic recovery and employment.

7 RDL 26/2020 of 7 July 2020 on economic recovery measures to address the impact of COVID-19 on transport and housing.

8 EBA (2020a).

self-employed, the economic sector in which they operate.⁹ Drawing on this information provided by banks, since April 2020 the Banco de España has been publishing a monthly briefing note on the legislative and banking sector moratoria.¹⁰ In addition, this ongoing monitoring of moratoria contributes to complying with Recommendation 2020/8 of the European Systemic Risk Board (ESRB) of May 2020¹¹ which, inter alia, recommends that EU national macroprudential authorities monitor the measures adopted and analyse their implications for financial stability.¹²

This article analyses the key factors that explain why households with a mortgage decide to take up a moratorium introduced in response to the impact of COVID-19, and the probability that they will choose a legislative moratorium. In addition, drawing on duration analysis, we estimate the probability of an original legislative moratorium expiring or being transferred to one of the other forms of moratoria.¹³

Clarifying the factors that explain the take-up of moratoria and the probability of their being legislative moratoria, as well as the exit therefrom and transfer to other types of moratoria, is key to understanding some of the implications that these measures will have in the coming months, once the period of more flexible prudential treatment established for them by the EBA comes to an end. It is important to note that legislative moratoria (which account for barely 5% of the outstanding credit stock subject to moratoria at end-2020) must be granted by law to applicants who satisfy the requirements established in the corresponding regulations (RDLs), but there is no obligation on banks to maintain the moratorium measures once the legally-established period ends. Accordingly, at that stage mortgage portfolio management decisions, among others, come into play.

The results of the econometric analysis show that the following groups record the highest take-up of moratoria: households that were more disadvantaged (for example, lower income households) or more vulnerable (households with higher debt or with mortgages with less favourable conditions) at the start of the pandemic; the self-employed; those hardest hit in terms of employment (in provinces with a higher unemployment rate or higher percentage of furloughed workers owing to COVID-19); and those linked to the economic sectors most affected (such as retail, hospitality or transport). This is consistent with the purpose of these schemes. Moreover, this would appear to be the case above all among the weakest banks (in

9 Pursuant to: Article 16 bis of RDL 8/2020 of 17 March 2020; Article 27 of RDL 11/2020 of 31 March 2020; Article 9 of RDL 25/2020 of 3 July 2020; Article 23 of RDL 26/2020 of 7 July 2020; and Article 6.3 of RDL 19/2020 of 26 May 2020.

10 Banco de España (2021).

11 ESRB (2020).

12 In the case of Spain, this ESRB recommendation is addressed to the Spanish macroprudential authority (AMCESFI) in which the Banco de España participates, along with the Ministry of Economic Affairs and Digital Transformation and the National Securities Market Commission (CNMV). The ESRB monitors these measures for the whole of the European Union (see ESRB (2021)).

13 For alternative analyses of the trajectory and different characteristics of the loans and borrowers subject to moratoria, see Banco de España (2020) and Alves et al. (2020 and 2021).

terms of lower capital ratios or higher NPL rates). All the above highlights the important role that the moratoria have played to cushion the initial impact of the pandemic, but also the need to monitor these schemes, on account of the high risk of borrowers falling into default if economic activity fails to normalise in the near term.

In this respect, the results also seem to suggest that households with a higher debt-to-income ratio, those located in regions heavily affected by the pandemic and lower income households tend to be subject to legislative moratoria for longer (or are more likely to take up non-legislative moratoria when the former expire). This is consistent with the possibility of a latent risk in banking sector moratoria portfolios for a certain household segment. The findings also show that loans that are classified as Stage 2 (i.e. with a significant increase in credit risk) or non-performing when the moratoria expire are especially those that were initially subject to legislative moratoria and those pertaining to households with lower income, higher debt ratios or poorer credit histories, older households or those that had a personal guarantee, and those located in regions where COVID-19 has had a more severe impact on employment. In this respect, it is important to note that although the take-up of legislative moratoria by the self-employed has been proportionally higher, reflecting the severe impact of the crisis on this group, the findings do not suggest that when their mortgage loans exit moratoria they are more likely to be classified as Stage 2 or non-performing.

The remainder of the article is structured as follows. The next section analyses how the total volume of applications made and moratoria granted has evolved and the status of the existing moratoria. Section 3 describes the characteristics of the granular data used for the econometric analysis of the moratoria, followed in Section 4 by a definition of the empirical strategy used. Section 5 describes the distribution and main characteristics of the variables considered and Section 6 comments on the results obtained. The last section presents a summary of the main conclusions.

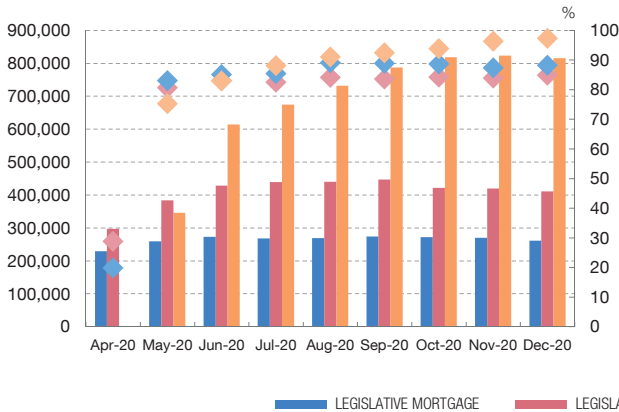
2 Trajectory and current status of moratorium applications, moratoria granted and outstanding moratoria

Drawing on the information provided by banks to the Banco de España, the number of applications rose swiftly from the outset. The number of moratoria granted also rose rapidly, such that acceptance rates have been high from the start. For instance, at end-May 2020 acceptance rates were already over 80% for legislative mortgage and non-mortgage moratoria and over 75% for banking sector moratoria (see Chart 1.1). Moreover, this high level of acceptance was widespread across banks. With data at end-December, more than 260,000 applications had been made for legislative mortgage moratoria, of which 222,000 had been granted, an acceptance rate of 85%. In the case of legislative non-mortgage moratoria, the applications

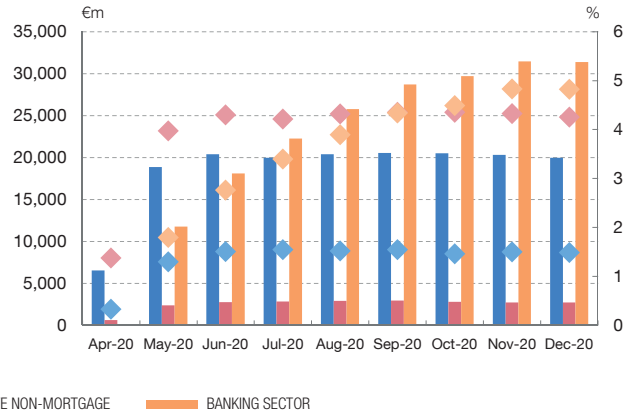
Chart 1

NUMBER AND OUTSTANDING AMOUNT OF LEGISLATIVE AND BANKING SECTOR LOAN MORATORIA

1 CUMULATIVE NUMBER OF APPLICATIONS AND ACCEPTANCE RATE BY MORATORIUM TYPE (a) (b)



2 OUTSTANDING AMOUNT OF MORATORIA, AND AS PERCENTAGE OF TOTAL LOANS ELIGIBLE FOR MORATORIUM SCHEMES (c) (d)



SOURCE: Banco de España.

- a For each moratorium scheme, the bars denote the cumulative total of applications (left-hand axis) and the diamond the percentage of that total that was approved (right-hand axis).
- b The number of applications for legislative and non-legislative mortgage moratoria, and the number granted, fell from October. According to the explanations provided in the information reported by banks, this was due to: reclassification of some of these moratoria to banking sector moratoria, given that the customer failed to evidence vulnerability; elimination of applications in which, ultimately, the customer failed to present the necessary documentation; updating of claims; or adjustment of the information reported after verifying operations that had been rejected or cancelled by the customer. All these reasons, except for the first, also explain the decrease in the number of applications for banking sector moratoria, and in the number granted, between November and December.
- c For each moratorium scheme, the bars denote the take-up volume (left-hand axis) and the diamond denotes this volume as a percentage of the total eligible loan book (for example, the legislative mortgage moratoria as a percentage of total mortgage credit to individuals) (right-hand axis).
- d From October, the outstanding amount of legislative mortgage and non-mortgage moratoria declined. According to the explanations provided in the information reported by banks, this was due to: reclassification of some of these moratoria to banking sector moratoria, given that the customer failed to evidence vulnerability; elimination of applications in which, ultimately, the customer failed to present the necessary documentation; updating of claims; or adjustment of the information reported after verifying operations that had been rejected or cancelled by the customer. All these reasons, except for the first, also explain the decrease in the outstanding amount of banking sector moratoria between November and December.

numbered more than 410,000, of which more than 363,000 had been granted, an acceptance rate over 88%. Given their less strict requirements, at end-December the acceptance rate for banking sector moratoria was even higher, at 97.4%, with more than 794,000 applications having been granted of the more than 815,000 submitted.

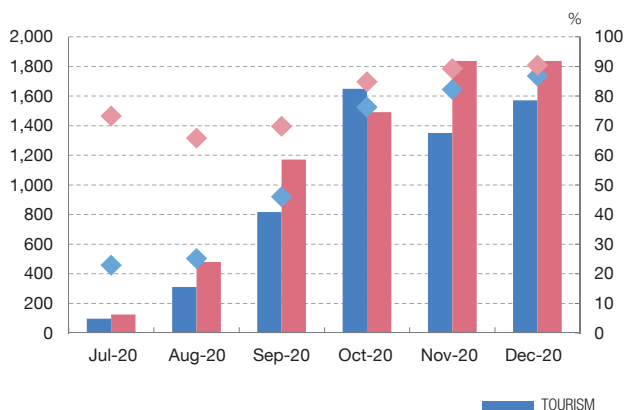
The outstanding amount of the loans subject to legislative mortgage moratoria was almost €20 billion (4.3% of the total outstanding amount of mortgage credit to individuals) (see Chart 1.2), much higher than the total for legislative non-mortgage moratoria (almost €2.7 billion, 1.5% of the total outstanding amount of non-mortgage credit to individuals). In turn, the outstanding amount of the loans subject to banking sector moratoria was over €31 billion (4.8% of the total outstanding amount of mortgage and non-mortgage credit to individuals).

For the last two types of moratoria, relating to the tourism and transport sectors, the number of applications and moratoria granted is much lower. Specifically, at end-

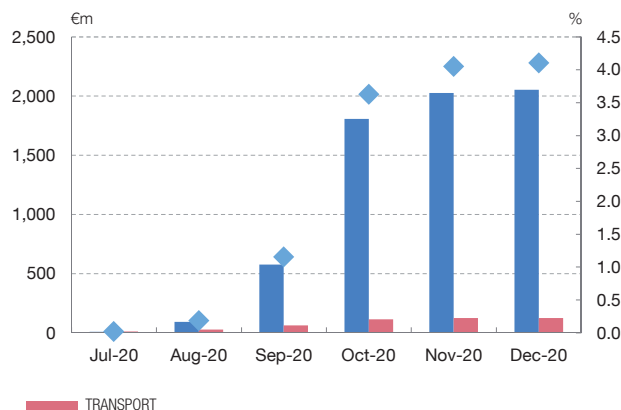
Chart 2

NUMBER AND OUTSTANDING AMOUNT OF TOURISM AND TRANSPORT SECTOR LOAN MORATORIA

1 CUMULATIVE NUMBER OF APPLICATIONS AND ACCEPTANCE RATE BY MORATORIUM TYPE (a)



2 OUTSTANDING AMOUNT OF MORATORIA, AND AS PERCENTAGE OF TOTAL LOANS ELIGIBLE FOR THESE SCHEMES (b)



SOURCE: Banco de España.

- a For each moratorium scheme, the bars denote the cumulative total of applications (left-hand axis) and the diamond the percentage of that total that was approved (right-hand axis).
- b For each moratorium scheme, the bars denote the take-up volume (left-hand axis) and the diamond denotes the tourism sector moratoria as a percentage of total tourism sector credit (right-hand axis).

2020, 1,570 applications had been submitted for the tourism sector legislative moratorium, of which 1,362 had been granted, an acceptance rate of almost 87% (see Chart 2.1). In the case of the transport sector legislative moratorium, 1,836 applications had been submitted, of which 1,661 had been granted, an acceptance rate of over 90%. The outstanding amount of the loans subject to the tourism sector moratorium was over €2 billion (4.1% of the total outstanding amount of the eligible loan book), while in the case of the transport sector moratorium it was just €125 million (see Chart 2.2).

For the three types of moratoria for individuals (the two legislative and the banking sector moratoria), the vast majority of the borrowers benefiting from these measures are wage-earners, who account for more than 75% of the total. However, considering that the Spanish labour market has a much higher number of wage-earners,¹⁴ in proportional terms the take-up of the self-employed is higher; this highlights the severe impact the crisis has had on this group. The breakdown by economic sector of the self-employed who have taken up moratoria shows that retail, hospitality and other services together account for 56% of the total moratoria, followed at a considerable distance by professional, scientific and technical activities, transportation, construction, and manufacturing. Overall, these seven economic sectors account for almost 80% of the total moratoria granted to the self-employed.

¹⁴ According to National Statistics Institute (INE) data, at 1 January 2020 there were 1.9 million self-employed in Spain, compared with almost 20 million wage-earners.

To sum up, the various loan moratorium schemes adopted in response to the health crisis have attracted a high number of applications: almost 1.5 million at end-December 2020, of which 1.38 million had been granted, a very high acceptance rate verging on 93%. As a result of this high number of applications received and moratoria granted, at end-December 2020 the volume of loans subject to moratoria was over €56 billion (8% of all outstanding credit in the eligible loan books). This notably enhances the beneficiaries' ability to meet their financial obligations and their available liquidity in the near term, in accordance with the goals of these schemes.

However, the data provided by banks under the provisions of the RDLs¹⁵ have their limitations. The main constraint is that they refer exclusively to the cumulative stock of applications for moratoria and moratoria granted since the schemes were first launched, irrespective of whether or not the moratoria are still in place. In consequence, to ascertain the current status of the moratoria, it is essential to identify the repayment flows – of moratoria that have expired or have been cancelled – so as to determine the volume of existing moratoria at each point in time. To obtain this information, the data contained in the Banco de España's Central Credit Register (CCR) are used. These data provide the latest available information (for this article, up to December 2020) on the performance of each loan subject to any kind of moratorium since origination. The CCR data include, in addition to the types of moratoria referred to above, all other moratoria – bilateral moratoria – granted as a consequence of the COVID-19 pandemic, backed by the principle of freedom of contract envisaged in the Spanish Civil Code and which may be agreed between parties even though they are not covered by a sector-wide framework agreement.

Accordingly, based on the CCR data, we now draw a distinction between two large groups of moratoria: legislative moratoria, which include the mortgage and non-mortgage moratoria for individuals and the tourism and transport sector moratoria; and conventional moratoria, which include the banking sector and bilateral moratoria.

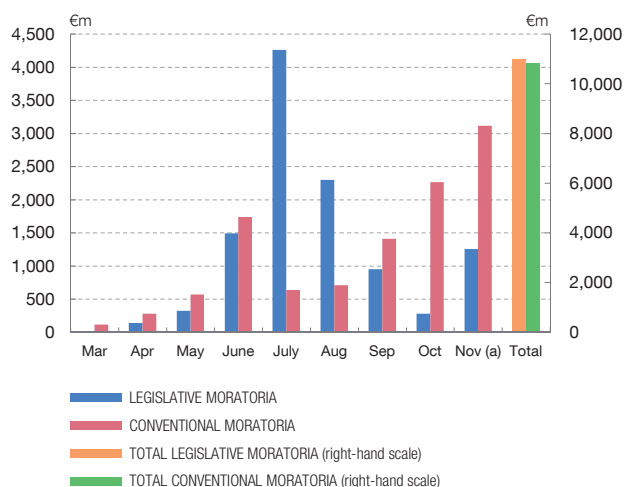
Chart 3.1 depicts the flows of expiries of loan moratoria as a consequence of discharges, repayments and cancellations (three ways by which moratoria come to an end and which are referred to hereafter as "reductions in moratoria"). The pattern of reductions is very different for the two groups, as a result of their different duration. For legislative moratoria, consistent with the higher volumes granted in April and May, the biggest reductions are in July and August, i.e. three months later, since as indicated earlier this was the duration of the legislative mortgage and non-mortgage moratoria up to the publication of RDL 3/2021 (see footnote 2). Specifically, 60% of the reductions in legislative moratoria occurred in July and August, and 77% had occurred up to August.

15 See footnote 9.

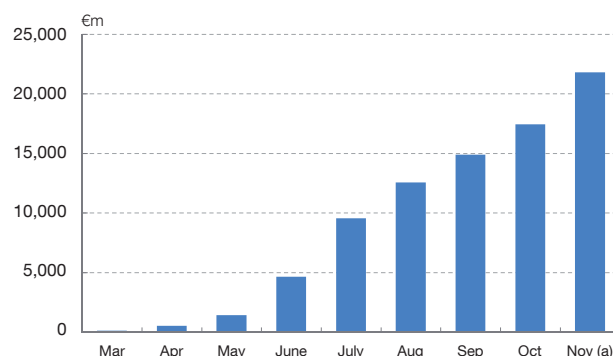
Chart 3

LOAN MORATORIA EXPIRED OR CANCELLED

1 FLOW OF LOAN MORATORIA EXPIRED OR CANCELLED, BY MONTH



2 CUMULATIVE TOTAL OF LOAN MORATORIA EXPIRED OR CANCELLED



SOURCE: Banco de España.

a The reductions data run to November, consistent with the criterion used to calculate the moratoria outstanding at December (moratoria that expire in December are not considered to have expired until end-December).

By contrast, the reductions in conventional moratoria, which have a longer duration, came later (see Chart 3.1), with half of these reductions occurring in October and November. On the latest data available, the cumulative total of reductions is very similar in the two groups of moratoria, amounting to some €11 billion in each group.

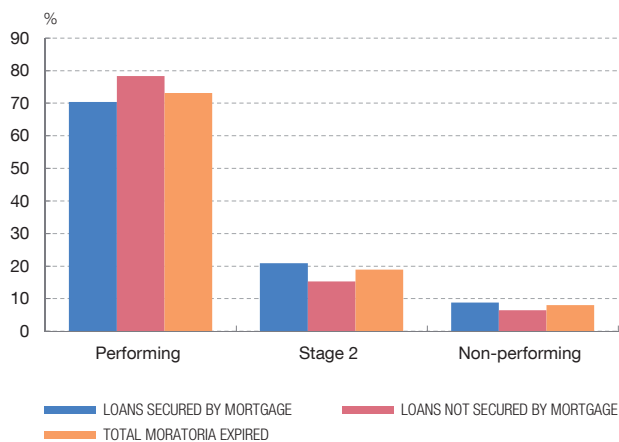
The different exit pattern for the two groups gives rise to a sustained increase in the cumulative total (see Chart 3.2) from June (up to May, only 9% of the total reductions had occurred), owing to legislative moratoria in the early months and conventional moratoria in the later months.

To recap, the cumulative amount subject to moratoria (some €28 billion in each group) and the cumulative amount expired (around €11 billion in each group) are similar for both groups, such that it could be concluded that the outstanding amounts subject to moratoria in the two groups are also similar (at around €17 billion). Yet nothing could be further from the truth, since there is another element to be considered, i.e. transfers between groups of moratoria. Specifically, over the course of 2020, loans initially subject to legislative moratoria amounting to €15.2 billion were transferred to conventional moratoria. This is because, as indicated earlier, the shorter duration of the legislative moratoria is conducive to their being transferred, upon expiry, to banking sector or bilateral moratoria. Accordingly, at end-December, the difference between legislative and conventional moratoria is much greater in terms of the outstanding amount than in terms of the cumulative total of applications

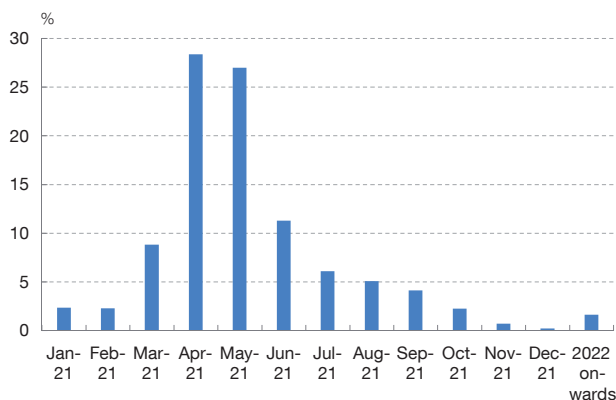
Chart 4

CREDIT QUALITY OF LOANS EXITING EXPIRED MORATORIA AND EXPIRIES OF OUTSTANDING MORATORIA

1 CREDIT QUALITY OF LOANS EXITING EXPIRED OR CANCELLED MORATORIA (a)



2 EXPIRIES OF TOTAL OUTSTANDING MORATORIA, BY MONTH, AT DECEMBER 2020 (% OF TOTAL)



SOURCE: Banco de España.

a Non-performing loans include loans that are non-performing for subjective reasons and loans that are non-performing for objective reasons (>90 days past due).

and moratoria granted: the loans outstanding subject to moratoria stood at around €34 billion, the bulk of which are conventional moratoria (over €32 billion, 95% of the total), while legislative moratoria accounted for just €2 billion (5% of the total outstanding).

As regards the classification of the loans amounting to almost €22 billion whose moratoria have expired or have been cancelled, most (almost three-quarters of the total) are performing, that is, their risk has not increased since origination. Almost 20% are classified as Stage 2, i.e. their risk has increased and their credit quality has declined since initial recognition, but no credit losses have been recorded. Lastly, just 6% are non-performing, that is, they have become impaired and credit losses have appeared. By type of collateral, 21% of loans secured by mortgage that were subject to moratoria are classified as Stage 2 (15% of unsecured loans or loans not secured by mortgage) and 9% are classified as non-performing (6% for all loans not secured by mortgage) (see Chart 4.1).

Lastly, regarding the outstanding moratoria, which amount to more than €34 billion, Chart 4.2 depicts the expected expiries in the coming months (from January 2021). Given that conventional moratoria account for the bulk (95%) of the total volume of outstanding moratoria at December 2020, they fully shape the expiry pattern. Chart 4.2 also shows that some 85% of the total will expire in the first six months of 2021, and that the main expiries (more than 50%) are concentrated between April and May.

In any event, the trajectory of the loan moratoria over the coming months (specifically, the total volume of loans subject to moratoria and the possible new moratoria granted) may change, given the current uncertainty surrounding the course of economic activity, the fact that the EBA is reactivating its Guidelines on the deadline for application of moratoria¹⁶ and the entry into force of RDL 3/2021. In consequence, the expiry profile shown to date could alter. The experience of these months shows that support measures of this kind are flexible and that they may be activated and withdrawn relatively quickly. It also shows that they must be used prudently, so as to ensure that at the same time as they ease borrowers' potential liquidity problems they also preserve adequate repayment incentives.

3 Databases

In order to describe as fully as possible the quality of the mortgage loans subject to some sort of deferral measure, whether through the legislative or banking sector moratorium schemes linked to the COVID-19 health crisis or through individual bilateral moratoria, two administrative registers are used: the Banco de España's CCR, which has granular data on the characteristics of all credit transactions in Spain and on some borrower characteristics, and the data obtained from banks' own balance sheets, included in their regular reporting to the Banco de España.

The CCR is a confidential database belonging to the Banco de España that has data on all bank loans extended since 1984 in Spain over €6,000. The data are reported monthly and include loan characteristics (interest rate, maturity, loan amount, collateral, etc.) and also some borrower characteristics (gender, age, economic sector, employment status, postcode, etc.). Drawing on all this information it is possible to analyse bank lending on a monthly basis and the key characteristics of the loans granted.

The analysis in this article considers only households' mortgage loans in force as at 31 December 2019. The main characteristics of these loans will be described, drawing on certain variables taken from the loan register, such as original term to maturity (in months), interest rate, number of borrowers, and whether or not there is a personal guarantee. In addition, any changes in the payment commitment status that may arise throughout the period considered are also taken into account. For this purpose, using data recently incorporated into the loan register, which enhance banks' reporting on their exposure to loans affected by the support measures approved to address the social and economic impact of the pandemic, it is possible to identify mortgages that are benefiting from a payment moratorium and to ascertain

¹⁶ See EBA (2020b) in which the EBA reactivated the application of its Guidelines up to 31 March 2021, thus extending for borrowers that had not previously benefited from payment moratoria on bank debt the opportunity to do so.

whether their grace period is linked to the COVID-19 crisis (in other words, whether it is a legislative, banking sector or bilateral moratorium).

Certain borrower characteristics are also identified, to determine the loan's credit risk, using for this purpose data available in the CCR since 2016. Specifically, characteristics of the household reference person (assumed to be the oldest borrower) are considered, as a synthesis of the characteristics of the mortgagor household: their age in 2019, if they are foreign or self-employed and also their past credit history (if they have had loans classified as non-performing before 2019). In addition, other less granular data are used to proxy certain household characteristics that are not available in the CCR and that are highly relevant to measure households' ability to pay, such as income and the employment situation in their region. Average gross household income in 2016 in the postcode in which the mortgaged property is located is used to proxy gross household income and the household debt-to-income ratio. Other variables used are the percentage of furloughed workers and the unemployment rate in the province in which the property is located, to quantify the probability that the household may have undergone a negative income shock affecting its ability to meet its payment obligations.

In addition, to include aspects that may influence banks' decisions, information included in their regular supervisory financial reporting to the Banco de España is used. Specifically, their asset volume, a measure of capital close to the leverage ratio (net equity to assets, which we call the "capital ratio"), their profitability (rate of return on average total assets (ROA)), their liquidity ratio (liquid assets to total assets), their NPL ratio (non-performing assets to loans to other resident actors) and a measure of their mortgage lending over the last five years.

By combining these data sources, a relatively complete description is obtained of the characteristics of each loan at the mortgage/bank level. This allows us to analyse which supply-side factors (linked to the bank) and demand-side factors (linked to the borrower or the macroeconomic situation of the province in which the property is located) could be most useful to explain the probability: i) that a household will have taken up any of the various types of COVID-19 moratoria; ii) that it will have transferred from one type of payment moratorium to another; and iii) that it will have exited the moratorium.

4 Empirical identification

The main aim of this study is to investigate the specific characteristics of mortgages that have been subject to any of the different types of payment moratoria introduced in response to the impact of COVID-19, be they legislative, banking sector or bilateral moratoria. It also aims to characterise the households that took up legislative moratoria and the performance of the moratoria over time, highlighting any transfers between moratoria that may have taken place.

As discussed in the previous section, CCR data on mortgages that were in force as at December 2019 are used; this provides us with more than 5.3 million observations. The CCR database includes a large number of variables as to households, mortgages, regions of Spain and mortgagee banks, but the drawback is that some of the data on households are static. We assigned them to each household, drawing on the information available at the postcode level (for instance, for average household income), or on the macroeconomic data available at the province level to proxy information that is not available in the CCR at a more granular level. Nevertheless, taking into account all these factors enables us to gain a better understanding of how these support measures have functioned, which households have been most affected by them and which banks are making most use of them and are consequently most exposed to how they evolve going forward. This can provide us with indications as to the future risk for the banking system when these measures come to an end.

First, access to the moratorium schemes and the characteristics of the mortgages subject to the schemes are analysed. The dependent variable is a dichotomous variable that takes the value 1 if the mortgage is, or has been, subject to any of the three types of moratoria (legislative, banking sector or bilateral moratoria) during 2020 (up to 31 December), and the value 0 otherwise. Thus, this variable is Moratorium_{ij} , where subscript “i” is the loan and subscript “j” is the lending bank. This would be an estimated ordinary least squares linear probability model, thus:¹⁷

$$\text{Moratorium}_{ij} = \Omega_1 \text{ Household characteristics}_i + \Omega_2 \text{ Mortgage characteristics}_i + \Omega_3 \text{ Province characteristics}_i + \Omega_4 \text{ Bank characteristics}_j + u_{ij}, \quad [1]$$

where four sets of variables are introduced as explanatory factors: 1) household characteristics (synthesised through the information on the household reference person, deemed to be the oldest household member who is a mortgagor), including average household income (drawing on National Statistics Institute (INE) postcode data for 2016), the age of the household reference person, their credit history, their total bank debt-to-income ratio in 2019 and, for the self-employed, their profession or economic sector;¹⁸ 2) loan characteristics, including the interest rate level, whether it is fixed or variable, whether the loan has a personal guarantee, and the logarithm of its original maturity; 3) characteristics of the situation at the provincial level, reflecting the impact of the pandemic on employment through the percentage of furloughed workers and the unemployment rate (both obtained from the National Public Employment Service (SPEE)); and 4) bank characteristics, including bank size (logarithm of total assets), capital ratio (net equity to assets), liquidity ratio (liquid

17 A linear probability model, rather than a binary probit type model, has been used for several reasons: first, to facilitate the interpretation of the estimated coefficients, in particular the effect of the interactions; second, because it enables standard errors to be corrected by multi-cluster; and third, because there is no intention to use the estimated coefficients for predictions.

18 See Table 1 for the complete list of the characteristics considered.

assets to total assets), profitability (ROA) and NPL ratio (non-performing assets to credit to other resident sectors), as an indicator of whether a bank's mortgage business has grown more than the system average over the last five years. In addition, u_{ij} represents the error component, and in the estimation standard errors are simultaneously corrected for bank and property postcode clusters.

The possible heterogeneity of the results is also analysed, estimating the same model as that contained in equation [1], adding interactions between certain variables. Thus, for example, we match the debt-to-income ratio to household income, to check whether the effect of the debt diminishes as income diminishes, and we analyse which banks are more likely to have mortgages subject to moratorium schemes according to the mortgage risk profile, captured by the interest rate, original maturity or the bank debt-to-income ratio.

Lastly, we also investigate whether legislative moratoria differ in any way from the other types of moratoria, whether they are greater risk or have a greater presence at certain types of banks. In addition, focusing on legislative moratoria, we analyse which of their characteristics are conducive to their expiring or being transferred to a different type of moratoria. This enables us to identify the characteristics of mortgages that are transferred from legislative to non-legislative moratoria and to detect the risk building up owing to the new grace periods.

To ascertain the key factors that determine the probability of a mortgage loan subject to moratorium being initially subject to a legislative moratorium, a linear regression model is estimated where the dependent variable is a binary variable that takes the value 1 if the original moratorium in 2020 was a legislative moratorium, with the following equation:

$$\begin{aligned} \text{Original legislative moratorium}_{ij} = & \Omega_1 \text{ Household characteristics}_i + \\ & \Omega_2 \text{ Mortgage characteristics}_i + \Omega_3 \text{ Province characteristics}_i + \\ & \Omega_4 \text{ Bank characteristics}_j + u_{ij}, \end{aligned} \quad [2]$$

where the sample is limited to mortgages subject to any of the types of moratoria. In this case also, standard errors are simultaneously corrected for bank and property postcode clusters.

To analyse the transitions of a legislative moratorium at expiry or at change in status, a duration model is considered in which the moratorium is monitored from the point of origination to the last observation, be it upon expiry or change of status or simply because it remains outstanding. This type of model allows us to analyse the length of time the loans remain in a certain status and, at the same time, to control for the fact that moratoria are observed that have not yet either expired or changed status (censored observations), because there are no more observations available on them.

For the purposes of this analysis, two types of exit from or transition between moratoria are studied: expiry of outstanding legislative moratoria, either ahead of term or when the moratorium ends; and change in status of outstanding legislative moratoria, becoming banking sector or bilateral moratoria. In both cases a Cox proportional risk model¹⁹ is used, where the exit rate takes the following form:

$$h(t) = h_o(t) \times \exp \left(\begin{array}{l} \Omega_1 \text{ Household characteristics}_i + \Omega_2 \text{ Mortgage characteristics}_i + \\ \Omega_3 \text{ Province characteristics}_i + \Omega_4 \text{ Bank characteristics}_j \end{array} \right), \quad [3]$$

where the rate of exit is the probability in each period “t” (month) of the moratorium ending with a transition (expiry or change of status). In this case, standard errors are corrected only for bank cluster, as it is not possible to simultaneously correct for postcode cluster.

Lastly, we also analyse the factors that explain why a loan whose moratorium has expired is classified as non-performing or Stage 2 as at December 2020. For this purpose, we use a similar model as in equation [2], but we replace the dependent variable with a binary variable that takes the value 1 if the loan whose moratorium has expired is classified as non-performing or Stage 2 at end-2020, and a value 0 otherwise. In this case, the sample is limited to expired moratoria. The equation is as follows:

$$\begin{aligned} \text{Loan whose moratorium has expired and which is classified as non-performing} \\ \text{or Stage 2}_{ij} = \Omega_1 \text{ Household characteristics}_i + \Omega_2 \text{ Mortgage characteristics}_i + \\ \Omega_3 \text{ Province characteristics}_i + \Omega_4 \text{ Bank characteristics}_j + u_{ij} \end{aligned} \quad [4]$$

5 Descriptive statistics

As indicated earlier, this article draws on information on mortgage loans granted to households in Spain in force as at 31 December 2019. Table 1 depicts the average, the standard deviation, the first quartile, the median and the third quartile of the variables used in the analysis. The set of mortgages considered is classified according to whether they were subject to payment moratoria in 2020. The loans that were are then classified into two groups, according to whether they were originally legislative moratoria and to the possible changes in their payment deferral status over the year.

Table 1 shows that around 5% of residential mortgages granted to households in force as at 31 December 2019 benefited from a payment moratorium in 2020; of these, around three-fifths were initially legislative moratoria. In other words, at least

¹⁹ A Cox model, entailing a risk function $h(t)$ with parameter θ constant and equal to 1, was used for the sake of simplicity.

Table 1

DESCRIPTIVE STATISTICS

	Unit	Average	SD	p25	Median	p75
Moratorium	0/1	0.050	0.217	0.000	0.000	0.000
Initially legislative moratorium	0/1	0.559	0.496	0.000	1.000	1.000
Legislative moratorium expired	0/1	0.478	0.500	0.000	0.000	1.000
Legislative moratorium changed status	0/1	0.518	0.500	0.000	1.000	1.000
Moratorium expired - loan classified as non-performing or Stage 2	0/1	0.230	0.421	0.000	0.000	0.000
Household characteristics						
Log(Average household income)	Log(€)	9.741	0.435	9.380	9.794	10.061
Log(Debt-to-income ratio)	Log(%)	5.527	0.884	5.021	5.668	6.171
Log(Age)	Log(Months)	6.372	0.217	6.229	6.363	6.519
Foreign	0/1	0.051	0.219	0.000	0.000	0.000
Self-employed	0/1	0.111	0.314	0.000	0.000	0.000
Poor credit history	0/1	0.081	0.272	0.000	0.000	0.000
Mortgage characteristics						
Interest rate	%	1.627	1.429	0.543	1.103	2.210
Personal guarantee	0/1	0.159	0.365	0.000	0.000	0.000
Log(Original maturity (months))	Log(Months)	5.725	0.321	5.501	5.724	5.905
More than one mortgagor	0/1	0.639	0.480	0.000	1.000	1.000
Province characteristics						
Percentage furloughed workers	%	18.207	4.388	15.889	18.032	21.057
Unemployment rate	%	14.519	4.694	10.600	14.080	18.290
Bank characteristics						
Log(Assets bank)	Log(€1,000)	18.669	1.382	17.713	19.157	19.810
Capital ratio/bank	%	8.148	2.455	6.309	7.668	9.312
ROA bank	%	0.484	0.194	0.369	0.487	0.668
Liquidity ratio/bank	%	8.573	4.045	7.178	7.845	9.860
NPL ratio/bank	%	4.981	1.810	3.966	5.177	5.634
High mortgage lending growth	0/1	0.474	0.499	0.000	0.000	1.000

SOURCE: Devised by authors, drawing on CCR data.

NOTE: The table depicts the average, the standard deviation (SD) and the first, second and third quartiles of the distribution of some characteristics of the mortgages in force as at December 2019.

55.9% of the households that obtained a mortgage payment moratorium in 2020 were vulnerable households in accordance with the definition established in RDL 8/2020 and RDL 11/2020.²⁰ In addition, of the total mortgage moratoria that were originally legislative moratoria, 47.8% concluded before the end of 2020 and 51.8% were transferred to another type of moratorium (mainly banking sector) between March and December 2020. Lastly, of the moratoria that expired, 23% of the

20 This entails, as discussed in the introduction, that households' mortgage payments plus utility costs and essential expenses (electricity, gas, water, telecommunication services and service charge) account for more than 35% of their net household income, and that their debt-to-income ratio has changed significantly (their mortgage payments have multiplied by at least 1.3 as a proportion of their household income).

corresponding loans were classified as non-performing or Stage 2 as at December 2020.

Regarding the characteristics of the households considered, the logarithm of gross income per household (in euro) averages 9.74, with a standard deviation of 0.44 (in other words, average gross income per household is approximately €11,855). The household reference person (the oldest mortgagor) has an average age of 58 (the logarithm of the age of the household reference person in months averages 6.37), is foreign in 5% of households, self-employed in 11% and has a poor credit history in 8.1%.

The mortgage characteristics show that the average mortgage rate is 1.6%, although it varies enormously, with a dispersion coefficient of 87.8%. Of the mortgages considered, 15% have a personal guarantee and the logarithm of the number of months to maturity at origination is 5.73 (i.e. average original maturity of slightly more than 25 years).

In the provinces where the housing subject to the mortgages considered is located the unemployment rate is 14.5% (slightly below the nationwide rate, which was 16.2% in December 2020). The percentage of furloughed workers is 18.2% (also below the nationwide level, which was around 24% in January 2021).

As regards the average characteristics of the mortgagee banks, in the period previous to that considered in the analysis (i.e. in 2020 Q1), the logarithm of their total assets averaged 18.7 (over €128,153 million), their average leverage ratio was 8.15% and their average NPL ratio was 5%. Their ROA stood at 0.48% and in 0.47% of cases the banks' mortgage business had grown more than the system average over the last five years.

6 Results

This section first analyses the extent to which borrower and bank characteristics can determine the probability of a mortgage payment moratorium being obtained during the period considered. It also includes an in-depth analysis of possible heterogeneous effects by borrower income levels and banks' balance sheet strength. This is followed by an analysis of the impact of these borrower and bank characteristics on the probability of a mortgage loan being initially subject to a legislative moratorium in 2020, of those initially legislative mortgage moratoria concluding before 31 December 2020, and of their status changing (transfer to banking sector or bilateral moratoria or cancellation) in 2020.

6.1 Probability of being subject to a mortgage payment moratorium

Table 2 presents the results of the specification in equation [1], an estimated ordinary least squares linear probability model, to determine the extent to which the borrower, bank and mortgage characteristics, and also the macroeconomic situation of the province in which the mortgaged housing is located, may be relevant to determine the probability of a mortgage payment moratorium being obtained in the period March to December 2020.

The results of the estimation are set out in three columns: column (1) shows the controls specified for each of the aspects considered; column (2) includes additional information on the activity status of the household reference person; and column (3) includes information on the economic sector with which the household reference person identifies, in accordance with the CCR data available. To avoid differences in the coefficients reported owing to changes in the sample size, the analysis is limited to 5,308,499 mortgages for which all the necessary data are available to estimate the specification with more controls.

In accordance with the results shown in Table 2, both the borrower and the mortgage characteristics, and also the macroeconomic situation in the region where the housing is located, are relevant to explain the probability of a mortgage moratorium being in place in 2020, and their effects are stable in the different specifications considered.

Thus, the higher the household income, the lower the probability of a mortgage in force at end-2019 becoming subject to a payment moratorium in 2020. Specifically, the probability of a household in the third income distribution quartile having a moratorium is 19.2% lower than that for a similar household in the first quartile. Conversely, households whose reference person is older have a higher probability of having a mortgage payment moratorium. Specifically, the average probability of having a mortgage moratorium is 8.8% higher for households whose reference person is in the third age-group quartile (around 56 years of age) than for those whose reference person is in the first age-group quartile (around 48 years of age). Likewise, if the household reference person is foreign, the probability of having a mortgage moratorium is three percentage points (3 pp) higher, i.e. the probability is 60.3% higher. If the household reference person is self-employed, the probability of having a mortgage payment moratorium is 4 pp higher, almost double the average. The impact is similar if the household reference person has a poor credit history (an increase of 107% in the average probability).

Considering the employment status of wage-earners or the economic sector of the self-employed, columns (2) and (3) of Table 2 analyse their impact on the likelihood of having a moratorium in greater detail. As column (2) shows, the probability of having a mortgage moratorium is lower for public employees, employees of the

Table 2

DETERMINANTS OF TAKE-UP OF COVID-19 MORATORIA

Household, mortgage, regional and lending bank characteristics are all relevant to explain the probability of having a mortgage moratorium as a consequence of the effects of the COVID-19 pandemic. Take-up of the moratoria is highest among households that were more disadvantaged or more vulnerable at the start of the pandemic, the self-employed, those employed in the economic sectors most affected by the pandemic, households with higher debt-to-income ratios and those with mortgages in provinces hardest hit in terms of employment. Higher interest rates, longer repayment periods and a higher debt-to-income ratio also increase the probability, as does having a mortgage granted by a larger bank, with a higher NPL ratio or whose lending business has grown more than the system average over the last five years.

Coefficients expressed in per-unit values

Dependent variable	Mortgage subject to moratorium		
	(1)	(2)	(3)
Household characteristics			
Log(Household income)	-0.014*** (0.003)	-0.013*** (0.003)	-0.015*** (0.003)
Log(Debt-to-income ratio)	0.013*** (0.002)	0.014*** (0.002)	0.013*** (0.002)
Log(Age)	0.015** (0.007)	0.021*** (0.006)	0.015** (0.007)
Foreign	0.030*** (0.006)	0.028*** (0.006)	0.028*** (0.005)
Self-employed	0.048*** (0.005)	0.044*** (0.004)	0.044*** (0.003)
Poor credit history	0.053*** (0.009)	0.051*** (0.009)	0.053*** (0.009)
Mortgage characteristics			
Interest rate	0.005*** (0.002)	0.005*** (0.002)	0.005*** (0.002)
Personal guarantee	0.010*** (0.003)	0.009*** (0.002)	0.010*** (0.003)
Log(Original maturity (months))	0.030*** (0.004)	0.029*** (0.004)	0.030*** (0.004)
Province characteristics			
Percentage furloughed workers	0.002*** (0.000)	0.002*** (0.000)	0.002*** (0.000)
Unemployment rate	0.002*** (0.000)	0.002*** (0.000)	0.002*** (0.000)
Bank characteristics			
Log(Assets bank)	0.009*** (0.002)	0.009*** (0.002)	0.009*** (0.002)
Capital ratio/bank	-0.000 (0.001)	-0.000 (0.001)	-0.000 (0.001)
ROA bank	0.013 (0.014)	0.013 (0.015)	0.013 (0.014)
Liquidity ratio/bank	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
NPL ratio/bank	0.003** (0.001)	0.003* (0.001)	0.003** (0.001)
High mortgage lending growth	0.015** (0.007)	0.014** (0.007)	0.014** (0.007)

SOURCE: Banco de España.

NOTE: The table presents the results of a linear probability regression that explains the determinants of mortgagors at end-2019 having applied for and been granted a moratorium in 2020 as a consequence of the effects of the COVID-19 pandemic. The first row depicts the coefficients and the second row the robust standard deviations (corrected for mortgaged property postcode and lending bank clusters), followed by the corresponding significance levels: *** significance at 1%, ** significance at 5%, * significance at 10%.

Table 2

DETERMINANTS OF TAKE-UP OF COVID-19 MORATORIA (cont'd)

Household, mortgage, regional and lending bank characteristics are all relevant to explain the probability of having a mortgage moratorium as a consequence of the effects of the COVID-19 pandemic. Take-up of the moratoria is highest among households that were more disadvantaged or more vulnerable at the start of the pandemic, the self-employed, those employed in the economic sectors most affected by the pandemic, households with higher debt-to-income ratios and those with mortgages in provinces hardest hit in terms of employment. Higher interest rates, longer repayment periods and a higher debt-to-income ratio also increase the probability, as does having a mortgage granted by a larger bank, with a higher NPL ratio or whose lending business has grown more than the system average over the last five years.

Coefficients expressed in per-unit values			
Dependent variable	(1)	(2)	(3)
Type of employment and economic sector	Mortgage subject to moratorium		
Public employee		-0.034*** (0.005)	
All other employees		0.008*** (0.002)	
Primary sector			-0.054*** (0.005)
Manufacturing			-0.017*** (0.002)
Energy and water			-0.036*** (0.006)
Construction			-0.025*** (0.002)
Wholesale and retail trade			0.005* (0.003)
Transportation			0.021*** (0.006)
Hospitality			0.103*** (0.011)
Public sector			-0.047*** (0.012)
Financial sector			-0.036*** (0.004)
Number of observations (million)	5.308	5.308	5.308
R2	0.034	0.037	0.037

SOURCE: Banco de España.

NOTE: The table presents the results of a linear probability regression that explains the determinants of mortgagors at end-2019 having applied for and been granted a moratorium in 2020 as a consequence of the effects of the COVID-19 pandemic. The first row depicts the coefficients and the second row the robust standard deviations (corrected for mortgaged property postcode and lending bank clusters), followed by the corresponding significance levels: *** significance at 1%, ** significance at 5%, * significance at 10%.

banking group extending the loan and pensioners (60%, 28% and 98% lower, respectively), while for wage-earners it is 16% higher than the average probability. Similarly, for employees in retail, transport and hospitality (the economic sectors most affected by the pandemic and for which, in the case of transport and tourism, there are also sector-specific moratoria in place), the average probability is higher (10%, 42% and 207% higher, respectively), while for employees in all the other sectors considered it is lower.

The mortgage characteristics are also relevant to explain the probability of having a mortgage payment moratorium. Higher interest rates, longer repayment periods and

a higher debt-to-income ratio and, albeit to a lesser extent, having needed a guarantor, raise the probability of having a mortgage payment moratorium. Specifically, an increase in the mortgage interest rate from the first interest rate distribution quartile to the third (an increase of 1.6 pp) lifts the average probability of having a payment moratorium by 16.8%, while an extension of the repayment period from the first to the third quartile (a difference of some 11 years between the two quartiles) raises the average probability by 24%. Having needed a personal guarantee increases the average probability of having a mortgage payment moratorium by 1 pp (an increase of 2% in the average probability), and an increase in the debt-to-income ratio from the first to the third quartile lifts the average probability by 22%.

The macroeconomic situation in the province is also relevant to explain the probability of having a mortgage payment moratorium in 2020. Specifically, every percentage point of increase in the unemployment rate or in the percentage of furloughed workers in the province lifts the average probability of having a mortgage payment moratorium by 0.2 pp. In this case, given that cross-province dispersion is higher in the unemployment rate (difference of 7.7 pp between the third and the first quartile) than in the percentage of furloughed workers (difference of 5.2 pp between the third and the first quartile), from a province in the third quartile to one in the first quartile the increase in average probability is higher (31% compared with 21%) in both distributions.

As regards bank characteristics, the results presented in Table 2 suggest that having a mortgage granted by a larger bank (higher asset volume),²¹ with a higher NPL ratio or whose lending business has grown more than the system average over the last five years raises the probability of the mortgage being subject to a payment moratorium on a stable basis in all the specifications considered. Specifically, an increase in the NPL ratio from the third to the first quartile lifts the probability by 10%, while the fact that the banks' lending business has grown more than the system average over the last five years raises the average probability by 1.5 pp (around 30%).

All these results provide robust evidence that the support measure in the form of legislative or banking sector moratoria is coherent. It has tended to have most impact on households that were more disadvantaged or more vulnerable before the pandemic and on those that have been hardest hit by the pandemic, such as

21 A possible explanation for the positive correlation between bank size and the number of moratoria granted is that larger banks were able to adapt their organisational structure and internal processes more swiftly in view of the restrictions introduced as a result of the pandemic. The fact that they were initially better prepared to adapt to remote working, having had more previous experience in this respect, could have enabled them to maintain their level of activity with fewer distortions, compared with others whose structures were less well adapted to remote working. Larger banks would thus have faced fewer operational hurdles, enabling them to respond swiftly to requests for deferral from customers who needed to address the temporary difficulties emerging as a consequence of the onset of the pandemic. Accordingly, all other things being equal, this would increase the probability of a mortgage granted by a larger bank having a legislative or banking sector moratorium approved during this period.

Table 3

DETERMINANTS OF INITIALLY LEGISLATIVE MORATORIA AND TRANSFERS. HETEROGENEOUS EFFECTS

To analyse the heterogeneous effects in the results, interactions among some of the characteristics that explain the probability of having a mortgage moratorium as a consequence of the effects of the COVID-19 pandemic are included. The analysis shows that from the first to the third income quartile, the effect of the debt-to-income ratio is halved. Likewise, bank weakness, captured both by a lower leverage ratio and a higher NPL ratio, accentuates the impact of other characteristics that proxy mortgage risk, such as a longer repayment period or a higher interest rate.

Coefficients expressed in per-unit values			
Dependent variable	(1)	(2)	(3)
	Mortgage subject to moratorium		
Household characteristics			
Log(Household income)	-0.012*** (0.003)	-0.015*** (0.003)	-0.014*** (0.003)
Log(Debt-to-income ratio)	0.008*** (0.001)	0.013*** (0.001)	0.014*** (0.001)
Log(Age)	0.016** (0.008)	0.015** (0.007)	0.015** (0.006)
Foreign	0.026*** (0.006)	0.030*** (0.006)	0.030*** (0.006)
Self-employed	0.046*** (0.005)	0.048*** (0.005)	0.047*** (0.005)
Poor credit history	0.048*** (0.009)	0.053*** (0.009)	0.053*** (0.010)
Mortgage characteristics			
Interest rate	0.007*** (0.002)	0.005*** (0.002)	0.006*** (0.001)
Personal guarantee	0.008*** (0.003)	0.010*** (0.003)	0.010*** (0.003)
Log(Original maturity (months))	0.029*** (0.005)	0.030*** (0.004)	0.032*** (0.003)
Province characteristics			
Percentage furloughed workers	0.002*** (0.000)	0.002*** (0.000)	0.002*** (0.000)
Unemployment rate	0.002*** (0.000)	0.002*** (0.000)	0.002*** (0.000)

SOURCE: Banco de España.

NOTE: The table presents the results of a linear probability regression that explains the determinants of mortgagors at end-2019 having applied for and been granted a moratorium in 2020 as a result of the effects of the COVID-19 pandemic. The first row depicts the coefficients and the second row the robust standard deviations (corrected for mortgaged property postcode and lending bank clusters), followed by the corresponding significance levels: *** significance at 1%, ** significance at 5%, * significance at 10%.

households in regions where COVID-19 has had more impact on employment or in economic sectors that have felt the brunt of the pandemic. This is coherent with the purpose for which these schemes were created.

Table 3 analyses the heterogeneity of the results obtained, adding interactions to analyse how certain variables are interlinked. For example, how households' debt-to-income ratios may vary for different income levels, or in accordance with banks' balance sheet strength (banks' leverage and NPL ratios). Column (1) of Table 3

Table 3

DETERMINANTS OF INITIALLY LEGISLATIVE MORATORIA AND TRANSFERS. HETEROGENEOUS EFFECTS (cont'd)

To analyse the heterogeneous effects in the results, interactions among some of the characteristics that explain the probability of having a mortgage moratorium as a consequence of the effects of the COVID-19 pandemic are included. The analysis shows that from the first to the third income quartile, the effect of the debt-to-income ratio is halved. Likewise, bank weakness, captured both by a lower leverage ratio and a higher NPL ratio, accentuates the impact of other characteristics that proxy mortgage risk, such as a longer repayment period or a higher interest rate.

Coefficients expressed in per-unit values

Dependent variable	Mortgage subject to moratorium		
	(1)	(2)	(3)
Bank characteristics			
Log(Assets bank)	0.009*** (0.002)	0.008*** (0.001)	0.008*** (0.001)
Capital ratio/bank	0.000 (0.001)	0.000 (0.001)	0.001 (0.001)
ROA bank	0.017 (0.015)	0.014 (0.014)	0.020 (0.014)
NPL ratio/bank	0.003* (0.001)	0.003** (0.001)	0.002 (0.001)
High mortgage lending growth	0.018** (0.008)	0.014** (0.007)	0.011 (0.007)
Heterogeneous effects			
Log(Debt-to-income ratio) × Log(Household income)	-0.012*** (0.003)		
Log(Debt-to-income ratio (2019)) × Capital ratio/bank		0.000 (0.001)	0.001 (0.000)
Log(Debt-to-income ratio (2019)) × NPL ratio/bank		0.003*** (0.001)	0.002*** (0.001)
Log(Original maturity (months)) × Capital ratio/bank			-0.002* (0.001)
Log(Original maturity (months)) × NPL ratio/bank			0.008*** (0.001)
Interest rate × Capital ratio/bank			-0.002** (0.001)
Interest rate × NPL ratio/bank			0.001** (0.001)
Number of observations (million)	5.308	5.308	5.308
R2	0.039	0.035	0.036

SOURCE: Banco de España.

NOTE: The table presents the results of a linear probability regression that explains the determinants of mortgagors at end-2019 having applied for and been granted a moratorium in 2020 as a result of the effects of the COVID-19 pandemic. The first row depicts the coefficients and the second row the robust standard deviations (corrected for mortgaged property postcode and lending bank clusters), followed by the corresponding significance levels: *** significance at 1%, ** significance at 5%, * significance at 10%.

includes the interplay between households' debt-to-income ratios and the logarithm of household income. Column (2) includes the interplay between households' debt-to-income ratios and banks' capital and NPL ratios. Lastly, column (3) incorporates into the column (2) specification interactions between mortgage characteristics, such as original maturity or interest rate, and banks' capital and NPL ratios.

As Table 3 shows, in the case of household income, from the first to the third percentile of the distribution the positive impact of the debt-to-income ratio is halved (for an increase in the latter from the first to the third quartile), down from an increase of 22% to one of just 11%. In turn, an increase of 1.7 pp in the default rate (which corresponds to an increase from the first to the third percentile of the distribution) doubles the impact of the debt-to-income ratio, lifting the average probability by 42%. In addition, bank weakness, captured both by a lower leverage ratio and a higher NPL ratio, also accentuates the impact of other characteristics that proxy mortgage risk, such as a longer repayment period or a higher interest rate. Thus, for example, extending the repayment period or raising the interest rate (in an amount similar to moving from the first to the third quartile), for a similar change in the NPL ratio, would increase the average probability by 35% or 61%, compared with the 24% or 31% commented in Table 1. The effect of bank solvency is also significant: banks with a lower capital ratio are more likely to have moratoria with a higher risk profile, although the impact is less relevant from an economic standpoint than that of the NPL ratio (an exercise similar to that described above would raise the probability by 29% and 37%, respectively). These results appear to suggest, either that the weakest banks tend to have a higher proportion of low-quality borrowers, and thus a higher percentage of moratoria for this market segment, or that they are the ones that have made most use of this tool for this type of households, in an endeavour to counter the negative impact of the pandemic on their provisioning and, ultimately, on their solvency.

6.2 Transfers

Table 3 focuses on initially legislative moratoria. Specifically, column (1) estimates the factors that determine the probability of a moratorium initially being a legislative moratorium (for loans effectively subject to moratoria in 2020). Column (2) analyses the impact of these same characteristics on the probability of a return to normal in terms of the obligation to meet mortgage payments (i.e. cessation of moratorium). Lastly, column (3) examines the probability of a legislative moratorium being transferred to another kind of moratorium. These situations are, by definition, restricted to mortgage loans that were subject to moratorium in the period considered. In consequence, a total of 264,051 mortgages are considered in column (1), while in columns (2) and (3) the analysis is limited to moratoria that were initially legislative, i.e. 143,014 loans during the period considered.

6.2.1 Probability of a moratorium being initially legislative

To explain the probability of a moratorium being initially legislative, for loans subject to moratorium at any time in 2020, the household, loan and bank characteristics variables continue to be relevant. By contrast, the macroeconomic situation in the

Table 4

DETERMINANTS OF INITIALLY LEGISLATIVE COVID-19 MORATORIA AND TRANSFERS

Take-up of initially legislative moratoria is highest among households that were more vulnerable at the start of the pandemic and those that were most affected in terms of employment. These households also tend to remain subject to legislative moratoria for longer, or are more likely to transfer to other (banking sector or bilateral) moratoria when the former expire. Moreover, loans subject to initially legislative moratoria pertaining to more vulnerable households or to those in regions hardest hit by the crisis have a higher probability of being classified as credit risk. Interestingly, in the case of the self-employed, although they are more likely to have legislative mortgage moratoria, once these moratoria expire the probability of their mortgage loans being classified as non-performing or Stage 2 is no higher.

Coefficients expressed in per-unit values

Dependent variable	(1)	(2)	(3)	(4)
	Initially legislative moratorium	Legislative moratorium expired	Legislative moratorium changed status	Moratorium expired - loan classified as non-performing or Stage 2
Initially legislative moratorium				0.075* (0.043)
Household characteristics				
Log(Household income)	-0.046*** (0.012)	0.025 (0.050)	-0.044* (0.026)	-0.030** 0.0
Log(Debt-to-income ratio)	-0.058*** (0.011)	-0.073** (0.033)	0.079*** (0.009)	-0.030** (0.012)
Log(Age)	-0.125*** (0.036)	-0.282* (0.160)	0.239*** (0.043)	0.024*** (0.005)
Foreign	0.033*** (0.010)	0.017 (0.025)	-0.011 (0.014)	0.098*** (0.024)
Self-employed	0.059*** (0.015)	-0.035 (0.050)	0.059* (0.034)	0.011 (0.008)
Poor credit history	-0.006 (0.015)	0.006 (0.029)	0.045*** (0.016)	0.019 (0.014)
Mortgage characteristics				
Interest rate	0.016** (0.007)	0.040 (0.029)	-0.014 (0.021)	-0.011 (0.014)
Personal guarantee	0.045*** (0.013)	0.081* (0.043)	-0.095** (0.040)	0.028*** (0.006)
Log(Original maturity (months))	0.197*** (0.046)	-0.090 (0.120)	0.117 (0.096)	0.28 (0.024)

SOURCE: Banco de España.

NOTE: The table presents the results of regressions that explain the determinants of the legislative moratoria, and of their change in status, for outstanding mortgages at December 2019 that were granted a moratorium in 2020 as a consequence of COVID-19. Column (1) shows the results of estimating a linear probability model to explain that a mortgage becomes subject to the COVID-19 legislative moratorium. Columns (2) and (3) show the results of a duration model, using a Cox model, where the exit event is expiry of the moratorium (column (2)) or a change of status (column (3)). The first row depicts the coefficients; the second row depicts the robust standard deviations in brackets, corrected for the lending bank cluster (columns (2) and (3)) and for the mortgaged property postcode cluster (column (1)), followed by the corresponding significance levels: *** significance at 1%, ** significance at 5%, * significance at 10%.

province ceases to be a determinant factor, reflecting the more dynamic and complementary nature of the banking sector moratoria.

As column (1) of Table 3 shows, the income, age and nationality of the household reference person, and also whether they are self-employed, are relevant to explain the probability of having an initially legislative mortgage payment moratorium. Yet their credit history is not relevant here, whereas it was relevant to explain the

Table 4

DETERMINANTS OF INITIALLY LEGISLATIVE COVID-19 MORATORIA AND TRANSFERS (cont'd)

Take-up of initially legislative moratoria is highest among households that were more vulnerable at the start of the pandemic and those that were most affected in terms of employment. These households also tend to remain subject to legislative moratoria for longer, or are more likely to transfer to other (banking sector or bilateral) moratoria when the former expire. Moreover, loans subject to initially legislative moratoria pertaining to more vulnerable households or to those in regions hardest hit by the crisis have a higher probability of being classified as credit risk. Interestingly, in the case of the self-employed, although they are more likely to have legislative mortgage moratoria, once these moratoria expire the probability of their mortgage loans being classified as non-performing or Stage 2 is no higher.

Coefficients expressed in per-unit values

Dependent variable	(1)	(2)	(3)	(4)
	Initially legislative moratorium	Legislative moratorium expired	Legislative moratorium changed status	Moratorium expired - loan classified as non-performing or Stage 2
Province characteristics				
Percentage furloughed workers	-0.001 (0.001)	-0.003 (0.007)	0.004* (0.003)	-0.000 (0.001)
Unemployment rate	0.003 (0.002)	-0.016** (0.006)	0.004 (0.005)	0.004*** (0.001)
Bank characteristics				
Log(Assets bank)	-0.096*** (0.017)	0.100 (0.098)	0.090 (0.086)	0.017* (0.009)
Capital ratio/bank	0.001 (0.008)	-0.126** (0.056)	0.000 (0.058)	0.005 (0.006)
ROA bank	0.008 (0.186)	-1.152* (0.621)	0.761 (0.685)	-0.246** (0.115)
Liquidity ratio/bank	0.006 (0.008)	0.030*** (0.009)	-0.012 (0.039)	0.007* (0.004)
NPL ratio/bank	-0.008 (0.015)	0.0 (0.039)	-0.024 (0.065)	-0.001 (0.008)
Number of observations (million)	0.264	0.143	0.264	0.085
R2	0.236			0.203

SOURCE: Banco de España.

NOTE: The table presents the results of regressions that explain the determinants of the legislative moratoria, and of their change in status, for outstanding mortgages at December 2019 that were granted a moratorium in 2020 as a consequence of COVID-19. Column (1) shows the results of estimating a linear probability model to explain that a mortgage becomes subject to the COVID-19 legislative moratorium. Columns (2) and (3) show the results of a duration model, using a Cox model, where the exit event is expiry of the moratorium (column (2)) or a change of status (column (3)). The first row depicts the coefficients; the second row depicts the robust standard deviations in brackets, corrected for the lending bank cluster (columns (2) and (3)) and for the mortgaged property postcode cluster (column (1)), followed by the corresponding significance levels: *** significance at 1%, ** significance at 5%, * significance at 10%.

probability of being subject to a moratorium. This shows that whether households have a good or a poor credit history is not a significant factor in the case of legislative moratoria. As regards income, the higher the household income, the lower the probability of the first payment moratorium of a mortgage in force at end-2019 being a legislative moratorium in 2020. Specifically, from the first to the third income quartile, the average probability of this occurring falls by 5.6%. Moreover, the probability of having an initially legislative mortgage payment moratorium in 2020 is lower for households whose reference person is older. Specifically, the average probability is 6.5% lower for households whose reference person is in

the third age-group quartile compared with those whose reference person is in the first age-group quartile.²²

Regarding the mortgage characteristics, having higher interest rates and longer repayment periods and, albeit to a lesser extent, having needed a guarantor, raise the probability of having an initially legislative moratorium, whereas having a higher debt-to-income ratio reduces the probability, if the loan becomes subject to moratorium, of it being a legislative moratorium.

Specifically, an increase in the mortgage rate from the first interest rate distribution quartile to the third (1.6 pp) lifts the average probability of having an initially legislative moratorium by 5%, while an extension of the repayment period from the first to the third quartile (a difference of some 11 years between the two quartiles) raises the average probability of having an initially legislative moratorium by 14%. These results are consistent with the fact that in order to be eligible for the legislative moratoria, certain conditions relating to households' difficulties meeting their monthly payment obligations – captured by the mortgage interest rate and repayment period – must be met.

Turning to bank characteristics, having a mortgage granted by a larger bank (higher asset volume) or whose lending business has grown more than the system average over the last five years reduces the probability of the mortgage being subject to an initially legislative moratorium. Specifically, an increase in the logarithm of total assets from the third to the first quartile lifts the probability by 344%, while the fact that the bank's lending business has grown more than the system average over the last five years reduces the average probability by 55%.

6.2.2 Probability of an initially legislative moratorium being cancelled

To explain the rate of termination of initially legislative payment moratoria over the course of 2020, of the household characteristics variables only age appears to be relevant.²³ Households whose reference person is older are less likely to return to normal; in other words, they remain subject to legislative moratoria for longer. Specifically, the average probability of an initially legislative moratorium being cancelled is 28.1% lower for households whose reference person is in the third age-group quartile, compared with those whose reference person is in the first age-group quartile.

22 The sign of the age coefficient could be capturing a lower initial level of sensitivity of older households' income to the COVID-19 shock. This could mean that older households with outstanding mortgages were less likely to satisfy the income conditions in order to be considered vulnerable households and, therefore, to be eligible to apply for legislative moratoria than younger households.

23 This may be partly due to the characteristics of the household-level data used, since they require that each household be assigned certain variables linked to their postcode.

Moreover, the higher the household debt-to-income ratio, measured by its logarithm, the lower the probability of cancellation of an initially legislative moratorium. Thus, from the first quartile to the third quartile of the logarithm of the household debt-to-income ratio, the average probability of this occurring falls by 27.6%.

The macroeconomic situation of the province seems to have some relevance to explain the exit from moratorium. Thus, from a province with an unemployment rate in the first quartile to one with an unemployment rate in the third quartile the probability of a legislative moratorium expiring falls by 4.1%; that is, these mortgages remain subject to legislative moratoria for longer.

Turning to bank characteristics, the probability of initially legislative moratoria being cancelled is higher for loans granted by banks with a higher liquidity ratio and lower for those granted by banks with a lower capital ratio. Specifically, from the first capital ratio quartile to the third, the average probability of this occurring falls by 123%, whereas in the case of the liquidity ratio the probability rises by 27.6%.

6.2.3 Probability of an initially legislative moratorium being transferred to a banking sector moratorium

In this case, both household income and age affect the probability of transfer to banking sector or bilateral moratoria, although higher household income reduces the probability whereas higher household age increases it.²⁴ A poor credit history is also relevant here, as it raises the probability of a legislative moratorium being transferred to another type of moratorium by 4.5 pp (some 8.8%). Self-employment also raises this probability (although this variable has limited statistical significance).

As regards the effect of the loan characteristics, the household debt-to-income ratio and having needed a personal guarantee appear to be the most important variables to explain transfer to a banking sector moratorium. The higher the debt-to-income ratio, the higher the probability of transfer from an initially legislative moratorium to a banking sector or bilateral one. Thus, from the first to the third quartile of the logarithm of the household debt-to-income ratio, the probability of this occurring increases by 17.7%. Conversely, having needed a personal guarantee reduces the probability of transfer to a banking sector moratorium by 9.5 pp (17.5% compared with the probability of transfer to another status from a legislative moratorium).

The employment effect, captured by the regional variables, shows that moratoria in provinces with a higher percentage of furloughed workers tend to remain in place for

²⁴ The second factor reflects the greater difficulty older, more vulnerable households face to recover their pre-pandemic ability to meet their payments.

longer (a 5% increase). In this case, no correlation is observed between lending banks' characteristics and transfer from an initially legislative moratorium.

In consequence, the results appear to suggest that households that have higher debt-to-income ratios, are in regions most affected by the pandemic or are lower income households tend to remain subject to legislative moratoria for longer or are more likely to change to another type of moratoria.

6.2.4 Probability of loans being classified as non-performing or Stage 2 when moratoria expire

In an endeavour to understand the explanatory factors behind the classification of loans exiting moratoria, equation [4] has been estimated. The results show that loans subject to moratoria that were initially legislative are 33% more likely to be classified in a category other than performing. In addition, more vulnerable households (in the first quartile of the income distribution) and more indebted households (in the third quartile of the debt distribution) have a 9% and 12%, respectively, higher probability of being classified in a category other than performing than those in the third or first quartile of their respective distributions. Likewise, the average probability of loans being classified as non-performing or Stage 2 once the moratoria are no longer in place is 12% higher for loans covered by a personal guarantee or pertaining to households whose reference person is older (again comparing the third quartile with the first quartile). Notably, in the case of the self-employed – despite, as we have seen, being more likely to apply for legislative moratoria, reflecting the severe impact of the crisis on this group²⁵ – we do not observe a higher probability of their loans being classified as Stage 2 or non-performing upon expiry of their mortgage moratoria. Lastly, for households in regions hardest hit by the pandemic in terms of employment, this probability is 13% higher.

7 Conclusions

Loan moratoria are one of the support measures for households and firms introduced against the backdrop of the crisis triggered by the COVID-19 pandemic. They have enabled households and firms to defer their loan payment commitments, notably enhancing their ability to meet their financial obligations and their available liquidity in the near term.

To date, five different types of loan moratoria have been approved (legislative mortgage and non-mortgage moratoria, banking sector moratoria and sector-specific moratoria for the tourism and transport industries), applicable to different

25 See the available evidence in Fernández Cerezo et al. (2021).

types of loans and borrowers, according to the requirements and conditions set out in the corresponding Royal Decree-Laws.

For these five types of moratoria, lending banks report a specific set of data to the Banco de España, which is supplemented by the data obtained through the CCR. Drawing on both these sources, some 1.5 million applications for moratoria have been made, of which 1.38 million have been granted, a very high acceptance rate verging on 93%. The volume of loans subject to moratoria is over €56 billion, which is 8% of all existing credit in the eligible loan books.

Most of the borrowers benefiting from the moratoria for individuals (the two legislative moratoria and the banking sector moratoria) are wage-earners, who account for more than 75% of the total. As for the self-employed who have benefited from the moratoria, their main economic sectors are retail, hospitality and other services (which together account for 56% of the moratoria granted to the self-employed).

Given that the moratoria had been in operation for almost a year at end-December 2020, some have expired, as a consequence of discharges, repayments or cancellations (reductions in general). The pattern of reductions is very different for the different groups of moratoria: for legislative moratoria, given the higher volumes granted in April and May 2020, the biggest reductions are in July and August, whereas for conventional moratoria, which have a longer duration, the reductions come later (specifically half of these reductions, in October and November).

Considering that the cumulative total under both groups of moratoria is slightly over €56 billion, that the cumulative total expired amounts to some €11 billion in each group, and that some €15.2 billion have been transferred between groups (loans initially subject to legislative moratoria transferred to conventional moratoria, given that the shorter duration of the former is conducive to their being transferred, upon expiry, to banking sector or bilateral moratoria), at end-December 2020 the loans outstanding subject to moratoria amounted to some €34 billion. Conventional moratoria accounted for the bulk of this sum (over €32 billion, 95% of the total) and legislative moratoria for just some €2 billion (5% of the total outstanding).

As regards the classification of the loans whose moratoria have expired or have been cancelled, almost three-quarters are classified as performing, 20% are classified as Stage 2 and just 6% are classified as non-performing. Lastly, of the outstanding moratoria (over €34 billion), approximately 85% will expire in the first six months of 2021, the great majority of which between April and May.

The results of the econometric analysis performed show that the following groups record the highest take-up of moratoria: households that were more disadvantaged (lower income) or more vulnerable (higher debt) at the start of the pandemic; those hardest hit in terms of employment (in provinces with a higher unemployment rate or

higher percentage of furloughed workers owing to COVID-19); and those linked to the economic sectors most affected by the pandemic (such as retail, hospitality or transport). This is consistent with the purpose of these schemes. Moreover, it would appear to be the case, above all, among the weakest banks, in terms of lower capital ratios or higher NPL rates. Furthermore, the results also appear to suggest that vulnerable households, those in regions most affected by the pandemic and lower income households tend to be subject to legislative moratoria for longer (or are more likely to transfer to non-legislative moratoria when the former expire), and that when the moratoria expire, these households' loans are more likely to be classified as Stage 2 or non-performing. All the above highlights the important role that the moratoria have played to cushion the initial impact of the pandemic, but also the latent risk in moratoria pertaining to more disadvantaged or more highly indebted households, which could give rise to higher future provisioning requirements for banks.

To sum up, the analysis performed and the evidence built up in 2020 since the moratoria were introduced show that these are flexible support measures that can be activated and withdrawn relatively quickly. But they must be used prudently, so as to ensure that at the same time as they ease borrowers' potential liquidity problems they also preserve adequate repayment incentives.

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