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How do macroprudential measures affect mortgage lending standards? Evidence from the ECB's Bank Lending Survey

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Abstract

Using information from the ECB's Bank Lending Survey, we examine how the implementation of borrower-based macroprudential measures (BBMs) between 2009-Q1 and 2023-Q3 affected mortgage lending standards in a sample of 15 euro area countries. We find that banks generally tightened credit standards around the implementation of BBMs, with the strongest effect occurring contemporaneously. Such tightening of credit standards is observed for different types of BBMs, including limits on loan-to-value or debt-service-to-income ratios and maturities. We also find mild evidence that legally binding measures imply a stronger tightening of credit standards than measures in the form of non-binding recommendations. Finally, this tightening is more pronounced in cases where mortgage loan growth or real estate price growth is high, consistent with BBMs effectively smoothing the credit cycle.

Keywords: mortgages, credit standards, macroprudential policy, borrower-based measures
JEL classification: G21, G28, G51

Non-technical summary

Since the global financial crisis of 2008-09, many euro area countries have implemented borrower-based macroprudential measures, for example including limits on loan-to-value (LTV) ratios, debt-service-to-income (DSTI) ratios, or loan maturities. Such measures aim to strengthen borrower resilience and prevent excessively risky lending, particularly in the residential real estate sector. They are often calibrated as structural backstops, intended to be non-binding for the average borrower but constraining the most risky part of the mortgage distribution.

In this paper, we examine how these borrower-based measures (BBMs) have affected mortgage lending standards and credit terms & conditions in the implementing countries. For this purpose, we make use of the European Central Bank's Bank Lending Survey and a comprehensive data set containing detailed information on BBMs in 15 euro area countries. Our analysis differentiates between different types of BBMs, to assess whether there is heterogeneity across measures, and further investigates whether the effects depend on economic and banking sector conditions.

We find that the net percentage of banks reporting a tightening in credit standards or credit terms & conditions is significantly higher around BBM implementation, with the strongest effects occurring contemporaneously (i.e., in the quarter of implementation). The tightening effects tend to be more pronounced for policy packages involving limits on LTV ratios, which are also the most common in the euro area. In line with intuition, we also find that legally binding measures tend to exert a slightly stronger impact on credit standards and terms & conditions than measures that come in the form of recommendations from supervisory or macroprudential authorities.

Finally, our analysis shows that tightening of credit standards following BBM implementation tends to be more pronounced in cases where mortgage or house price growth was high (above 75^{th} percentile). The differential effects are consistent with the macroprudential objective of smoothing the credit cycle and confirm that BBMs can have a relatively strong impact on mortgage supply, as they impose direct constraints on certain borrowers. At the same time, more muted effects under depressed market conditions suggest that (properly calibrated) BBM implementation can go ahead even under more challenging conditions. A reason for this is that other factors (such as mortgage demand or interest rates) tend to be more important than BBMs in such times, while constraining overly risky lending remains a valid policy objective from a financial stability perspective.

1 Introduction

Borrower-based measures (BBMs) are an essential part of the macroprudential policy toolkit and among the most actively used instruments in the euro area. They include, for example, limits on loan-to-value ratios, debt-service-to-income ratios, or loan maturities, and are often employed to address risks in the residential real estate sector. Specifically, since the global financial crisis of 2008-09, many European countries have used these tools to strengthen borrower resilience and prevent excessively risky lending. In doing so, they often calibrated these measures as structural backstops, intended to be non-binding for the average borrower but constraining the most risky part of the mortgage distribution (see, e.g., Tereanu et al. 2022 or Durante et al. 2025).

Given their widespread use in recent years, a clear understanding of the impact of BBMs on mortgage lending is of vital importance for policy makers and academics alike. Considering their common role as structural backstops, targeting only the most risky borrowers, whether and how strongly BBM implementation affects overall credit standards as well as credit terms and conditions in the implementing countries is a priori unclear. At the same time, it is plausible that the impact depends on macro-financial conditions at the time of implementation, insofar as the macro-financial environment has an impact on the share of risky mortgages.[1] In this paper, we aim to shed light on these issues by making use of the European Central Bank's (ECB's) Bank Lending Survey (BLS) and a comprehensive data set containing detailed information on BBMs in 15 euro area countries. We employ this data to assess whether and how the implementation of BBMs has affected bank lending standards as well as credit terms and conditions. In doing so, we differentiate between different types of BBMs, to see whether there is heterogeneity across measures, and investigate whether the effects depend on economic and banking sector conditions.

We find that the net percentage of banks reporting a tightening in credit standards in the three quarters around BBM implementation is about 23 to 25 percentage points higher than in the average quarter. The strongest effect occurs contemporaneously, i.e., in the quarter of BBM tightening itself. Moreover, the net percentage of banks reporting a tightening in overall credit terms & and conditions is 11 to 12 percentage points higher around BBM implementation, and

[1] Mortgage lending standards typically tend to ease during real estate boom periods, as evidenced, for example, by the time period before the global financial crisis of 2008-09. As a result, the share of risky borrowers is likely to be higher during such times, which means that the implementation of an identical BBM will be more binding during such times, in the sense that it will exclude a larger share of mortgage applicants from the market.

similar effects are observed for individual sub-components of the latter (i.e., loan-to-value ratios, loan maturities, and other loan size limits). These effects correspond to roughly one standard deviation of the respective BLS variables, suggesting that they are meaningful also from an economic perspective.[2] Thus, according to the BLS, BBMs in the euro area had a sizable impact on lending standards at the time of implementation on average, despite their prominent role as structural backstops targeting only the most risky part of the mortgage distribution.

Differentiating between different types of BBMs, the tightening effects tend to be strongest for policy packages involving limits on loan-to-value ratios, which are also the most common in the euro area. This could either mean that limits on loan-to-value ratios exert a generally stronger impact on credit standards than limits on other metrics such as debt-service-to-income ratios or loan maturities, or that they tend to be calibrated more tightly than other types of measures (relative to the ex ante distribution of the underlying ratios in the respective countries). Indeed, among limits of loan-to-value ratios, we find that the effects tend to be somewhat stronger for more tightly calibrated measures. The reverse is true for limits on debt-service-to-income ratios, possibly also due to difficulties in measuring the stringency of such measures with precision.[3] In line with intuition, we also find that legally binding measures tend to exert a slightly stronger impact on credit standards and terms & conditions than measures that come in the form of recommendations from supervisory or macroprudential authorities.

Finally, our analysis shows that tightening of credit standards following BBM implementation tends to be more pronounced in cases where mortgage or house price growth was high (above 75^{th} percentile). The differential effects are consistent with the macroprudential objective of smoothing the credit cycle and confirm that BBMs can have a relatively strong impact on mortgage supply, as they impose direct constraints on certain borrowers (Tereanu et al. 2022). At the same time, more muted effects under depressed market conditions suggest that (properly calibrated) BBM implementation can go ahead even under more challenging macro-financial conditions. A reason for this is that other factors (such as mortgage demand or interest rates) tend to be more important than BBMs in such times, while constraining overly risky lending

[2] Unfortunately, assessing the overall economic relevance of the effects is complicated by the design of the BLS, which records only whether or not a specific bank tightens its credit standards, but not by how much.

[3] Specifically, while we have information on the applicable quantitative limits, we lack granular time series information on the distribution of lending standards in each country, which would be needed for measuring the "tightness" of a specific measure with precision. The analysis is further complicated by differences in definitions across countries, and a widespread application of exemptions from the quantitative limits, the calibration of which varies across countries (see Appendix Table B.1 for an overview and Section 2.2 for further discussion).

remains a valid policy objective from a financial stability perspective.

Our paper contributes to a growing literature on the effects of borrower-based macroprudential policies on credit and housing markets as well as overall economic outcomes (for recent surveys, see Galati and Moessner 2018, Biljanovska et al. 2023, or Malovaná et al. 2024). Cross-country studies typically rely on aggregate data and tend to find moderate negative effects of the policies on credit and house price growth (Kuttner and Shim 2016, Akinci and Olmstead-Rumsey 2018, Alam et al. 2019, Morgan et al. 2019, Richter et al. 2019). These findings are confirmed by studies looking at individual countries in more detail (Igan and Kang 2011, Krznar and Morsink 2014, Defusco et al. 2019, Tzur-Ilan 2023), which also found distributional effects of BBMs (Peydró et al. 2023). We contribute to this literature by examining whether and how banks' adjust their credit standards and credit terms and conditions in response to BBMs, thus shedding light on the transmission channels of previously documented effects on credit growth. By relying on survey data asking specifically about adjustments in banks' behaviour, we complement other recent literature examining the transmission channels with granular, loan-level data (Acharya et al. 2022, Dirma and Karmelavičius 2023, Epure et al. 2023).[4]

Besides, we also add to the literature on bank lending standards. Deterioration of mortgage lending standards in the early 2000's has been identified as one of the root causes of the global financial crisis starting in 2008 (Mian and Sufi 2009, Keys et al. 2010, Dell'Ariccia et al. 2012, Adelino et al. 2016). More generally, banks' lending standards have been found to be important determinants of broader macroeconomic outcomes and future financial stability (Dell'Ariccia and Marquez 2006, Carlos Hatchondo et al. 2015). Given the difficulty in directly observing lending standards for mortgage loans, several papers make use of survey data, such as the Federal Reserve's Loan Officer Opinion Survey (Bassett et al. 2014, Vojtech et al. 2020). We add to this literature by providing further evidence from the euro area, making use of the Eurosystem's BLS, and putting particular focus on the role of BBMs in determining lending standards.

Finally, we also contribute to a broader empirical literature on regulation and mortgage lending. Starting with Hancock and Wilcox (1993, 1994), several papers have examined the impact of bank capital (requirements) on banks' mortgage lending behaviour. Although granular data on mortgage lending is scarcer than for corporate credit, several recent studies have used loan-level

[4] Another recent paper relying on survey data is the one by Fuster and Zafar (2021), which uses household survey data to examine the sensitivity of housing demand to mortgage rates and available leverage.

data from individual jurisdictions to examine the effects of changes in capital requirements on mortgage volumes and riskiness (Behncke 2023), interest rates (Basten 2019), or the overall composition of credit (Auer et al. 2022). There are also a number of recent studies that have looked into the impact on mortgage lending of capital relief measures provided during the pandemic (Dursun-de Neef et al. 2023, Mathur et al. 2023), and into the role of policy uncertainty (Gissler et al. 2016, Kara and Yook 2023). Our findings confirm that regulatory factors are important determinants of mortgage growth, e.g. via their impact on lending standards.

The remainder of this paper is organised as follows. In the next section, we describe our data set and provide an overview on BBMs implemented in the Banking Union since the global financial crisis. Thereafter, we describe our estimation strategy in Section 3 and present the results in Section 4. Finally, Section 5 concludes.

2 Data and descriptive statistics

2.1 ECB's Bank Lending Survey

Our first source of information is the Eurosystem's Bank Lending Survey (BLS). The BLS is a quarterly survey that is conducted among euro area banks since 2003. It provides a timely assessment of bank lending conditions in the euro area, thus informing the conduct of the ECB's monetary policy (see Berg et al. 2005 or Köhler-Ulbrich et al. 2016 for a description).[5] The survey is addressed to senior loan officers at a representative sample of around 150 banks from all euro area countries. It includes questions on the supply of, and demand for, loans to enterprises and households, and has been found to be a significant leading indicator for euro area bank credit and real GDP growth (see, e.g., de Bondt et al. 2010, Van der Veer and Hoeberichts 2016). The survey is usually conducted towards the end of a quarter and asks loan officers about changes in lending conditions in the past three months, and expectations for the subsequent three months.

Our primary interest in the BLS is in the questions that concern financing conditions for mortgage loans (for a detailed description, see Appendix A). Following common practice for analyses of the survey responses, we calculate the net percentage of banks reporting a tightening in overall credit standards or overall credit terms and conditions for mortgage loans in a specific

[5]Further information and the latest results are also provided on the ECB's website.

country-year.[6] In addition, we also observe the net percentage of banks reporting a tightening in the terms and conditions for loan-to-value ratios, loan maturities, and other loan size limits. Net percentages vary between −100 percent (referring to a situation where all banks report an easing) and +100 percent (referring to a situation where all banks report a tightening).

Descriptive statistics for these net percentages are reported in Table 1, Panel A. Average values are slightly positive for all variables, in particular overall credit standards and loan-to-value ratios. This indicates a slight tendency for banks to tighten mortgage lending standards during our sample period from 2009-Q1 to 2023-Q3, although the statistics for all variables exhibit considerable variation. Showing the evolution of the variables over time, Figure 1 confirms a slight tightening bias, but also illustrates that our sample period comprises both periods with an easing and periods with a tightening of credit standards and credit terms and conditions. Finally, Panel A of Table 2 reports correlation coefficients between the different variables. Not surprisingly, the coefficients are positive in all cases, indicating that the direction of tightening or easing tends to be the same across different types of loan standards and terms & conditions.

2.2 Borrower-based measures in the euro area

We complement the data from the BLS with detailed information on borrower-based measures (BBMs) in the euro area. Such measures are usually implemented by authorities to improve borrower resilience, and thereby bank resilience. Specifically, income-based BBMs can help to reduce the probability of default of mortgage loans, while collateral-based BBMs can help to contain losses given default.[7] The number of euro area countries applying BBMs almost tripled in the last ten years, illustrating that they have become an essential part of the macroprudential policy toolkit. Many countries apply them in a structural manner, i.e., they keep the measures in place over the entire cycle, targeting the most risky part of the borrower distribution, with limited adjustments to avoid unwarranted bindingness when necessary (see Durante et al. 2025 for

[6] More specifically, the net percentage is calculated as the difference between the sum of the percentages of banks responding "tightened considerably" and "tightened somewhat" and the sum of the percentages of banks responding "eased somewhat" and "eased considerably". See, e.g., ECB (2024) for the same type of approach.

[7] The fact that BBMs help to reduce household risk is well-established in the literature (see, e.g., the papers by Gross and Población 2017 or Giannoulakis et al. 2023 and the references cited therein).

further discussion).[8] The data is sourced from ECB-internal data bases and includes information on all BBMs implemented since 2009 in 15 euro area countries. It captures various types of BBMs, including limits on loan-to-value (LTV), debt-service-to-income (DSTI), and debt-to-income (DTI) ratios as well as limits on loan maturities (see Appendix Table B.1 for an overview of the measures, and Figure 2 for distributional characteristics of their calibration).

Based on the BBM data, we construct several indicator variables that we then use in the regression analysis to gauge the impact of BBM implementation on bank lending standards. For defining the dummy variables, we focus either on all BBMs, differentiate by type of measure (i.e., LTV, DSTI, DTI, or maturity limits), or differentiate by their legal status (i.e., legally binding measures vs. non-binding recommendations from relevant authorities). The indicator variables are set to one in the three quarters around BBM implementation (i.e., from the quarter ahead until the quarter after implementation), and to zero otherwise. In this manner, we account for possible anticipatory or lagged effects, since the measures are usually announced some time in advance and may also take some time to become fully effective.[9]

Descriptive statistics for the dummy variables are provided in Table 1, Panel B. The indicator $D(BBM)$, capturing the implementation of any type of BBM, is equal to one for aroung 5.1 percent of the observations in the sample. Not surprisingly, the value is a bit lower for the remaining dummies, since they are referring to subsets of the former. Moreover, Panel B of Table 2 shows that there is considerable correlation between different dummy variables, in line with the observation from Appendix Table B.1 that measures tend to be implemented in packages.[10]

To get a first impression of the impact of BBMs, Figure 3 plots the evolution of the net percentage of banks reporting a tightening in credit standards (left) or credit terms and conditions (right), aligning the observations around the time of BBM implementation. The figure clearly shows an upward shift in the whole distribution of the respective variables around BBM implementation. For example, the median for the net percentage of banks reporting a tightening in credit standards increases from around 10 percent in the quarter ahead of BBM implementation

[8] As noted by Durante et al. (2025), besides its financial stability benefits, structural use of BBMs can also have social benefits, as it can help to *"avoid a situation in which too many borrowers simultaneously face restricted access to housing credit [when BBMs are implemented] during upturns."* As we will show in Section 4.4, the impact of BBM implementation indeed depends on macro-financial conditions at the time of implementation, and is more constraining during real estate boom periods, supporting the line of argument in Durante et al. (2025).

[9] Notably, all our results are robust when defining the dummeis such that they consider only contemporaneous effects. For further discussion and analysis, see Section 4.1.

[10] We formally examine the implications of joint implementation of measures in Section 4.2 of the paper.

to around 50 percent in the quarter of implementation, while the mean increases from around 10 percent to around 40 percent. While it is difficult to make statements about the economic implications of these effects, given the qualitative nature of the survey data, the patterns suggest a meaningful impact of BBMs on banks' lending behaviour. To be clear, for now this analysis is purely descriptive and does not control for confounding factors that could be driving the evolution of lending standards. Our regression analysis in Section 4 formally addresses this issue.

Of course, the impact of BBMs on lending standards is likely to depend on the "tightness" of the measures, i.e., the number of borrowers affected by the measures and the degree to which they are affected. However, measuring the tightness of a specific limit on lending standards is complicated by several practical challenges. First, the definition of lending standards differs substantially across countries, so that limits imposed on the respective metrics are not directly comparable (see, e.g., European Central Bank 2022). Second, also the design of measures differs across countries (see, e.g., Durante et al. 2025), where in particular the diverging interplay between the level of the quantitative limits and the use of exemption quotas (allowing banks to grant a certain fraction of loans with lending standards exceeding the limit) makes it very difficult to directly compare the tightness of different measures.[11] Finally, the tightness of measures depends not only on the level of the quantitative limits, but also on the country-specific distribution of the underlying lending standards, which is again very heterogeneous across countries and not available in a coherent data set (see, e.g., Lang et al. 2020).

Taking note of all these challenges, and in line with the vast majority of empirical studies (see, e.g., the corresponding discussion in the meta analysis by Araujo et al. 2020), our baseline empirical analysis relies on dummy variables reflecting the introduction of BBMs, rather than continuous variables capturing also the strength of the implemented measures. Still, in complementary analysis we also employ an ECB-ESRB internal data collection on lending standards to calculate the share of new lending above the respective limits imposed by BBMs, thus obtaining

[11] For example, some countries couple relatively low quantitative limits with relatively high exemption quotas, while others impose relatively high quantitative limits coupled with relatively low or no exemption quotas (see Table B.1). It is difficult to say which type of measure is more constraining for banks and borrowers. Other relevant differences in the design of measures relate to the use of either current or stressed lending standards for the definition of the limits, or to the use of differentiated limits for different borrower groups (e.g., first-time buyers). All these design elements have an impact on the tightness of a measure.

a proxy for the tightness of the measures.[12] As we do not have data for all countries going back to the date in which the respective measures were introduced, we need to rely on data from 2022 as the first year in which this data is available for all countries with limits in place. This implies that our variable describes the tightness of measures in 2022 rather than the tightness at the time of implementation, which is certainly a shortcoming but impossible to overcome given the lack of data. Using this data, we classify measures as "tighter" if the share of lending above the limit in 2022 is higher than for the median country in our sample [and as "looser" if the share is below the median], and interact the resulting dummy variables with the BBM implementation dummy in our regression setup (see Section 3).[13]

2.3 Macroeconomic and banking sector variables

Our final source of information is the ECB-internal macroprudential policy data base, which includes information on macro-financial variables from various data sources. Specifically, we obtain information on the change in the ratio of household credit to gross domestic product (GDP), equity price growth, GDP growth, consumer price index (CPI) inflation, the change in the loan-to-deposit ratio, the change in the long-term interest rate, mortgage loan growth, residential real estate price growth, and the changes in banks' non-performing loans ratio, return on assets, tier 1 capital ratio, as well as a Herfindahl index of banking sector assets to proxy for banking sector concentration. All variables are measured at the country-year level, where changes and growth rates are defined with respect to the previous quarter. Descriptive statistics are reported in Panel C of Table 1.

[12] The ESRB and ECB collect data on mortgage lending standards through a questionnaire distributed to national authorities on a bi-annual basis. This questionnaire aims to collect data on new residential real estate (RRE) loans on a best-effort basis, using information which is available to the national authorities. It provides data on the volume of new lending, categorized by various lending standards—such as LTV, DSTI, LTI, and maturity—organized into buckets and reported on both an annual and semi-annual basis.

[13] As noted above, it is often the case that national authorities allow banks the possibility to grant a specific share of lending above the established limits, to avoid that the measures are overly constraining. If there is a high share of lending making use of this exemption, we regard this as an indication that the limit is "tighter".

3 Estimation strategy

To estimate how the implementation of BBMs affected credit standards and credit terms and conditions in euro area countries, we estimate panel data models of the following type:

$$Y_{c,t} = \alpha_c + \alpha_t + \beta D(BBM)_{c,t} + X'_{c,t-1}\gamma + \epsilon_{c,t}, \tag{1}$$

where c denotes the country and t denotes the quarter. The dependent variable, $Y_{c,t}$, is the net percentage of banks that reports a tightening in either overall credit standards, credit terms and conditions, loan-to-value ratios, maturities, or other size limits (see Section 2.1 and Appendix A for further details). Our main variable of interest is $D(BBM)_{c,t}$, which is a dummy variable that equals one in the three quarters around BBM implementation (i.e., from the quarter ahead of implementation until the quarter after implementation; see Section 2.2). In alternative specifications, we replace $D(BBM)_{c,t}$ with dummy variables indicating specific types of BBMs, or further differentiate between anticipatory, contemporaneous and lagged effects, by including separate dummy variables for the five quarter around implementation. In any case, a positive coefficient for β would indicate that BBM implementation implies a tightening in financing conditions. The vector $X'_{c,t-1}$ includes additional macro-financial and banking sector control variables that are described in Section 2.3. These variables are lagged by one quarter in the regression analysis, to account for possible endogeneity concerns.[14] Furthermore, the equation includes country and quarter fixed effects, α_c and α_t, which systematically control for both observed and unobserved heterogeneity across countries and over time. Finally, $\epsilon_{c,t}$ is a random error term.

Equation (1) allows to assess the measures' average effect on financing conditions. Furthermore, by altering the variable of interest accordingly, we can use the equation to analyse whether effects are stronger (or weaker) for specific types of BBMs (e.g., limits on loan-to-value or debt-service to income ratios). To further assess whether the effects of BBMs depend on certain characteristics of the economy or the banking sector, we amend the equation as follows:

$$Y_{c,t} = \alpha_c + \alpha_t + \beta D(BBM)_{c,t} + \delta[D(BBM)_{c,t} \times Char_{c,t}] + \zeta Char_{c,t} + X'_{c,t-1}\gamma + \epsilon_{c,t} \tag{2}$$

[14] The BLS is conducted towards the end of a quarter and asks about the evolution of credit standards and loan terms and conditions over the past three months. Hence, lagging the control variables by one quarter strikes a good balance between addressing potential endogeneity concerns while ensuring that the macro-financial information is still relevant for informing banks' lending decisions as recorded in the BLS.

Most of the variables in Equation (2) are defined as above. Additionally, $Char_{c,t}$ is a dummy variable that indicates whether certain economic, banking sector or measure-specific variables are above or below specific thresholds of their respective distributions. Thus, a positive coefficient for δ would indicate that a potential tightening of financing conditions following BBM implementation is more pronounced if the respective condition is met.

4 Empirical results

4.1 Baseline impact of BBM implementation

We start the analysis by assessing the impact of BBMs on banks' overall credit standards. As further explained in Appendix A, credit standards refer to the the internal guidelines or loan approval criteria of a bank, applied to both new loans and refinancing of existing loans. As shown in Table 3, the majority of banks reports a tightening of credit standards around BBM implementation. Specifically, the net percentage of banks reporting a tightening of credit standards in the three quarters around BBM implementation is around 23 to 25 percentage points higher than in the average quarter. This roughly corresponds to exactly one standard deviation of the variable (Table 1, Panel A), suggesting that the effect is highly significant also from an economic perspective. Moreover, the regression coefficient for $D(BBM)$ is remarkably stable in terms of magnitude and statistical significance across the various specifications, including when adding quarter fixed effects (column 2), country fixed effects (column 3), macroeconomic control variables (column 4), and banking sector control variables (column 5).

Table 3 further shows that the bulk of the variation in credit standards is explained by quarter fixed effects, indicating a strong common component that is driving the standards across euro area banks, possibly linked to the common monetary policy. In addition, most of the macroeconomic and banking sector control variables have the expected sign, although only some of them are statistically significant, possibly because the quarter fixed effects already pick up a lot of the variation. Notably, changes in the ratio of household credit to GDP have a strongly significant impact on credit standards: a one percentage point increase in the ratio, roughly corresponding to the variable's standard deviation (Table 1, Panel C), is associated with a four percentage point higher percentage of banks reporting a tightening. Similarly, changes in the loan-to-deposit ratio exert a statistically significant effect on credit standards, with a 3.2 percentage point (i.e., one standard deviation) increase in the ratio being associated with a 1.4 percentage point increase in the fraction of banks reporting a tightening. A positive interpretation of these findings could be that banks have become more cautious with respect to an excessive loosening of credit standards in booming credit markets, thus following up on one of the key lessons learnt from the global financial crisis (Mian and Sufi 2009, Keys et al. 2010, Dell'Ariccia et al. 2012, Adelino et al. 2016). It could also be that lending standards are looser on average when credit growth is high, so that there is greater scope and need to eventually tighten the standards again. By contrast, GDP growth exhibits a negative coefficient, statistically significant in column 4, indicating that lending standards still tend to become looser when economic conditions are good.

In Table 4, we analyse the impact of BBMs on banks' overall credit terms & conditions, following the same methodology as before. As further explained in Appendix A, credit terms & conditions refer to the conditions of new or refinanced loans that the bank has actually approved (i.e., loans that it has actually granted). They include, e.g., the interest rate or other loan charges, loan size, access conditions, collateral or guarantees that the borrower needs to provide, loan covenants, or agreed maturity. The results in Table 4 show that banks tend to tighten their overall credit terms & conditions around BBM implementation, where once again the regression coefficient is robust and very stable across the various specifications. The increase in the net percentage of banks reporting a tightening in credit terms & conditions varies between 11 and 13 percent, corresponding to roughly 75 percent of the variable's standard deviation (Table 1, Panel A) and thus constituting an economically meaningful effect. Again, the control variables mostly exhibit the expected sign, with statistically significant effects being observed for equity price growth, changes in bank profitability, and changes in long-term interest rates. In particular the latter effect is rather intuitive, since mortgage loans are long-term assets for which interest rates should go up when overall market rates increase.

In Tables 5 to 7, we break down overall credit terms & conditions into individual components for which banks also report their adjustment via the BLS. Specifically, this comprises adjustments in loan-to-value ratios (Table 5; with a tightening referring to a situation where banks are willing to grant smaller loans on any given value of collateral), loan maturities (Table 6; with a tightening referring to a shortening of maturities), and other loan size limits (Table 7; with loan-to-income ratios being an example and a tightening referring to a situation where banks are willing to grant smaller loans for any given borrower income). In all cases, BBM implementation is associated with a statistically and economically significant tightening in the respective credit terms, with the strongest effect occurring for loan-to-value ratios. A possible explanation for this is that many BBMs are in the form of restrictions on loan-to-value ratios (recall Appendix Table B.1 and see the next subsection for further analysis differentiating by type of measure). Besides the policy variables, macroeconomic and banking sector control variables continue to show the expected sign in most cases, with statistically significant effects being observed in some cases.

To conclude the baseline analysis, we further investigate the time profile of the tightening in credit standards around BBM implementation. Specifically, instead of a single dummy variable, we include five individual dummies to estimate dynamic treatment effects in the five quarters around the policy measures. Results for these regressions, using our five different dependent variables, are reported in Table 8. In most cases, the strongest effect of the policy measures occurs contemporaneously, i.e., in the quarter of BBM implementation. For the case of overall credit standards, we find a statistically significant tightening also in the period ahead of formal implementation, indicating that banks start to adjust their loan approval criteria already some time in advance. This is perhaps non-surprising, since policy measures tend to be announced well in advance and it usually takes some time from loan approval until the signing of the loan contract. We observe anticipatory effects also for overall credit terms & conditions and lagged effects for some of its sub-components. Overall, the results in Table 8 justify our decision to set the main variable of interest, $D(BBM)$, to one in the three quarters around BBM implementation, since these are the quarters where we observe the strongest effects. Nevertheless, we also conducted robustness checks focusing only on the quarter of BBM implementation, and found overall consistent results.

4.2 Differentiation by type of measure

Thus far, we have looked at the effects on credit standards and credit terms & conditions of BBM implementation in general. However, as shown in Appendix Table B.1, euro area countries have implemented different types of BBMs during our sample period, ranging from collateral-based LTV limits and income-based DSTI or DTI restrictions to limits on loan maturities. Moreover, different measures have been often combined to capture the various lending standards dimensions in a comprehensive manner. Therefore, in a second step, we now examine whether BBM impact on credit conditions varies by type of measure.

Results for overall credit standards are presented in Table 9. In columns 1 to 4, we sequentially include dummy variables equal to one in the quarters around implementation of limits on LTV ratios, DSTI ratios, LTI ratios, or loan maturities, respectively. We find a statistically significant and economically sizable tightening of credit standards for all types of measures, where this effect tends to be largest for LTV and LTI limits.[15] Of course, the latter result should be interpreted with caution, since the analysis relies exclusively on the use of dummy variables and does not account for the calibration of measures (see Section 4.3 below for further discussion). For example, a stronger effect for LTV limits could either imply that such measures tend to have a stronger general impact on credit standards, or that they tend to be calibrated more tightly than other types of measures (relative to the ex ante distribution of the underlying ratios in the respective countries).

In column 5 of Table 9, we include all four dummy variables in a single regression and confirm that limits on LTV ratios tend to have the strongest tightening effect on credit standards. The negative coefficient for limits on DSTI ratios is surprising, but likely due to multicollinearity between the different dummy variables, as BBMs are often implemented in packages (recall Table B.1 and the correlation coefficients reported in Table 2, Panel B). To investigate this issue in more detail, column 6 includes dummy variables indicating all mutually exclusive cases of individual instruments or instrument combinations that were implemented during our sample period. In this corrected regression, none of the variables exerts a loosening impact on credit standards (as expected), and, apart from the single LTI solo case, instrument packages involving a limit on LTV ratios generally exert the strongest impact on lending standards, as before.

In Table 10, we repeat the estimation of Table 9, column 6, this time using the different variables on credit terms & conditions as dependent variables. For overall terms & conditions, most of the dummies tend to have a positive sign but are statistically insignficant, likely due to a loss of statistical power associated with the smaller sample size for this variable. In the remaining columns, we see the expected tightening of loan-to-value limits, maturity limits, and other size limits in most of the cases of BBM implementation. While the table includes a few cases with statistically significant negative coefficients, we would not want to overinterpret these

[15] LTI results should be interpreted with caution as the sample includes only three such limits (Table B.1).

results, since they are often based on a small number of observations.

Separately, we differentiate measures by their legal status, distinguishing between measures that are legally binding for banks and measures that come in the form of recommendations from supervisory or macroprudential authorities.[16] Results for these tests using our various dependent variables are presented in Table 11. In all cases, the coefficients for legally binding measures are larger in magnitude than the coefficients for recommendations. As indicated by the Wald test reported at the bottom of the table, the difference in coefficients is statistically significant in one of the cases and close to statistical significance in one additional case. Overall, this points towards a slightly stronger effect on lending standards of legally binding measures, although the difference relative to recommendations does not seem to be that pronounced.

4.3 Stringency of measures

Next we turn to the analysis on the tightness of measures, which is subject to the caveats discussed in Section 2.2. We focus on LTV and DSTI limits for this part of the analysis, as they are the most widely adopted type of limits in our sample of countries. It is often the case that national authorities allow banks the possibility to grant a specific share of lending above the established limits, in order to facilitate access to the housing market for specific segments of population, e.g. first time buyers (see Table B.1). We classify measures as "tighter" if the share of lending above the limit is higher than for the median country in our sample [and as "looser" if the share is below the median], following the logic that there is a larger share of borrowers that could be potentially affected by the measures in the former case (see Section 2.2).[17]

The results in Table 12 show that tighter LTV limits generally tend to induce a stronger tightening of credit standards, as coefficients estimates tend to be larger and more statistically significant for the group of countries with a high share of lending above the limit. However, the result is not very stable, and it tends to be the reverse for DSTI limits, for which coefficients are larger for the group of countries with relatively lower lending above the limits. These overall

[16] In contrast to the capital buffer framework, the regulation of borrower-based measures is not harmonised in the EU. For this reason the process of BBM implementation and the tools available to the relevant authorities differ across countries, including with respect to the possibility for authorities to implement legally binding measures.

[17] This is clearly an imperfect measure of stringency, as we do not observe the fraction of potential borrowers that would have liked to obtain a mortgage but were cut off by the limits. This imperfection may also explain why some of the results reported below appear to be counterintuitive. However, given a lack of granular data, including on loan applications, it is very difficult to overcome this challenge, unfortunately.

inconclusive results underscore the issues around analysing the stringency of the measures across countries, and of estimating the associated impact on credit standards of tighter/looser limits, which remains an issue to be analysed further with more granular data in the future.

4.4 Relevance of economic and banking sector conditions

Our analysis up until now has shown that, on average, mortgage lending standards and terms & conditions are strongly tightened around BBM implementation. However, previous literature suggests that the effects of BBMs may be non-linear, e.g. depending on the conditions in the banking sector or the broader economy (Morgan et al. 2019). Therefore, to test for such non-linearities, we interact the BBM indicator with several of our control variables.

Results using overall credit standards as a dependent variable are reported in Table 13. Column 1 shows that the tightening of credit standards following BBM implementation tends to be more pronounced when mortgage loan growth was high (above the 75^{th} percentile) in the quarter ahead of BBM implementation. One possible interpreation for this could be that lending standards are looser on average when mortgage growth is strong, consistent with the experience from the period before the global financial crisis, so that any given BBM is more binding and thus more likely to constrain certain borrowers when implemented in such booming mortgage markets. We do not find any differential effects for periods of low mortgage growth (below 25^{th} percentile; see column 2), but observe consistent patterns when looking at real estate price growth instead of mortgage loan growth in the interaction term. Specifically, the tightening of credit standards tends to be considerably more pronounced in periods where RRE price growth is high, and considerably less pronounced in periods where it is low (columns 3 and 4).

The differential effects are highly significant from an economic perspective and suggest that the timing of BBMs has a strong impact on the degree of tightening in credit standards, where the stronger impact in boom times is consistent with the macroprudential objective of smoothing the credit cycle. In addition, the more muted impact under depressed conditions suggests that other factors may be more important in determining mortgage lending in such times. This suggests that properly calibrated BBMs can still be implemented and should generally be maintained also under less favourable conditions, to serve as structural backstops preserving sound lending standards in all stages of the cycle (Tereanu et al. 2022, Behn and Lang 2023).[18]

5 Conclusion

In this paper, we have examined how borrower-based macroprudential measures implemented in the period from 2009-Q1 to 2023-Q3 have affected banks' mortgage lending standards and credit terms & conditions in 15 euro area countries. We have observed a general tightening of credit conditions around BBM implementation, with the strongest effects occuring contemporaneously and for policy packages involving limits on LTV ratios. We have also documented that legally binding measures seem to have slightly stronger effects that non-binding recommendations, and that tightening was more [less] pronounced in cases where mortgage loan growth or real estate price growth were high [low] ahead of implementation of the measures.

On the one hand, this implies that besides increasing borrower resilience BBMs can also help to tame the upswing of the credit cycle, by constraining overly risky lending in booming mortgage markets, thus addressing one of the key lessons learnt from the global financial crisis (Mian and Sufi 2009, Keys et al. 2010, Dell'Ariccia et al. 2012, Adelino et al. 2016). On the other hand, more muted effects under depressed market conditions suggest that properly calibrated BBMs can still be implemented and should generally be maintained also under less favourable conditions, to serve as structural backstops preserving sound lending standards in all stages of the cycle (Tereanu et al. 2022, Behn and Lang 2023, Durante et al. 2025). Such a structural use of BBMs can also help to address potential social acceptance problems during economic upturns, where BBM implementation tends to be particularly constraining (according to our results) and may thus restrict market access for many borrowers simultaneously.

Overall, our findings confirm the notion that BBMs can be expected to have somewhat stronger effects on mortgage lending than capital-based measures, as they directly constrain lending to certain borrowers. Specifically, our results document a significant net tightening in credit standards following the introduction of BBMs. This, in turn, has a direct impact on bank lending as borrowers might face harsher conditions to obtain a loan following the implementation

[18] In unreported regressions, we also tested whether BBM implementation had a differential effect depending on banking sector conditions (i.e., capital ratios and profitability), but did not obtain any statistically significant results. This is rather intuitive, since the measures mainly work on lending composition and do not exert a direct effect on bank balance sheet constraints.

of BBMs. Indeed, previous literature established that credit standards data from the BLS has leading properties for the evolution of lending (see, e.g., de Bondt et al. 2010). By contrast, while capital-based measures increase resilience and enhance banks' capacity to absorb shocks, they are unlikely to have a major dampening effect on lending and/or real estate (or other) vulnerabilities during the upswing phase of a financial cycle. Specifically, recent empirical and theoretical evidence shows that the effects of higher capital requirements are very modest when banking sector and/or economic conditions are favourable (see, e.g., Couaillier 2021, Lang and Menno 2023, Behn et al. 2024, Behn et al. 2025).

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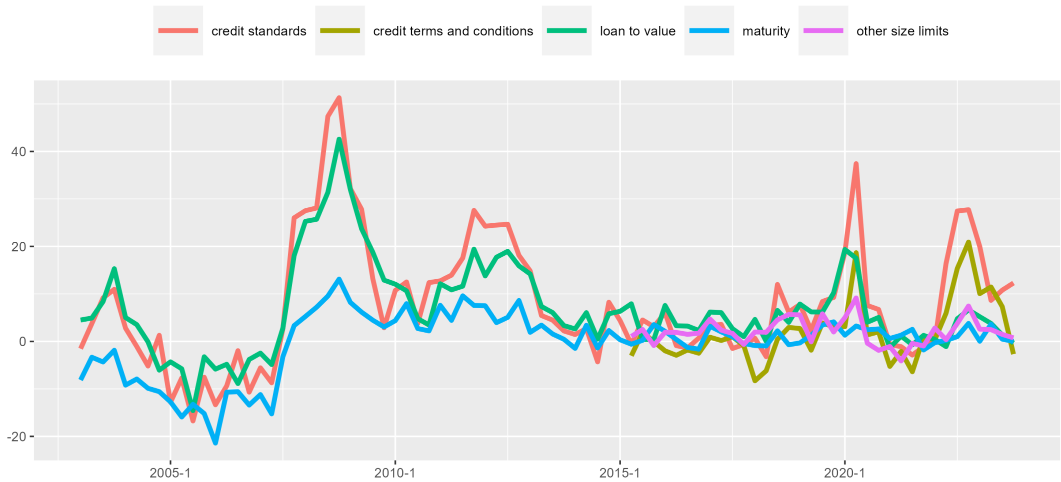
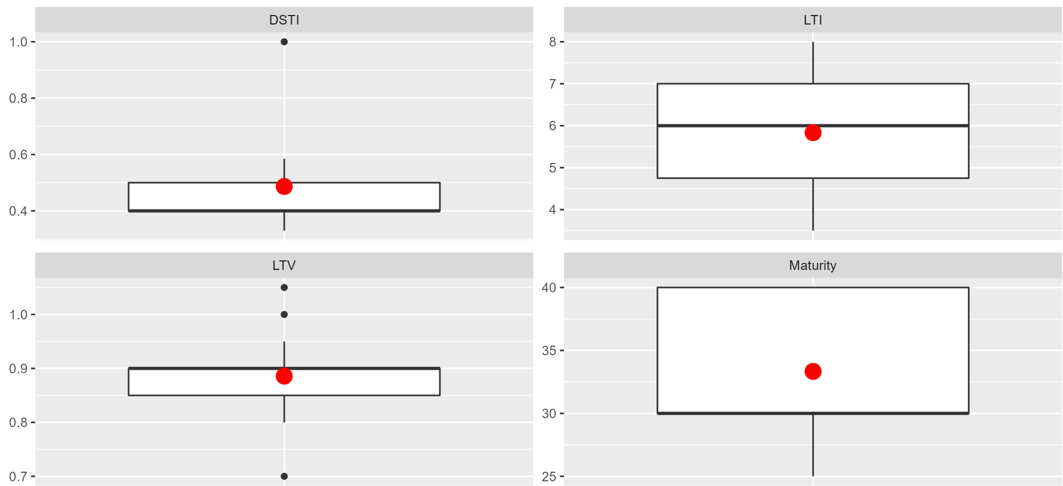
Figures & Tables

Figure 1: Evolution of credit standards and terms & conditions over the sample period



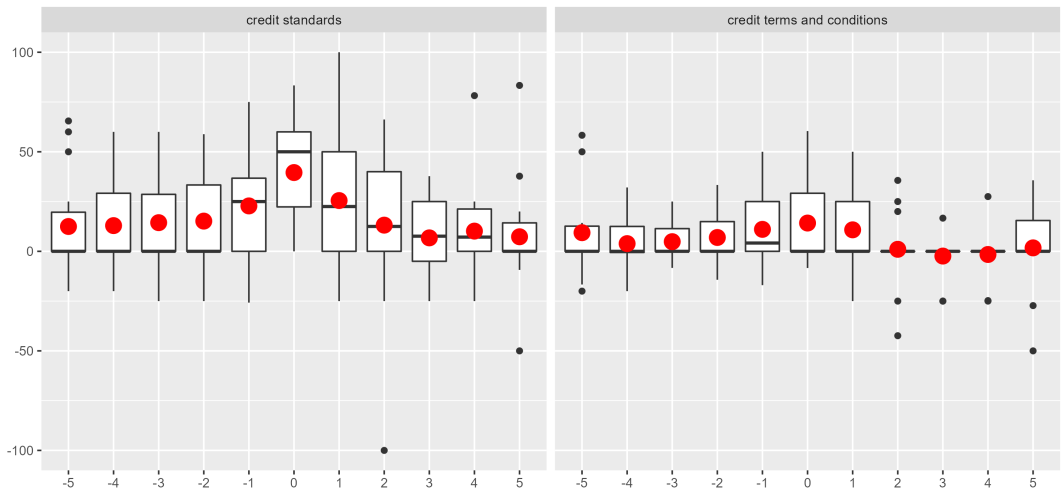
Note: This figure shows the evolution of our main dependent variables over the sample horizon. The value in each quarter refers to the average value of the respective variable across all countries in the sample.

Figure 2: Calibration of BBMs across countries



Note: This figure shows the calibration across countries of the limits imposed under the different type of BBMs considered in this analysis. The box plots represent the interquartile range (IQR) and the dark horizontal line inside the box shows the median value. The red dots depict the average value. The upper and lower whiskers extend to the furthest data points within 1.5 times the IQR from the hinges (quartiles). Values beyond these whiskers are considered outliers and are shown as individual points. The y-axis is measured in decimal numbers for DSTI and LTV, in multiples of income for LTI and in years for maturity limits. When countries introduced multiple limits according to the type of borrower, the analysis always considers limits applicable to first time buyers as this is typically the largest lending segment. In addition, the chart focuses on the main limits and does not consider the role of exemptions, by which countries allow banks to extend a certain fraction of mortgage loans with lending standards above the limits (see Table B.1 for details).

Figure 3: Credit standards and terms & conditions around BBM implementation



Note: This figure shows the evolution of credit standards (left) and credit terms & conditions (right) around the implementation of borrower-based measures (BBMs). The box plots represent the interquartile range (IQR) and the dark horizontal line inside the box shows the median value. The red dots depict the average value. The upper and lower whiskers extend to the furthest data points within 1.5 times the IQR from the hinges (quartiles). Values beyond these whiskers are considered outliers and are shown as individual points. The x-axis is measured in quarters, with 0 indicating the time of BBM implementation. The y-axis is measured in net percentages, corresponding to the percentage of banks reporting a tightening minus the percentage of banks reporting a loosening of the respective item.

Table 1: Descriptive statistics

	(1) N	(2) mean	(3) sd	(4) min	(5) max
Panel A: credit standards and credit terms & conditions (dependent variables)					
overall credit standards	924	8.236	25.338	-100.0	100.0
credit terms and conditions	568	0.676	16.747	-84.3	92.6
loan to value	924	6.945	18.951	-75.0	100.0
maturity	924	2.206	10.458	-33.3	80.0
other size limits	568	1.927	11.281	-45.2	72.8
Panel B: borrower-based measures (indicator variables)					
D(BBM)	924	0.051	0.220	0.0	1.0
D(LTV)	924	0.040	0.196	0.0	1.0
D(DSTI)	924	0.029	0.169	0.0	1.0
D(LTI)	924	0.010	0.098	0.0	1.0
D(MAT)	924	0.026	0.159	0.0	1.0
D(LEG)	924	0.030	0.172	0.0	1.0
D(REG)	924	0.021	0.142	0.0	1.0
Panel C: macroeconomic and banking sector variables					
Δ HH credit to GDP t-1	924	-0.118	0.943	-8.5	6.8
Equity price growth t-1	924	0.912	9.471	-33.1	49.1
GDP growth t-1	924	1.062	6.182	-15.1	26.3
CPI inflation t-1	924	0.539	1.334	-4.9	9.0
Δ Loan to deposit ratio t-1	924	-0.827	3.199	-19.6	22.1
Δ Long term interest rate t-1	924	-0.029	0.736	-7.5	7.7
Mortgage growth t-1	924	0.919	1.573	-10.2	9.0
RRE price growth t-1	924	0.906	2.126	-11.4	9.9
Δ NPL ratio t-1	924	-0.042	0.906	-8.4	9.2
Δ RoA t-1	924	0.000	0.432	-3.5	4.2
Δ Tier 1 ratio t-1	924	0.140	1.404	-14.5	14.4
Herfindahl index banking assets t-1	924	0.13	0.08	.02	0.39

Notes: The table shows descriptive statistics for the main variables used in our analysis. Panel A shows statistics on the net percentage of banks reporting a tightening of credit standards or credit terms & conditions in the respective country-quarter, obtained from the ECB's Bank Lending Survey. Panel B shows statistics for dummy variables indicating the implementation of a borrower-based measure in the respective country-quarter, set to one in the three quarters around implementation (i.e., from the quarter ahead until the quarter after BBM implementation) and to zero otherwise. Panel C shows statistics for a range of macroeconomic and banking sector variables that are used as explanatory variables in the regression analysis.

Table 2: Correlation matrices

Panel A: credit standards and credit terms & conditions (dependent variables)					
	overall credit standards	credit terms & conditions	loan to value	maturity	other size limits
overall credit standards	1				
credit terms & conditions	0.5957	1			
loan to value	0.5813	0.4367	1		
maturity	0.3547	0.4401	0.2604	1	
other size limits	0.5131	0.4263	0.4599	0.3427	1

Panel B: borrower-based measures (indicator variables)							
	D(BBM)	D(LTV)	D(DSTI)	D(LTI)	D(MAT)	D(LEG)	D(REG)
D(BBM)	1						
D(LTV)	0.8822	1					
D(DSTI)	0.7494	0.62	1				
D(LTI)	0.4284	0.1484	0.1791	1			
D(MAT)	0.7054	0.5566	0.82	0.1916	1		
D(LEG)	0.7636	0.6723	0.4192	0.561	0.4474	1	
D(REG)	0.6259	0.5539	0.654	-0.0144	0.5517	-0.0256	1

Notes: The table shows correlation matrices for the main variables used in our analysis. Panel A shows statistics on the net percentage of banks reporting a tightening of credit standards or credit terms & conditions in the respective country-quarter, obtained from the ECB's Bank Lending Survey. Panel B shows statistics for dummy variables indicating the implementation of a borrower-based measure in the respective country-quarter, set to one in the three quarters around implementation (i.e., from the quarter ahead until the quarter after BBM implementation) and to zero otherwise.

Table 3: Impact of BBMs on overall credit standards

Dependent variable:	overall credit standards				
	(1)	(2)	(3)	(4)	(5)
D(BBM)	23.08***	25.52***	25.23***	24.74***	24.97***
	(4.51)	(4.59)	(4.91)	(5.13)	(4.99)
Δ HH credit to GDP t-1				4.00***	4.14**
				(1.31)	(1.46)
Equity price growth t-1				0.13	0.14
				(0.11)	(0.11)
GDP growth t-1				-0.28*	-0.26
				(0.16)	(0.15)
CPI inflation t-1				0.68	0.65
				(0.56)	(0.58)
Δ Loan to deposit ratio t-1				0.45*	0.44*
				(0.22)	(0.22)
Δ Long term interest rate t-1				2.52	2.61
				(2.32)	(2.33)
Mortgage growth t-1				1.02	0.99
				(0.64)	(0.64)
RRE price growth t-1				-0.25	-0.28
				(0.79)	(0.81)
Δ NPL ratio t-1					0.10
					(0.64)
Δ RoA t-1					-2.73
					(1.65)
Δ Tier 1 ratio t-1					-0.29
					(0.48)
Herfindahl index banking assets t-1					30.41
					(40.61)
Constant	7.06***	34.57***	35.71***	31.29***	27.84***
	(0.83)	(8.50)	(9.01)	(8.92)	(9.61)
Observations	924	924	924	924	924
R-squared	0.04	0.20	0.21	0.24	0.24
Quarter FE	NO	YES	YES	YES	YES
Country FE	NO	NO	YES	YES	YES

Notes: The table shows regression results for Equation (1), using the net percentage of banks reporting a tightening in overall credit standards as a dependent variable. The unit of observation is a country-quarter, with the sample period ranging from 2009-Q1 until 2023-Q3. *D(BBM)* is an indicator variable that equals one in the three quarters around implementation of any type of BBM (i.e., from the quarter ahead until the quarter after BBM implementation). The remaining explanatory variables are lagged by one quarter. Robust standard errors are reported in parentheses. *p<0.1; **p<0.05; ***p<0.01.

Table 4: Impact of BBMs on credit terms and conditions

Dependent variable:	credit terms and conditions				
	(1)	(2)	(3)	(4)	(5)
D(BBM)	12.72***	12.74***	11.20**	11.46**	11.47**
	(3.62)	(4.02)	(4.93)	(4.99)	(5.09)
Δ HH credit to GDP t-1				1.12	1.13
				(0.89)	(0.88)
Equity price growth t-1				0.17*	0.18**
				(0.08)	(0.08)
GDP growth t-1				-0.07	-0.04
				(0.14)	(0.13)
CPI inflation t-1				0.77	0.69
				(1.12)	(1.15)
Δ Loan to deposit ratio t-1				0.19	0.19
				(0.32)	(0.30)
Δ Long term interest rate t-1				3.85	4.67**
				(2.69)	(1.91)
Mortgage growth t-1				0.43	0.25
				(0.74)	(0.70)
RRE price growth t-1				-0.86	-0.78
				(0.64)	(0.63)
Δ NPL ratio t-1					0.82
					(0.86)
Δ RoA t-1					-3.44*
					(1.66)
Δ Tier 1 ratio t-1					-0.03
					(0.24)
Herfindahl index banking assets t-1					64.37
					(56.03)
Constant	-0.06	-5.31	-4.83	-5.08	-13.34
	(0.70)	(4.18)	(4.09)	(4.43)	(8.56)
Observations	568	568	568	568	568
R-squared	0.03	0.13	0.13	0.15	0.16
Quarter FE	NO	YES	YES	YES	YES
Country FE	NO	NO	YES	YES	YES

Notes: The table shows regression results for the impact of borrower-based measures (BBMs) on credit terms and conditions. The dependent variable is the net percentage of banks reporting a tightening in credit terms and conditions. The unit of observation is a country-quarter, with a sample period of 2009-Q1 to 2023-Q3. *D(BBM)* is an indicator variable equal to one in the three quarters around the implementation of any type of BBM. The remaining explanatory variables are lagged by one quarter. Robust standard errors are reported in parentheses. *p<0.1; **p<0.05; ***p<0.01.

Table 5: Impact of BBMs on loan to value ratios

Dependent variable:	loan to value ratios				
	(1)	(2)	(3)	(4)	(5)
D(BBM)	16.06***	17.35***	16.39***	16.32***	16.09***
	(4.36)	(4.38)	(3.95)	(4.02)	(3.93)
Δ HH credit to GDP t-1				2.06*	1.92
				(1.04)	(1.13)
Equity price growth t-1				0.00	0.02
				(0.07)	(0.08)
GDP growth t-1				-0.27*	-0.27*
				(0.15)	(0.14)
CPI inflation t-1				0.17	0.17
				(0.63)	(0.63)
Δ Loan to deposit ratio t-1				0.16	0.13
				(0.21)	(0.22)
Δ Long term interest rate t-1				1.57	1.57
				(1.91)	(1.94)
Mortgage growth t-1				0.60	0.57
				(0.54)	(0.54)
RRE price growth t-1				0.10	0.14
				(0.57)	(0.59)
Δ NPL ratio t-1					0.63
					(0.54)
Δ RoA t-1					-0.63
					(1.23)
Δ Tier 1 ratio t-1					-0.28
					(0.42)
Herfindahl index banking assets t-1					-2.65
					(39.48)
Constant	6.13***	27.42***	27.62***	23.74***	24.38**
	(0.60)	(6.63)	(6.46)	(7.08)	(8.64)
Observations	924	924	924	924	924
R-squared	0.03	0.15	0.15	0.17	0.17
Quarter FE	NO	YES	YES	YES	YES
Country FE	NO	NO	YES	YES	YES

Notes: The table shows regression results for the impact of borrower-based measures (BBMs) on loan to value (LTV) ratios. The dependent variable is the LTV ratio. The unit of observation is a country-quarter, with a sample period from 2009-Q1 to 2023-Q3. *D(BBM)* is an indicator variable equal to one in the three quarters around the implementation of any type of BBM. The remaining explanatory variables are lagged by one quarter. Robust standard errors are reported in parentheses. *p<0.1; **p<0.05; ***p<0.01.

Table 6: Impact of BBMs on loan maturity limits

Dependent variable:	credit terms (maturity)				
	(1)	(2)	(3)	(4)	(5)
D(BBM)	5.51**	6.97***	6.89**	6.85**	7.08**
	(2.43)	(2.47)	(2.90)	(2.84)	(2.91)
Δ HH credit to GDP t-1				1.29**	1.46**
				(0.61)	(0.61)
Equity price growth t-1				0.02	0.02
				(0.08)	(0.09)
GDP growth t-1				-0.10	-0.10
				(0.06)	(0.06)
CPI inflation t-1				0.23	0.22
				(0.33)	(0.34)
Δ Loan to deposit ratio t-1				0.05	0.07
				(0.12)	(0.14)
Δ Long term interest rate t-1				1.98	2.04
				(1.35)	(1.37)
Mortgage growth t-1				0.01	0.02
				(0.34)	(0.34)
RRE price growth t-1				0.07	0.03
				(0.32)	(0.31)
Δ NPL ratio t-1					-0.24
					(0.30)
Δ RoA t-1					-0.94
					(0.59)
Δ Tier 1 ratio t-1					0.14
					(0.19)
Herfindahl index banking assets t-1					19.38
					(17.11)
Constant	1.93***	6.10**	6.10*	4.35	1.79
	(0.34)	(2.42)	(2.92)	(3.33)	(3.32)
Observations	924	924	924	924	924
R-squared	0.01	0.09	0.10	0.13	0.13
Quarter FE	NO	YES	YES	YES	YES
Country FE	NO	NO	YES	YES	YES

Notes: The table shows regression results for the impact of borrower-based measures (BBMs) on maturity. The dependent variable is the maturity of loans. The unit of observation is a country-quarter, with a sample period from 2009-Q1 to 2023-Q3. *D(BBM)* is an indicator variable equal to one in the three quarters around the implementation of any type of BBM. The remaining explanatory variables are lagged by one quarter. Robust standard errors are reported in parentheses. *p<0.1; **p<0.05; ***p<0.01.

Table 7: Impact of BBMs on other (than loan-to-value) loan size limits

Dependent variable:	credit terms (other size limits)				
	(1)	(2)	(3)	(4)	(5)
D(BBM)	8.81***	8.35***	7.33**	7.48**	7.59**
	(3.18)	(3.16)	(2.87)	(2.94)	(2.97)
Δ HH credit to GDP t-1				-0.50	-0.48
				(1.00)	(0.97)
Equity price growth t-1				0.00	0.01
				(0.06)	(0.06)
GDP growth t-1				-0.15	-0.15
				(0.19)	(0.19)
CPI inflation t-1				0.82	0.84
				(0.50)	(0.50)
Δ Loan to deposit ratio t-1				0.13	0.14
				(0.11)	(0.12)
Δ Long term interest rate t-1				3.22*	2.94*
				(1.60)	(1.52)
Mortgage growth t-1				0.74	0.72
				(0.61)	(0.62)
RRE price growth t-1				-0.42	-0.43
				(0.56)	(0.56)
Δ NPL ratio t-1					-0.33
					(0.46)
Δ RoA t-1					0.48
					(1.34)
Δ Tier 1 ratio t-1					0.46
					(0.33)
Herfindahl index banking assets t-1					14.47
					(19.04)
Constant	1.42***	0.28	0.05	0.18	2.04
	(0.45)	(2.29)	(2.71)	(3.25)	(5.03)
Observations	568	568	568	568	568
R-squared	0.03	0.09	0.09	0.11	0.11
Year FE	NO	YES	YES	YES	YES
Country FE	NO	NO	YES	YES	YES

Notes: The table shows regression results for Equation (1), using the net percentage of banks reporting a tightening in other (than loan-to-value) loan size limits as a dependent variable. The unit of observation is a country-quarter, with the sample period ranging from 2009-Q1 until 2023-Q3. *D(BBM)* is an indicator variable that equals one in the three quarters around implementation of any type of BBM (i.e., from the quarter ahead until the quarter after BBM implementation). The remaining explanatory variables are lagged by one quarter and further described in Section 2. Robust standard errors are reported in parentheses. *p<0.1; **p<0.05; ***p<0.01.

Table 8: Impact of BBMs on credit standards and credit terms & conditions

Dependent variable:	Credit standards	Credit terms	Loan-to-value	Maturity	Other size
	(1)	(2)	(3)	(4)	(5)
BBM t+2	7.94*	9.11	1.56	4.17	6.84
	(4.57)	(5.56)	(2.80)	(2.61)	(6.41)
BBM t+1	15.76**	12.99*	6.79	4.51	5.41
	(6.62)	(7.44)	(6.34)	(4.41)	(4.53)
BBM	36.02***	10.64	22.98***	11.78*	15.73**
	(7.40)	(8.27)	(7.95)	(6.43)	(7.21)
BBM t-1	20.27**	10.35	17.07*	2.41	2.79
	(7.55)	(7.33)	(8.26)	(1.90)	(1.97)
BBM t-2	10.45	0.68	7.02	-0.84	2.77
	(9.85)	(4.56)	(6.15)	(1.41)	(3.62)
Δ HH credit to GDP t-1	3.98**	0.89	1.94	1.35*	0.59
	(1.48)	(1.01)	(1.14)	(0.67)	(0.99)
Equity price growth t-1	0.12	0.13	-0.00	0.02	-0.00
	(0.11)	(0.08)	(0.08)	(0.08)	(0.07)
GDP growth t-1	-0.24	-0.00	-0.28*	-0.10	-0.13
	(0.15)	(0.13)	(0.14)	(0.07)	(0.18)
CPI inflation t-1	0.95	1.77**	0.32	0.23	1.22**
	(0.74)	(0.78)	(0.69)	(0.37)	(0.57)
Δ Loan to deposit ratio t-1	0.44*	0.21	0.14	0.04	0.12
	(0.23)	(0.31)	(0.22)	(0.14)	(0.12)
Δ Long-term interest rate t-1	2.67	4.39**	1.65	2.08	2.50
	(2.39)	(1.90)	(2.02)	(1.38)	(1.75)
Mortgage growth t-1	1.07	0.27	0.57	0.04	0.67
	(0.66)	(0.77)	(0.58)	(0.35)	(0.59)
RRE price growth t-1	-0.21	-0.50	0.17	0.01	-0.45
	(0.78)	(0.60)	(0.61)	(0.32)	(0.56)
Δ NPL ratio t-1	-0.02	0.76	0.44	-0.19	-0.37
	(0.61)	(0.85)	(0.58)	(0.29)	(0.48)
Δ RoA t-1	-3.03*	-3.45*	-0.77	-1.03*	0.23
	(1.70)	(1.77)	(1.21)	(0.57)	(1.33)
Δ Tier 1 ratio t-1	-0.32	-0.10	-0.27	0.07	0.32
	(0.45)	(0.22)	(0.40)	(0.18)	(0.28)
Herfindahl index banking assets t-1	39.75	41.47	0.54	19.51	22.19
	(42.24)	(54.34)	(40.62)	(18.18)	(24.51)
Constant	26.54**	-10.41	23.59**	1.84	2.76
	(9.60)	(8.45)	(8.72)	(3.33)	(5.68)
Observations	905	549	905	905	549
R-squared	0.25	0.15	0.18	0.14	0.14
Quarter FE	YES	YES	YES	YES	YES
Country FE	YES	YES	YES	YES	YES

Notes: The table shows regression results for Equation (1), using the net percentage of banks reporting a tightening in the respective variable indicated at the top of the column as a dependent variable. The unit of observation is a country-quarter, with the sample period ranging from 2009-Q1 until 2023-Q3. *BBM* is an indicator variable that equals one in the quarter of implementation of any type of BBM, *BBM t+2* and *BBM t+1* are the corresponding lead variables, and *BBM t-1* and *BBM t-2* are the corresponding lag variables. The remaining explanatory variables are lagged by one quarter and further described in Section 2. Robust standard errors are reported in parentheses. *p<0.1; **p<0.05; ***p<0.01.

Table 9: Impact of different types of instruments on credit standards

Dependent variable:	overall credit standards					
	(1)	(2)	(3)	(4)	(5)	(6)
D(LTV)	24.77***				25.27**	
	(6.40)				(9.66)	
D(DSTI)		16.07***			-17.97*	
		(5.32)			(9.97)	
D(LTI)			25.48**		19.46	
			(11.96)		(14.12)	
D(MAT)				21.33***	17.27*	
				(4.91)	(8.79)	
D(LTV SOLO)						35.48**
						(13.21)
D(LTI SOLO)						54.00***
						(3.49)
D(LTV, DSTI)						-0.84
						(4.57)
D(LTV, LTI)						30.74***
						(5.29)
D(LTV, MAT))						26.90***
						(4.17)
D(DSTI, MAT)						17.65**
						(6.44)
D(LTV, DSTI, MAT)						24.03***
						(8.14)
D(LTI, DSTI, MAT)						0.66
						(5.04)
Observations	924	924	924	924	924	924
R-squared	0.23	0.21	0.21	0.22	0.24	0.26
Quarter FE	YES	YES	YES	YES	YES	YES
Country FE	YES	YES	YES	YES	YES	YES
Macro controls	YES	YES	YES	YES	YES	YES
Bank controls	YES	YES	YES	YES	YES	YES

Notes: The table shows regression results for Equation (1), using the net percentage of banks reporting a tightening in overall credit standards as a dependent variable. The unit of observation is a country-quarter, with the sample period ranging from 2009-Q1 until 2023-Q3. The dummy variables in columns (1)-(5) equal one in the three quarters around implementation of the respective type of BBM (i.e., from the quarter ahead until the quarter after BBM implementation). The dummy variables in column (6) split the whole set of BBMs into mutually exclusive groups of instrument combinations, since BBMs are often implemented as a package. The remaining explanatory variables are the same as in the previous regressions, lagged by one quarter and further described in Section 2. Robust standard errors are reported in parentheses. *p<0.1; **p<0.05; ***p<0.01.

Table 10: Impact of different types of instruments on credit terms & conditions

Dependent variable:	overall credit terms & conditions	loan-to-value	maturity	other size limits
	(1)	(2)	(3)	(4)
D(LTV SOLO)	17.26	30.38**	6.44	-0.28
	(14.36)	(11.38)	(3.72)	(2.05)
D(LTI SOLO)	1.15	33.00***	-18.01***	28.50***
	(2.03)	(2.15)	(1.47)	(1.70)
D(LTV, DSTI)	1.95	6.33	11.48*	-2.98*
	(2.09)	(7.00)	(6.18)	(1.51)
D(LTV, LTI)	9.47	19.80***	5.21*	26.95**
	(11.43)	(4.51)	(2.79)	(10.87)
D(LTV, MAT))	—	22.93***	1.56	—
	—	(3.73)	(1.50)	—
D(DSTI, MAT)	14.92	6.71	-1.33	-0.42
	(9.47)	(9.99)	(2.87)	(2.79)
D(LTV, DSTI, MAT)	17.36***	6.01*	15.28***	12.64**
	(4.00)	(3.41)	(2.74)	(5.74)
D(LTI, DSTI, MAT)	-9.65**	-2.64	5.16***	11.77***
	(3.96)	(4.22)	(1.43)	(2.37)
Constant	-15.85*	22.19**	2.13	-2.11
	(8.05)	(8.46)	(3.21)	(4.27)
Observations	568	924	924	568
R-squared	0.17	0.19	0.16	0.15
Number of cnty	19	19	19	19
Quarter FE	YES	YES	YES	YES
Country FE	YES	YES	YES	YES
Macro controls	YES	YES	YES	YES
Bank controls	YES	YES	YES	YES

Notes: The table shows regression results for Equation (1), using the net percentage of banks reporting a tightening in the respective variable indicated at the top of the column as a dependent variable. The unit of observation is a country-quarter, with the sample period ranging from 2009-Q1 until 2023-Q3. The dummy variables equal one in the three quarters around implementation of the respective types of BBM (i.e., from the quarter ahead until the quarter after BBM implementation). They split the whole set of BBMs into mutually exclusive groups of instrument combinations, since BBMs are often implemented as a package. The remaining explanatory variables are the same as in the previous regressions, lagged by one quarter and further described in Section 2. Robust standard errors are reported in parentheses. *p<0.1; **p<0.05; ***p<0.01.

Table 11: Distinguishing legally binding measures and recommendations

Dependent variable:	overall credit standards	overall credit terms & conditions	loan-to-value limits	maturity limits	other size limits
	(1)	(2)	(3)	(4)	(5)
D(LEG)	30.75***	13.29	21.42***	7.14*	11.65***
	(6.39)	(8.73)	(3.97)	(3.52)	(3.95)
D(REG)	16.44**	9.48*	8.23	6.98*	3.17
	(6.06)	(4.87)	(5.62)	(3.66)	(4.58)
Observations	924	568	924	924	568
R-squared	0.25	0.16	0.18	0.13	0.12
Quarter FE	YES	YES	YES	YES	YES
Country FE	YES	YES	YES	YES	YES
Macro controls	YES	YES	YES	YES	YES
Bank controls	YES	YES	YES	YES	YES
Wald test: D(LEG)=D(REC)	2.890	0.139	4.158	0.00137	1.760
Wald test (p-value)	0.106	0.714	0.0564	0.971	0.201

Notes: The table shows regression results for Equation (1), using the net percentage of banks reporting a tightening in the respective variable indicated at the top of the column as a dependent variable. The unit of observation is a country-quarter, with the sample period ranging from 2009-Q1 until 2023-Q3. The dummy variables equal one in the three quarters around implementation of the respective types of BBM (i.e., from the quarter ahead until the quarter after BBM implementation). They split the whole set of BBMs into mutually exclusive groups of legally binding measures (D(LEG)) and measures that were introduced in the form of a recommendation (D(REC)). The remaining explanatory variables are the same as in the previous regressions, lagged by one quarter and further described in Section 2. Robust standard errors are reported in parentheses. *p<0.1; **p<0.05; ***p<0.01.

Table 12: Share of new lending above the LTV and DSTI limits

	Overall Credit Standards		Overall Credit Terms & Conditions		Loan-to-Value Limits		Maturity Limits		Other Size Limits	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
D(LTV higher lending above limits)	38.102***		16.018		24.896**		9.815***		-0.115	
	(10.185)		(10.346)		(9.265)		(2.809)		(1.450)	
D(LTV lower lending above limits)	14.644**		12.990**		10.934**		9.784**		13.464**	
	(5.213)		(4.733)		(3.862)		(3.406)		(6.204)	
D(DSTI higher lending above limits)		4.538		1.973		-1.892		5.887**		2.891
		(5.457)		(4.199)		(3.052)		(2.488)		(2.604)
D(DSTI lower lending above limits)		25.900***		23.485***		14.308**		14.223***		13.412**
		(6.754)		(3.925)		(5.400)		(3.898)		(6.289)
Constant	26.862***	30.995***	-13.979	-14.143*	23.653**	26.318***	1.332	2.805	-1.184	-2.125
	(9.067)	(9.719)	(8.363)	(7.626)	(8.356)	(8.647)	(3.354)	(3.272)	(4.917)	(4.970)
Observations	924	924	568	568	924	924	924	924	568	568
R-squared	0.242	0.214	0.164	0.161	0.172	0.146	0.142	0.140	0.110	0.106
Quarter FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Country FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Macro Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Bank Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Notes: The table shows regression results for Equation (1), using the net percentage of banks reporting a tightening in the respective variable indicated at the top of the column as a dependent variable. The unit of observation is a country-quarter, with the sample period ranging from 2009-Q1 until 2023-Q3. *D(LTV higher lending above the limits)* and *D(LTV lower lending above the limits)* are dummy variables indicating whether the share of lending above the LTV limit is higher/lower than the median for all countries with an LTV limit in place. *D(DSTI higher lending above the limits)* and *D(DSTI lower lending above the limits)* are dummy variables classifying countries with a DSTI limit in place in the same fashion. The remaining explanatory variables are lagged by one quarter and further described in Section 2. Robust standard errors are reported in parentheses. *p<0.1; **p<0.05; ***p<0.01.

Table 13: Credit standards and RRE market conditions

Dependent variable:	overall credit standards			
	(1)	(2)	(3)	(4)
D(BBM)	18.51***	21.68***	16.28***	31.55***
	(5.51)	(6.29)	(4.43)	(6.46)
D(BBM) × D(HIGH MLG)	15.73*			
	(7.85)			
D(HIGH MLG)	2.06			
	(3.22)			
D(BBM) × D(LOW MLG)		19.21		
		(14.88)		
D(LOW MLG)		-5.41		
		(3.38)		
D(BBM) × D(HIGH RREPG)			23.51***	
			(7.65)	
D(HIGH RREPG)			-2.47	
			(2.61)	
D(BBM) × D(LOW RREPG)				-32.62***
				(10.19)
D(LOW RREPG)				1.29
				(4.54)
Observations	924	924	924	924
R-squared	0.25	0.25	0.25	0.25
Quarter FE	YES	YES	YES	YES
Country FE	YES	YES	YES	YES
Macro controls	YES	YES	YES	YES
Bank controls	YES	YES	YES	YES

Notes: The table shows regression results for Equation (2), using the net percentage of banks reporting a tightening in overall credit standards as a dependent variable. The unit of observation is a country-quarter, with the sample period ranging from 2009-Q1 until 2023-Q3. *D(BBM)* is an indicator variable that equals one in the three quarters around implementation of any type of BBM (i.e., from the quarter ahead until the quarter after BBM implementation). *D(HIGH MLG)* and *D(LOW MLG)* are dummy variables indicating whether mortgage loan growth is above the 75^{th} or below the 25^{th} percentile, respectively, and *D(HIGH RREPG)* and *D(LOW RREPG)* indicate the same thing for RRE price growth. The remaining explanatory variables are the same as in the previous regressions, lagged by one quarter and further described in Section 2. Robust standard errors are reported in parentheses. *p<0.1; **p<0.05; ***p<0.01.

Table 14: Credit terms & conditions and RRE market conditions

Dependent variable:	overall credit terms & conditions			
	(1)	(2)	(3)	(4)
D(BBM)	7.56	10.40*	3.33	14.80**
	(4.48)	(5.62)	(4.37)	(5.43)
D(BBM) × D(HIGH MLG)	8.65			
	(10.89)			
D(HIGH MLG)	0.49			
	(2.29)			
D(BBM) × D(LOW MLG)		12.37		
		(9.28)		
D(LOW MLG)		-2.31		
		(1.99)		
D(BBM) × D(HIGH RREPG)			19.02	
			(11.31)	
D(HIGH RREPG)			0.57	
			(1.71)	
D(BBM) × D(LOW RREPG)				-33.33**
				(12.46)
D(LOW RREPG)				-0.20
				(3.48)
Observations	568	568	568	568
R-squared	0.16	0.16	0.18	0.18
Quarter FE	YES	YES	YES	YES
Country FE	YES	YES	YES	YES
Macro controls	YES	YES	YES	YES
Bank controls	YES	YES	YES	YES

Notes: The table shows regression results for Equation (2), using the net percentage of banks reporting a tightening in overall credit standards as a dependent variable. The unit of observation is a country-quarter, with the sample period ranging from 2009-Q1 until 2023-Q3. *D(BBM)* is an indicator variable that equals one in the three quarters around implementation of any type of BBM (i.e., from the quarter ahead until the quarter after BBM implementation). *D(HIGH MLG)* and *D(LOW MLG)* are dummy variables indicating whether mortgage loan growth is above the 75^{th} or below the 25^{th} percentile, respectively, and *D(HIGH RREPG)* and *D(LOW RREPG)* indicate the same thing for RRE price growth. The remaining explanatory variables are the same as in the previous regressions, lagged by one quarter and further described in Section 2. Robust standard errors are reported in parentheses. *p<0.1; **p<0.05; ***p<0.01.

Appendix

A Bank lending survey

The bank lending survey (BLS) is conducted four times a year and addressed to senior loan officers of a representative sample of euro area banks. The sample comprises around 150 banks, representing all euro area countries while taking into account the characteristics of the respective national banking systems. The main purpose of the BLS is to enhance the Eurosystem's knowledge of bank lending conditions in the euro area. The BLS contains 22 standard questions focused on developments in loans to euro area residents (i.e., domestic and euro area cross-border loans) and distinguishes between three loan categories: loans or credit lines to enterprises, loans to households for house purchase, and consumer credit and other lending to households.

For all three loan categories, questions are asked on credit standards for approving loans, credit terms and conditions on new loans, loan demand, the share of loan rejections, and the factors affecting loan supply and demand conditions. Our main interest is in the first two of these, which the BLS glossary defines as follows:

- **Credit standards:** Credit standards are the internal guidelines or loan approval criteria of a bank. Both requests for new loans and loan refinancing, i.e. leading to a prolongation of a loan or a higher loan amount, should be considered. Credit standards are established prior to the actual loan negotiation on the terms and conditions and the actual loan approval/rejection decision. They define the types of loan a bank considers desirable and undesirable, the designated sectoral or geographic priorities, the collateral deemed acceptable and unacceptable, etc. Credit standards specify the required borrower characteristics (e.g. balance sheet conditions, income situation, age, employment status) under which a loan can be obtained. In the survey, both changes in written loan policies and their application should be considered. Credit standards may change owing to changes in the bank's cost of funds and balance sheet situation, changes in competition, changes in the bank's risk perception, changes in the bank's risk tolerance or regulatory changes, for instance.
- **Credit terms and conditions:** Credit terms and conditions refer to the conditions of a loan that a bank is willing to grant, i.e. to the terms and conditions of the (new or refinanced) loan actually approved as laid down in the loan contract which was agreed

between the bank (the lender) and the borrower. They generally consist of the agreed spread over the relevant reference rate, the size of the loan, the access conditions and other terms and conditions in the form of non-interest rate charges (i.e. fees), collateral or guarantees which the respective borrower needs to provide (including compensating balances), loan covenants and the agreed loan maturity. Credit terms and conditions are conditional on the borrower's characteristics and may change in parallel with credit standards or independently of them. For instance, an increase in the bank's funding cost or a deterioration in the general economic outlook can lead to both a tightening in the approval criteria (credit standards) and a tightening of the terms and conditions on those loans that the bank is willing to approve and its customers are willing to accept. Alternatively, the bank may only change its credit terms and conditions (e.g. increasing the required spread to compensate for the additional cost/risk) and leave credit standards unchanged.

The BLS questions are generally phrased in terms of changes over the past three months or expectations of changes over the next three months. For our analysis, we focus on questions 10 and 12, which read as follows:

- **Question 10.** Over the past three months, how have your bank's credit standards as applied to the approval of loans to households changed? Please note that we are asking about the change in credit standards, rather than about their level.
- **Question 12.** Over the past three months, how have your bank's terms and conditions for new loans to households for house purchase changed? Please rate the overall terms and conditions for this loan category and each factor [...].

Survey participants are asked to indicate changes on a five-point scale, indicating in a qualitative way the strength of a tightening or easing. Specifically, response options are the following: (1) tightened considerably, (2) tightened somewhat, (3) basically unchanged, (4) eased somewhat, or (5) eased considerably. Our dependent variables refer to the net percentage of banks reporting a tightening of the respective item. They are calculated as the difference between the sum of the percentages of banks responding "tightened considerably" or "tightened somewhat", and the sum of the percentages of banks responding "eased somewhat" or "eased considerably".

B Additional tables

Table B.1: Overview of borrower-based measures across countries

Country	Date	Measure	Type	Calibration	Exemptions (% of new loans)
AT	2018 Q3	DSTI	rec.	40%	–
AT	2018 Q3	LTV	rec.	80%	–
AT	2018 Q3	Maturity	rec.	35y	–
BE	2020 Q1	LTV	rec.	90%	$\leq$ 35% of lending above limit
CY	2013 Q4	DSTI	leg.	35%	–
CY	2013 Q4	LTV	leg.	80%	–
EE	2015 Q1	DSTI	leg.	50%	$\leq$ 15% of lending above limit
EE	2015 Q1	LTV	leg.	85%	$\leq$ 15% of lending above limit
EE	2015 Q1	Maturity	leg.	30y	$\leq$ 15% of lending above limit
FI	2017 Q3	LTV	leg.	95%	–
FR	2020 Q1	DSTI	rec.	33%	$\leq$ 15% above limit if DTI $<$ 7
FR	2020 Q1	Maturity	rec.	25y	$\leq$ 15% above limit if DTI $<$ 7
IE	2015 Q1	LTI	leg.	3.5x	$\leq$ 20% above limit
IE	2015 Q1	LTV	leg.	90%	$\leq$ 15% above limit
LT	2011 Q4	DSTI	leg.	40%	$\leq$ 5% above limit (max. DSTI of 60%)
LT	2011 Q4	LTV	leg.	85%	–
LT	2011 Q4	Maturity	leg.	40y	–
LU	2021 Q1	LTV	leg.	90%	$\leq$ 15% of lending above limit
LV	2014 Q3	LTV	leg.	90%	–
LV	2020 Q2	DSTI	leg.	40%	$\leq$ 10% above limit
LV	2020 Q2	LTI	leg.	6x	$\leq$ 10% above limit
LV	2020 Q2	Maturity	leg.	30y	$\leq$ 10% above limit
MT	2019 Q3	DSTI	leg.	40%	–
MT	2019 Q3	LTV	leg.	90%	$\leq$ 10% above limit
MT	2019 Q3	Maturity	leg.	40y	–
NL	2013 Q1	LTV	leg.	105%	–
NL	2013 Q1	Maturity	leg.	30y	-
PT	2018 Q3	DSTI	rec.	50%	$\leq$ 20% above limit (max. DSTI of 60%)
PT	2018 Q3	LTV	rec.	90%	–
PT	2018 Q3	Maturity	rec.	40y	–
SI	2016 Q3	DSTI	rec.	58.5%	–
SI	2016 Q3	LTV	rec.	80%	–
SK	2014 Q4	LTV	rec.	90%	$\leq$ 25% above limit
SK	2015 Q1	DSTI	rec.	100%	–
SK	2015 Q1	Maturity	rec.	30y	$\leq$ 10% above limit
SK	2018 Q3	LTI	leg.	8x	$\leq$ 10% above limit

Notes: The table shows an overview of the borrower-based measures implemented during our sample period. It provides information on the date of implementation, form and type (recommendation vs. legally binding) of the measure, calibration, and exemptions.

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