Who gets publicly guaranteed loans? The effect of guarantee fees on loan allocation and pricing ⋆,⋆⋆

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Abstract

This paper studies bank lending under public loan guarantees. Exploiting Belgium's COVID-19 loan guarantee program, we specifically examine how guarantee fees affect loan allocation and pricing. Guaranteed lending to eligible borrowers was mandatory in Belgium, but banks could deselect some eligible loans, or issue loans by adjusting their terms such that they marginally fall outside of the scope of the mandatory program. Using credit register data, we find that banks are more likely to grant non-guaranteed loans to more important borrowers, with a lower interest rate than the total cost of a guaranteed loan (i.e., the sum of an interest rate and a fee), suggesting that banks use non-guaranteed lending to help more important borrowers avoid paying guarantee fees. We show that committed amounts increase with borrower importance, but only for non-guaranteed loans. Moreover, although banks use guaranteed lending as a substitute for pre-existing non-guaranteed lending, the degree of substitution decreases with borrower importance. The effects are overall stronger for better-capitalized banks. Our results provide novel evidence that guarantee fees encourage lending outside of public guarantee programs.

Keywords: loan guarantees, guarantee fees, bank lending, credit substitution, COVID-19

JEL classification: G18, G21, H81

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1. Introduction

In this paper, we study bank lending under public loan guarantees. Specifically, we examine how guarantee fees affect loan allocation and pricing.

Public loan guarantee programs have become a widespread tool to facilitate firms' access to bank credit, especially since the 2007-08 financial crisis (Beck et al., 2010; OECD, 2017). Such programs have gained even more popularity during the COVID-19 pandemic. To tackle liquidity concerns of firms during the pandemic, governments initiated loan guarantee programs with exceptionally large budgets. For example, in the US, the budget of the Paycheck Protection Program was $669 billion, amounting to around 3% of the pre-pandemic US GDP. In Europe, governments allocated even larger amounts of funds to their programs relative to the size of their economies. For example, the total budgets of the Italian, German, and Belgian loan guarantee programs were €400, €757, and €50 billion, amounting to around 25%, 20%, and 10% of their pre-pandemic GDP, respectively (Cascarino et al., 2022).

In a loan guarantee program, disbursing loans along with screening and monitoring is commonly delegated to lenders. When lenders make a loss from guaranteed loans, the government would then cover part of the loss. However, the public guarantee is often not free of charge. When lenders disburse a loan with a public guarantee, they typically transfer a fee to the government in exchange for credit protection. Banks usually pass this fee on to borrowers, i.e., borrowers pay the fee for the public guarantee. For example, during the COVID-19 pandemic, EU State Aid rules (2020/C 91 I/01) required banks to transfer a fee between 25 bps and 200 bps to the government for guaranteed loans, depending on the size of the borrower and the maturity of the loan.

Whereas existing studies examine the effect of public guarantees on loan allocation (e.g., Gropp et al., 2014; De Blasio et al., 2018; Bachas et al., 2021; Altavilla et al., 2022; Jiménez et al., 2022; Cascarino et al., 2022), the literature does not consider the role that the guarantee fee plays in loan outcomes. In this paper, we show that the guarantee fee plays an important role in the bank's decision to allocate loans. Specifically, this paper demonstrates that banks are more likely to grant their important borrowers loans outside of the guarantee program with more favorable terms so that those borrowers can avoid paying guarantee fees.

To investigate the effect of guarantee fees on loan allocation, we exploit the Belgian loan guarantee program launched on 1 April 2020, after the onset of the COVID-19 pandemic. The program applied only to 'new' loans with a maturity of up to 1 year. The maximum interest rate that banks could charge was capped at 1.25%. In addition to the interest rate, banks were required to charge SMEs (large firms) a fee of 25 (50) bps for the public guarantee and to transfer this fee to the government in exchange for credit protection. Crucially for our analysis, the program required that, if the bank decides to disburse an eligible loan, then the eligible loan has to be granted with a public guarantee. However, banks had the right to 'deselect' eligible loans and grant them without public guarantees. Thus, deselected loans are exempt from the capped interest rate and the guarantee fee. That said, when the total amount of deselected loans exceeded 17.5% of the total amount of guaranteed loans, lenders had to transfer a higher guarantee fee to the government.[1] Under the program, banks were not able to pass this higher guarantee fee (i.e., higher than the fee set in the program) on to the borrower. Thus, higher levels of deselection would lead banks to forgo a part of the interest rate.

We use granular loan-level data from the Belgian Extended Credit Risk Information System (BECRIS), matched with firms' and banks' financial information. BECRIS records every loan without any reporting threshold, and flags whether an eligible loan was granted with a public guarantee or issued through the lender's deselection (i.e., without a guarantee, albeit eligible) during the pandemic. We conduct our analysis over the period of April 2020 to June 2020.[2]

Importantly, the program design and reporting requirements allow us to take into account endogeneity concerns. First, as the pandemic was unexpected, one can credibly argue that the initiation of the public loan guarantee program was orthogonal to the pre-pandemic borrower and lender characteristics. Second, given that guaranteed and deselected loans are outcomes of the eligible loan applications, we are able to compare loan outcomes of firms that obtained a guaranteed loan vis-à-vis firms that demanded a loan that was eligible for the public guarantee but

[1] In fact, loan maturity is also incorporated along with loan amount in the calculation of the deselection factor. We will discuss this in Section 2.

[2] This time frame is selected, because on 24 July 2020, a second guarantee program started, and it introduced some new features. Therefore, we exclude the period of the second program from the analysis to eliminate the contaminating effects.

instead obtained a non-guaranteed loan. Our analysis thus reduces the concern that our results are confounded by unobserved credit demand. Besides, we further control for firms' credit demand using firm-cluster fixed effects (as in Acharya et al., 2019; Degryse et al., 2019), or more rigorously using firm fixed effects (as in Khwaja and Mian, 2008).

By comparing the likelihood of obtaining a guaranteed loan vis-à-vis a loan granted through deselection, we primarily find that firms with a higher pre-pandemic share in their banks' total lending portfolio (i.e., important borrowers) were more likely to obtain deselected loans relative to guaranteed loans. Numerically, when the firm's ex-ante share in the bank's lending portfolio increases by one standard deviation, the firm's likelihood of obtaining a guaranteed loan decreases by 3 basis points (8.6%).

Next, given that the Belgian loan guarantee program (i) covered only loans with a maturity of up to 1 year and (ii) forced banks to issue eligible loans with a public guarantee, we also incorporate into our analysis loans with a maturity of marginally higher than 1 year, which were otherwise eligible. Even though banks were allowed to deselect eligible loans, they might have preferred to issue some loans entirely outside of the guarantee program by slightly adjusting the maturity of otherwise eligible loans. By doing so, banks might have avoided overstepping the deselection threshold and paying higher fees as a consequence. To explore this, we incorporate into the analysis loans that were granted with a maturity of 367 to 400 days (henceforth, "marginally ineligible" loans) that were otherwise eligible.[3] We show that the fraction of marginally ineligible loans in the total number of new short-term loans is overall higher during the post-pandemic period, relative to the pre-pandemic period. In addition, we find that, on average, when the committed amount of guaranteed or deselected loans decreases, the committed amount of marginally ineligible loans increases at the bank-firm level. Taken together, the evidence suggests that marginally ineligible loans might indeed have been used as a substitute for guaranteed and deselected loans.

By comparing the likelihood of obtaining a guaranteed loan vis-à-vis a marginally ineligible loan, we also find that firms that had a higher initial share in their banks' lending portfolio were more likely to obtain marginally ineligible loans relative to guaranteed loans. Specifically, when the

[3]In our robustness tests, we show that our results are robust to selecting ineligible loans based on alternative maturity thresholds.

firm's ex-ante share in the bank's total lending volume increases by one standard deviation, the firm's likelihood of obtaining a guaranteed loan decreases by 2 basis points (4%). All in all, our results show that banks were more likely to grant their important borrowers non-guaranteed loans (i.e., deselected or marginally ineligible loans).

Banks might issue non-guaranteed loans for two reasons. First, banks might grant non-guaranteed loans to charge a higher interest rate than the capped rate of 1.25% for guaranteed loans. Particularly, non-guaranteed lending allows banks to capitalize the guarantee fee, i.e., banks might implicitly charge the guarantee fee for non-guaranteed loans but do not have to transfer it to the government. Second, banks might grant their important borrowers non-guaranteed loans to help them avoid paying guarantee fees. Banks might do so to preserve valuable relationships with their important borrowers. If this is the case, then the interest rate of the non-guaranteed loan should be lower than what the total cost of a guaranteed loan (i.e., the sum of an interest rate and a fee) would be. In fact, non-guaranteed lending can be beneficial to both borrowers and lenders at the same time. This happens if the interest rate of the non-guaranteed loan is set higher than 1.25% but lower than the total cost of a guaranteed loan for the borrower, which is 1.5% for an SME and 1.75% for a large firm.[4]

We examine which case is more prevalent for banks' important borrowers. We find that banks issue non-guaranteed loans to obtain a higher return, i.e., interest rates of non-guaranteed loans are on average higher than those of guaranteed loans. However, this is not the case for banks' important borrowers. Specifically, when the firm's ex-ante share in the bank's lending portfolio increases by one standard deviation, the interest rates of marginally ineligible and deselected loans significantly decrease by 0.31 and 0.05 percentage points, respectively. That is, banks and firms split the profit from avoiding the guarantee fee depending on how important the firm is in the bank's lending portfolio. The difference between deselected and marginally ineligible loans can be attributed to the fact that banks might have been less willing to disburse loans through deselection, as higher levels

[4]For example, a bank charges an SME a total rate of 1.5% for a guaranteed loan, which is the sum of the capped interest rate of 1.25% and the fee of 0.25% required for the public guarantee. Instead of a guaranteed loan, if the bank grants the same borrower a non-guaranteed loan, for instance, with an interest rate of 1.35%, then both the lender and the borrower would be better off. That is, the borrower would pay a lower interest rate than 1.5%, while the lender would obtain a higher return than 1.25%.

of deselection reduce the maximum interest rate that banks can charge for guaranteed loans. At the same time, the results indicate that the interest rate of guaranteed loans is rather disadvantageous for important borrowers. The fact that banks are more likely to grant their important borrowers non-guaranteed loans with lower interest rates, suggests that banks issue non-guaranteed loans to their important borrowers to help them avoid paying guarantee fees. In line with this, we also document that committed amounts of non-guaranteed loans increase with the firm's ex-ante share in the bank's lending portfolio, more than committed amounts of guaranteed loans.

Then, we investigate whether banks use guaranteed lending as a substitute for pre-existing non-guaranteed lending. We on average find strong evidence of substitution. Specifically, non-guaranteed lending decreased by 18-21 percentage points among firms that obtained a guaranteed loan relative to firms that did not. This result is consistent with other existing studies (Altavilla et al., 2022; Cascarino et al., 2022; Jiménez et al., 2022). Differently from previous papers, however, we show that the degree of substitution between guaranteed and non-guaranteed loans decreases with borrower importance. In other words, banks are less likely to substitute their pre-crisis exposure to their important borrowers with new guaranteed loans. Numerically, when the firm's ex-ante share in the bank's lending portfolio increases by one standard deviation, non-guaranteed lending on average grew by 6-10 percentage points more among firms that obtained a guaranteed loan vis-à-vis firms that did not. This is consistent with our main result, i.e., banks tend to grant their important borrowers non-guaranteed loans to relieve them of guarantee fees.

In sum, our results signify the importance of guarantee fees in loan allocation. We show that guarantee fees lead banks to grant their important borrowers loans outside of the guarantee program with more favorable terms, so that those borrowers can avoid paying the fees required for guaranteed loans.

We also show that bank capital plays an important role in loan allocation. Banks with a higher pre-pandemic capital ratio are more likely to grant non-guaranteed loans to their important borrowers. The evidence also indicates that the interest rate (amount) of non-guaranteed loans issued to important borrowers further decreases (increases) with the bank's capital. Taken together, our results suggest that banks with higher capital can further help their important borrowers by granting them loans outside of the guarantee program with more favorable conditions.

At the same time, our estimates reveal that banks issued guaranteed loans to riskier and less important borrowers. Those borrowers, on average, experienced a lower sales growth and defaulted more frequently than expected, relative to the borrowers of non-guaranteed loans. Overall, the results indicate that guaranteed loans neither helped riskier borrowers improve performance nor helped them survive at the very least. The latter also suggests that public guarantees did not lead to zombie lending.

Related literature. Our study first contributes to the growing stream of research that analyzes the effects of public guarantees on loan outcomes. The preceding papers initially study the pre-COVID-19 period. It is documented that loan guarantee programs induce banks to issue larger loans (De Blasio et al., 2018) and that credit supply increases with guarantee generosity (Bachas et al., 2021). The literature also links public guarantees to increased bank risk-taking (Lelarge et al., 2010; Gropp et al., 2014; De Blasio et al., 2018; Bachas et al., 2021).

The closest papers to ours are the studies of Altavilla et al. (2022), Jiménez et al. (2022), and Cascarino et al. (2022), which employ the euro-area, the Spanish, and the Italian credit register data, respectively, to study credit allocation under public loan guarantee programs initiated during the COVID-19 pandemic.[5] However, they do not consider the role that the guarantee fee plays in loan outcomes. By exploiting the unique feature of the Belgian loan guarantee program, this paper provides novel evidence that banks on average grant their important borrowers non-guaranteed loans to help them avoid paying guarantee fees. Those studies commonly find that guaranteed loans are used as a substitute for non-guaranteed loans (Altavilla et al., 2022), less so for relation borrowers (Jiménez et al., 2022), and more so when the coverage ratio is higher (Cascarino et al., 2022). Even though we on average find that banks use guaranteed lending as a substitute for non-guaranteed lending in line with those studies, we differently document that the degree of the substitution decreases with the firm's importance in the bank's lending portfolio.

Our work also contributes to the literature by assessing the real effects of publicly guaranteed loans. Pre-pandemic research shows that guaranteed loans translate into higher employment and

[5]See also other related evidence on the allocation of guaranteed loans during the COVID-19 pandemic from Italy (Core and De Marco, 2022) and from the US (Cororaton and Rosen, 2021; Balyuk et al., 2021; Bartik et al., 2020b; Granja et al., 2022).

capital growth (Lelarge et al., 2010; Brown and Earle, 2017; Barrot et al., 2021), yet at the same time loan guarantees are shown to help unproductive firms stay in the market (Gropp et al., 2020) and to hinder the reallocation of workers towards productive firms (Barrot et al., 2021). Then, several studies examine the real effects of the Paycheck Protection Program in the US during the COVID-19 pandemic. While some of them document positive and noticeably large real effects (Autor et al., 2022; Bartik et al., 2020a), the others find a rather small impact (Chetty et al., 2020; Granja et al., 2022; Bartik et al., 2020b). We contribute to the literature by providing evidence from the Belgian loan guarantee program implemented after the onset of the COVID-19 pandemic. Particularly, in the Belgian case, we find that guaranteed loans neither helped borrowers improve performance nor helped them survive at the very least.

2. The Belgian loan guarantee program

The surge of COVID-19 forced a nationwide lockdown and plunged firms into a severe liquidity crisis.[6] To help liquidity-constrained firms during the pandemic, the Belgian government initiated a €50 billion loan guarantee program. Eligible non-financial firms could obtain guaranteed loans from 1 April 2020 to 31 December 2020. In more detail, to benefit from the program, firms were required to have no arrears with their bank loans as well as tax and social security contributions on 1 February 2020, as well as required that they did not undergo any debt restructuring by 31 January 2020. That said, banks were not obligated to provide any proof that the applicant was eligible, but were supposed to thoroughly examine this before granting a loan with a public guarantee. We observe that around 3% (1%) of firms that obtained a guaranteed loan were in arrears with banks (underwent debt restructuring) just before the pandemic.[7] For comparison, when we look at the figures in February, around 7% (2%) of firms that obtained a new loan were in arrears (underwent debt structuring). Given the decline in the proportion of firms that were in arrears and of those that underwent debt restructuring between the pre- and post-pandemic periods, it is plausible to say that banks largely respected the eligibility criteria set in the loan guarantee program.

[6] See Tielens et al. (2020) for a detailed analysis of the impact of the COVID-19 crisis on Belgian firms.
[7] We only observe arrears with loans but not arrears with tax and social security contributions.

The key features of the guarantee program are the following (see NBB (2020) for more details).

Terms and conditions of guaranteed loans

- *Loan type:* All *new* loans, except those to refinance or reinstate credits granted before 1 April 2020, i.e., the 'new money'.
- *Amount:* The maximum amount is the highest of *(i)* the borrower's liquidity needs; SMEs (large firms) can borrow for their liquidity needs during a period of 18 (12) months, *(ii)* the double of the borrower's total annual wage costs in the last closed financial year, or *(iii)* 25% of the borrower's turnover in the last closed financial year. However, the maximum amount that can be granted cannot exceed €50 million at the group level (exceptions may apply).
- *Maturity:* Loans with a maturity of up to 12 months.
- *Interest rate and fee:* The maximum interest rate is 1.25%. In addition to the interest rate, banks charge SMEs and large firms a guarantee fee of 25 and 50 bps, respectively. Banks, however, are required to transfer the guarantee fee to the government in exchange for credit protection.

How does the guarantee program work?

The Belgian government allocated a total envelope of €50 billion to banks based on their market share on 31 December 2019. In the first step, firms apply for a loan. According to the rule, the program was mandatory: if the bank decides to disburse an eligible loan, then the eligible loan has to be granted with a public guarantee. However, banks have the right to 'deselect' eligible loans within their allocated envelope and to grant such loans without a public guarantee. Deselected loans are exempt from the capped interest rate of 1.25% and are priced at the bank's discretion. However, the amount of eligible loans that a bank is allowed to deselect is constrained by the *deselection factor*, which is computed as follows:

$$\textit{deselection factor} = \frac{\sum_i \text{deselected amount}_i \times \text{deselected maturity (in days)}_i}{\sum_i \text{guaranteed amount}_i \times \text{guaranteed maturity (in days)}_i} \tag{1}$$

where i refers to each eligible loan granted by the lender when the guarantee program was in effect. According to the rule, the bank is allowed to deselect loans without any cost until its deselection factor equals 0.175. If the bank's deselection ratio exceeds 0.175, then the payable fee on guaranteed loans is multiplied by one plus the amount exceeding 0.175. Stated in other words, the more the bank goes beyond the deselection threshold of 0.175, the higher the fee the bank has to transfer to the government for each guaranteed loan it makes.[8] Importantly, the bank is not able to pass the higher guarantee fee on to the borrower. That is, firms do not pay a higher guarantee fee than the one set in the program. Thus, when the bank has to transfer a higher guarantee fee to the government due to exceeding the deselection threshold, then the bank has to forgo a part of the interest rate for the guaranteed loan, which cannot be higher than 1.25% by the law.

Another important feature of the guarantee program is that guarantees kick in only when the bank's *total* of the guaranteed and deselected loan portfolio (henceforth, the 'reference' portfolio) incurs a certain amount of loss. Losses on guaranteed loans were allocated between the bank and the government at the end of the guarantee program as follows:

% of losses in the reference portfolio	% of losses on guaranteed loans covered by the government
$loss \leq 3\%$	0%
$3\% < \ loss \ \leq 5\%$	50%
$5\% < loss$	80%

More specifically, if the bank makes a loss from a guaranteed loan, then the percentage of the loss borne by the government depends on the loss in the bank's reference portfolio. For example, if the bank's reference portfolio incurs a loss of only 2%, then the government guarantee would not kick in. If the bank's reference portfolio incurs a loss of 4%, then the government would cover 50% of the losses on guaranteed loans.

Given also that losses are only partially covered by the government, the program ensures that banks have some skin in the game, which mitigates moral hazard on their side.

[8] For example, if the bank's deselection factor is calculated as 0.25, then the fee on guaranteed loans increases from 0.0025 to 0.0027 = 0.0025×1.075[= 1 + (0.25 − 0.175)] for SMEs and from 0.005 to 0.0054 = 0.005×1.075 for large firms.

3. Data, sample selection, and hypothesis

3.1. Data sources

We gather information on loans as well as bank and firm financial statements from the National Bank of Belgium (the central bank of Belgium, hereafter NBB).

Loan-level data. We draw loan-level information from the Belgian Extended Credit Risk Information System (BECRIS), collected and maintained by the NBB. BECRIS is the Belgian part of the European Central Bank's AnaCredit project and contains detailed information on monthly individual bank loans.[9] While AnaCredit only includes loans from debtors whose total borrowing equals or exceeds €25,000 within the reporting reference period, there is no reporting threshold for BECRIS, and thus we observe the universe of loans granted by all Belgian financial institutions to Belgian firms.

BECRIS comprises a broad set of instrument types. We focus only on those covered by the program: overdrafts, revolving credit, non-revolving credit lines, and other loans including term loans.[10] BECRIS records a comprehensive set of loan characteristics such as (both committed and drawn) amounts, maturity, and interest rate. In addition, we observe the borrower's arrears, probability of default estimated by its lender, as well as its default status.

Under the guarantee program, an eligible loan is either issued with a public guarantee or deselected by the lender. Just as BECRIS separately flags eligible and ineligible loans, it also records whether an eligible loan was granted with a public guarantee (with a distinction of whether the borrower is an SME or a large firm) or deselected. Crucially for our analysis, being able to distinguish between guaranteed and deselected loans, combined with the mandatory nature of the program requiring all eligible loans to be granted with a public guarantee, allows us to entirely observe banks' behaviour towards firms that demanded a loan that was eligible for a public guar-

[9] Anacredit is a proprietary and confidential database containing detailed monthly data on bank loans from all euro area countries -by combining and harmonizing their national credit registers- from September 2018.

[10] Other instruments that are included in BECRIS but are not covered by the guarantee program: credit card debt, finance leases, trade receivables, and reverse purchase agreements. Although we also observe off-balance sheet commitments provided with public guarantees, we do not include them in the analysis because of the different nature of those contracts.

antee. Thus, contrary to related other studies (e.g., Altavilla et al., 2022; Cascarino et al., 2022; Jiménez et al., 2022), we are able to account for selection bias that might arise when we do not know whether firms without guaranteed loans actually demanded a guaranteed loan or not.[11]

Firm-level data. We also utilize Belgian firms' annual financial accounts, collected by the Central Balance Sheet Office (CBSO) at the NBB. Almost all non-financial corporations in Belgium, regardless of their size, report on an annual basis.[12] We use the latest unconsolidated accounts prior to February 2020. Because the first lockdown was announced in March, February was the latest month when economic activities were unaffected by the COVID-19 crisis. More specifically, if the firm closes its accounts in January or in February, we use its information from 2020. However, if the firm's fiscal year ends in March onwards, then we use the information from 2019. Nevertheless, the fiscal year for 72% of firms in our sample ends in December, thus for the majority of firms in our sample, we mainly use the accounts of December 2019. We focus on the real economy and therefore exclude less relevant sectors (D, K, O, P, Q, T, U).[13]

Additionally, we collect information on firms' quarterly sales from VAT filings.[14] By looking at the change in sales between the pre- and post-pandemic periods, we create a proxy for the sector's affectedness by the pandemic. Additionally, quarterly sales figures allow us to estimate the real effects of guaranteed loans.

Bank-level data. We obtain unconsolidated bank balance sheets and income statements from the monthly regulatory filings (so-called "program A") available at the NBB. We only keep banks in the sample. Other financial institutions, such as leasing, insurance, or factoring companies, are out of the scope of this study.

[11] Even though eligible loans have to be granted with a public guarantee if disbursed, it is possible that banks might decide not to disburse an eligible loan at all (e.g., even through deselection). We do not observe those cases, and thus our analysis suffers from possible sample selection bias arising due to leaving rejected loan applications out of the analysis. That said, except in a few studies (e.g., Jiménez et al., 2012, 2014), this limitation exists in the vast majority of the banking literature as often only granted loans are observed.

[12] Some exceptions include sole traders or unlimited liability companies.

[13] The excluded sectors in detail are electricity, gas, steam, and air conditioning supply (D), financial and insurance sector (K), public administration and defense; compulsory social security services (O), education sector (P), services related to human health and social work (Q), activities of households as employers; undifferentiated goods and services-producing activities of households for own use (T), activities of extraterritorial organisations and bodies (U).

[14] SMEs are not obligated to report sales figures in their annual profit and loss accounts, yet they are obligated to regularly file VAT declarations. Thus, by using VAT filings, we can get a more complete view of the pandemic's impact on sales.

We focus on the first three months of the program, i.e., April 2020 and June 2020. This is because, on 24 July 2020, a second guarantee program with new features started. Crucially, eligible loans no longer had to be granted with guarantees under the second-stage of the Belgian loan guarantee program.[15] Our focus is on the first-stage of the program because it was mandatory for banks and thus provides a unique opportunity for us to analyse banks' behavior towards borrowers with varying characteristics. Therefore, we exclude the period of the second program from the analysis to eliminate the contaminating effects.

3.2. "Marginally ineligible" loans

Given that the first Belgian loan guarantee program covered only loans with a maturity of up to 12 months and that all eligible loans could only be granted with a public guarantee, our analysis also takes into account the possibility that banks might have asked some of their borrowers to apply for loans with a maturity just above 12 months (e.g., 12 months + 7 days) to avoid the conditions of the guarantee program. Although banks were allowed to deselect loans, they might have preferred to issue some loans entirely outside of the guarantee program through adjusting the maturity of otherwise eligible loans. This is because high levels of deselection result in an increase in the payable guarantee fee (see the discussion in Section 2). Besides guaranteed and deselected loans, we therefore also incorporate into our analysis loans with a maturity marginally higher than 12 months which were otherwise eligible. We define these "marginally ineligible" loans as loans of an eligible type with a maturity of 367-400 days granted to eligible borrowers (i.e., those that did not have any loan arrears and did not undergo any debt restructuring during the period indicated by the law). In our robustness tests in Section 5.4, we also define marginally ineligible loans using different maturity dates to ensure that our results are not sensitive to our choice of maturity.

To justify the incorporation of marginally ineligible loans into the analysis, Figure 1a shows the maturity distribution of newly originated loans between 367-450 days before and during the

[15] Moreover, with the second-stage of the Belgian loan guarantee program, the maturity for guaranteed credit was first extended up to 3 years, and then up to 5 years for SMEs. The maximum interest rate that banks could charge for guaranteed loans increased to 2% (2.5%) for loans with a maturity between 1-3 (3-5) years. Similarly, the guarantee fee also increased to 50 (100) basis points for loans with a maturity between 1-3 (3-5) years. Importantly, guarantees provided under the second-stage covered 80% losses from each individual loan, regardless of losses incurred in banks' reference portfolio, contrary to the first-stage of the guarantee program.

pandemic. The figure demonstrates that banks issued more loans with a maturity just above 1 year post-pandemic. This is further corroborated by Figure 1b, which illustrates that the fraction of marginally ineligible loans in the total number of short-term new loans is overall higher during the post-pandemic period, relative to the pre-pandemic period. Lastly, we regress committed marginally ineligible loans on committed guaranteed loans and committed deselected loans (all scaled by the total of active and new short-terms committed loans in February) along with a set of controls at the bank-firm level. As shown in Table B1, we find a negative relation between marginally ineligible loans and loans in the reference portfolio. On the whole, all these suggest that marginally ineligible loans might have been used as a substitute for guaranteed and deselected loans.

3.3. Hypothesis

We formulate our main hypotheses in this section. To do so, we start with the features of the three loan categories in our sample: guaranteed, deselected, and marginally ineligible loans. For better illustration, the key features of these loan groups are compared in Table 1.

On the one hand, banks benefit from issuing guaranteed loans because part of their losses from those loans would be covered, conditional on that their reference portfolio (i.e., the total of guaranteed and deselected loan portfolio) incurs more than a 3% loss. On the other hand, the maximum interest rate that banks can charge for a guaranteed loan is capped at 1.25%, which is significantly lower than the pre-pandemic interest rate for similar loans. As illustrated in Figure 2, the average interest rate of loans with a maturity of up to 12 months was 1.63% in February 2020 (just before the pandemic) and on average 1.7% over April-June 2019 (1 year before the post-pandemic period). Thus, if banks want to charge a higher interest rate than 1.25% for an eligible loan, then they have to issue the eligible loan either through deselection or with a maturity higher than 1 year (i.e., pushing the eligible loan to the ineligible category). Furthermore, non-guaranteed lending allows banks to avoid the fee required for the public guarantee. When banks issue a guaranteed loan, they charge the borrower a guarantee fee (25 or 50 bps) but transfer this fee to the government. Hence, instead of a guaranteed loan, banks may opt to disburse a non-guaranteed loan and still implicitly charge the borrower a fee the same as they would charge for a guaranteed loan. In this case, differently than for guaranteed lending, they keep all the return to

themselves, i.e., they do not have to transfer anything to the government. In this situation, while it does not make any difference for the firm between obtaining a guaranteed or non-guaranteed loan, non-guaranteed lending can increase the bank's return. All in all, non-guaranteed lending enables banks to charge a higher interest rate.

H1: Banks use non-guaranteed lending to charge a higher interest rate.

Banks may also opt to issue non-guaranteed loans to help their important borrowers avoid paying guarantee fees. Banks may do so to preserve valuable relationships with their important borrowers. Specifically, banks may grant their important borrowers non-guaranteed loans and charge them lower than what they would charge for a guaranteed loan including the fee. Note also that, non-guaranteed lending can be beneficial to both borrowers and lenders at the same time. This happens if the interest rate of the non-guaranteed loan is set higher than 1.25% but lower than the maximum total cost of a guaranteed loan for the borrower, which is 1.5% for an SME and 1.75% for a large firm. For example, the bank charges an SME a total rate of 1.5% for a guaranteed loan, which is the sum of the capped interest rate of 1.25% and a fee of 0.25% for the public guarantee. Instead of a guaranteed loan, if the bank grants the same borrower a non-guaranteed (deselected or marginally ineligible) loan, for example, with an interest rate of 1.35%, then both the lender and the borrower would be better off. That is, the borrower would pay an interest rate lower than 1.5%, while the lender would obtain a return higher than 1.25%. We argue that banks and borrowers split the profit from avoiding the guarantee fee depending on how important the borrower is to the bank.

H2: Banks use non-guaranteed lending to help their important borrowers avoid paying guarantee fees.

4. Empirical framework

The COVID-19 pandemic provides an ideal setting for examining the allocation of loans under public loan guarantees. This is because the pandemic was arguably unexpected and one can credibly argue that the initiation of the public loan guarantee program was orthogonal to the pre-pandemic firm and bank characteristics.

To elucidate how bank and/or firm factors affected the allocation of loans under the Belgian loan guarantee program during the pandemic, we first estimate the following OLS model at the loan-month level:

$$\begin{aligned} Y_{lbft} = \alpha Firm\ share_{bf} + \Phi Bank\text{-}firm_{bf} + \Theta Firm_f \\ (+\gamma Sector\ sales\ growth_s + \Psi Bank_b) + \gamma_{bt} + \theta_{splt} + \upsilon_{amount} + \varepsilon_{lbft} \end{aligned} \tag{2}$$

where the dependent variable, Y, is equal to 1 if a guaranteed loan of type l (overdraft, revolving credit, credit line, or others including term loans) is issued from bank b to firm f in month t during the period of April 2020 to June 2020; and to 0 if the loan is issued through deselection. We also estimate Equation (2) with a dependent variable equal to 1 if the loan is issued with a public guarantee, and to 0 if the issued loan is marginally ineligible. Our main explanatory variable, *Firm share*, captures the importance of firm f for bank b. It is calculated as the ratio of total credit committed by bank b to firm f relative to bank b's total lending portfolio. We use the average value of *firm share* between 2019:3 and 2020:2 (i.e., 12-months average) to mitigate the concern for time-specific shocks, and pre-pandemic values are used to ensure that firm share is not affected by the pandemic. We exclude March 2020, when the COVID-19 cases started to accrue in Europe, from the analysis to mitigate the contaminating effects of the lockdown announcement.

Bank-firm$_{bf}$ refers to bank-firm controls including *firm risk* (the firm's probability of default estimated by its bank's internal model in February 2020) and *maturing debt* (an indicator variable that is equal to 1 if there is a maturing loan between the bank and the firm over April-June 2020, and to 0 otherwise). $Firm_f$ denotes a set of firm controls, measured prior to February 2020: (i) *firm size* (a dummy variable equal to 1 if the firm is large, and 0 to otherwise), (ii) *firm leverage* (long-term debt, divided by total assets), (iii) *firm age* (the number of years since the incorporation date), (iv) *firm liquidity* (the sum of cash and liquid assets, divided by total assets), and (v) *firm RoA* (earnings before interest, taxes, depreciation, and amortization, divided by total assets).

In our tests, we also look at whether guaranteed loans were mainly issued to borrowers that were adversely affected by the pandemic. To do so, we additionally include the change in sales between the pre- and post-pandemic periods at the sector-level (denoted as *sector sales growth*) as a proxy

for affectedness by the pandemic. As our main analysis focuses on a relatively short time period and COVID-19 was arguably the most dominant event, we can credibly attribute the decline in sales to the effect of the pandemic. Nevertheless, we use a sector-level measure, rather than a firm-level one, to mitigate the concern that the decline in sales is correlated with idiosyncratic firm factors. To create our sector-level exposure, we follow Chodorow-Reich et al. (2021). Specifically, using data on firms' VAT declarations, we first measure the quarterly year-on-year growth in median sales for each 2-digit sector from 2019:Q2 to 2020:Q2.[16] Then, we subtract the average of Q2-Q2 growth rates of each sector from 2015 to 2019 to ensure that our proxy is free of pre-pandemic trends in sector growth.

$Bank_b$ denotes a set of bank controls, including *bank assets* (the natural log of total assets), *bank capital* (the ratio of common equity to total assets), bank NPL (the ratio of non-performing loans to total loans). These variables are measured in February 2020. Furthermore, we control for the bank's exposure to the pandemic (denoted as *bank exposure*), calculated ex-post. Specifically, it is calculated as the total share of the affected sectors in the bank's total lending, where affected sectors are defined as those whose sales growth in 2020:Q2 relative to 2019:Q2 are below the median across all sectors.

The most restrictive version of Equation (2) includes bank×month fixed effects (γ_{bt}) to control for time-varying observed and unobserved lender heterogeneity, as well as 2-digit sector×province×loan-type×month fixed effects (θ_{splt}) to net out any variation in demand factors that are common to all borrowers in the same province and sector, and for the same loan type, in a given month. Crucially, we also saturate the model with loan amount fixed effects using percentiles of the committed loan amount. This allows us to compare loan outcomes within groups of firms that demanded a similar loan amount.[17] Controlling for this is important because loan amount is included in the deselection factor (see Equation (1)) and thus directly affects banks' lending decisions.[18] Lastly, we cluster

[16] Differently than ours, Chodorow-Reich et al. (2021) use industry employment figures obtained from the Bureau of Labor Statistics Current Employment Statistics.

[17] Note that we do not observe demanded loan amounts. For this reason, we use the bins of the committed loan amount, assuming that firms in the same bin demanded a similar loan amount.

[18] The deselection factor also incorporates loan maturity along with loan amount. However, we do not control for maturity as it does not have any impact on our results. This is because the maximum maturity was already capped at 1 year under the loan guarantee program and accordingly we observe that the majority (73%) of loans in the bank's reference portfolio were granted with 1-year maturity.

standard errors at the bank×2-digit sector level.[19]

Note that, in our models, we use firm-cluster-month fixed effects, instead of firm×month fixed effects, which at the bank-firm-month level would enable us to compare exposures to the same borrower between banks extending loans with guarantees and other banks extending similar loans without guarantees in a given month (as in Khwaja and Mian, 2008).[20] This is because the vast majority of our sample (around 96% of firms) only borrow from one bank, so using firm×month fixed effects, which can be used for firms borrowing from multiple lenders, would result in losing a vast proportion of observations. Furthermore, excluding single-bank firms from the analysis would create a selection bias if single-bank firms have different characteristics than multi-bank firms, which might be the case for Belgian firms as shown by Degryse et al. (2019). To ensure that our results are not driven by demand factors, in our robustness tests (in Section 5.4), we control for time-varying loan type-specific demand factors that are common to firms not only in the same province-sector, but also in the same size. Degryse et al. (2019) compare credit supply shocks obtained through location-sector-size-time fixed effects to those obtained through firm-time fixed effects in Belgium, and show that such firm cluster fixed effects adequately capture credit demand. Additionally, in Section 6, we conduct estimations at the bank-firm level, and show that the results obtained with firm-cluster fixed effects are qualitatively similar to those obtained with firm fixed effects (i.e., within-firm comparison as in Khwaja and Mian (2008)).

Next, we estimate the following specification to examine how interest rates and amounts of

[19]Even though our main variable of interest, *firm share*, varies at the bank-firm level, we opt to cluster standard errors at the bank×2-digit sector level, instead of e.g., at the bank and the firm level (as in Jiménez et al., 2022). This is because, in our main sample, around 96% of Belgian firms borrow only from one lender, and thus firm-level clustering would lead to large amounts of single-unit clusters. Moreover, we have only 7 banks in the sample, and thus bank-level clustering would lead to too few clusters.

[20]See Güler et al. (2021) for a review of the banking literature on the use of firm(×time) fixed effects to control for credit demand for multi-bank firms since Gan (2007) and Khwaja and Mian (2008), followed by firm-cluster fixed effects to control for demand when the sample mainly consists of single-bank firms (e.g., Degryse et al., 2019; Acharya et al., 2019).

granted loans varied with *firm share*.

$$\begin{aligned} Y_{lbft} = {} & \beta_1 Firm\ share_{bf} \times Guaranteed_{lbft} + \beta_2 Firm\ share_{bf} \times M.\ Ineligible_{lbft} \\ & + \beta_3 Firm\ share_{bf} + \beta_4 Guaranteed_{lbft} + \beta_5 M.\ Ineligible_{lbft} \\ & + \Phi Bank\text{-}firm_{bf} + \Theta Firm_f + \gamma_{bt} + \theta_{splt} + \varepsilon_{lbft} \end{aligned} \tag{3}$$

where Y stands for *interest rate+fee* (interest rate, plus the fee for guaranteed loans) or *ln(amount)* (the natural log of the committed loan amount) of the loan with type l granted from bank b to firm f in month t. $Guaranteed_{lbft}$ is a dummy variable equal to 1 if the loan is issued with a public guarantee, and to 0 otherwise. $M.\ Ineligible_{lbft}$ is a dummy variable equal to 1 if the loan is issued with a maturity of 367-400 days which was otherwise eligible for the public guarantee (i.e., a marginally ineligible loan), and to 0 otherwise. The rest of the variables are defined as in Equation (2). As before, we cluster standard errors at the bank×2-digit sector level.

In Equation (3), deselected loans are the reference category and thus are omitted. For this reason, the interaction term denotes the effect of *firm share* on loan characteristics (*interest rate+fee* or *ln(amount)*) for the given category of loans (*guaranteed* or *m. ineligible*) vis-à-vis the deselected loans.

5. Results

5.1. Stylized facts and summary statistics

Our sample includes 3,185 guaranteed, 5,852 deselected, and 2,910 marginally ineligible loans issued from 7 banks to 9,998 unique firms between April 2020 to June 2020. In fact, 14 banks participated in the Belgian loan guarantee program, yet we exclude 7 of them for two reasons. First, they do not report their borrowers' probability of default, which is our main measure of firm risk. Second, the number (volume) of loans granted from those 7 banks only accounts for 5% (7%) during our sample period.

Figure 3 illustrates the origination of loans for each category on a cumulative basis. In terms of the number of loans (Figure 3a), deselected loans were issued more frequently from the start until

the end of the program. In terms of committed amounts (Figure 3b), guaranteed loans represent the largest volume as of June. When we calculate each bank's deselection factor using Equation (1) for the first three months of the program, we observe that 6 banks already exceeded the deselection threshold of 17.5%, and the deselection factor was above 100% for 5 banks. This shows banks' willingness to grant loans through deselection rather than with a public guarantee. It appears to be that banks intended to reduce their deselection factor by granting guaranteed loans with larger amounts over time. Despite that, the deselection factor still remained more than 17.5% for 6 banks by December. Meanwhile, marginally ineligible loans accounted for the smallest volume among the three groups.

Figure 4 compares the distribution of the loan types across guaranteed, deselected, marginally ineligible loans, and new loans granted in February 2020 (just before the pandemic). Compared to the pre-pandemic period, the fraction of overdrafts overall decreases in all loan categories post-pandemic. While credit lines dominate among guaranteed and marginally ineligible loans, the fraction of other loans (which typically include term loans) is highest among deselected loans. In our estimations, we account for these differences with loan-type fixed effects.

Table 2 presents summary statistics for the entire sample, while Table 3 compares the sample means of the variables, separately for guaranteed, deselected, and marginally ineligible loan categories. It seems that all sectors in each group experienced a decline in sales growth in 2020:Q2 relative to 2019:Q2 (see Figure B1 for the comparison of sectors' sales growth). Nevertheless, the borrowers of guaranteed loans on average operate in sectors that were the most affected by the pandemic. In addition, the borrowers of guaranteed loans were overall ex-ante riskiest according to their probability of default and other firm characteristics (e.g., higher leverage, lower liquidity, and lower RoA). Interestingly, firm share is highest among the recipients of guaranteed loans. In the next section, we investigate loan allocation through our regression analysis where we control for various elements such as credit demand.

5.2. Results: banks' decision to issue guaranteed loans

5.2.1. Probability of obtaining a guaranteed vis-à-vis deselected loan

Table 4 presents evidence on how guaranteed loans were allocated across non-financial borrowers during the pandemic, based on estimating various versions of Equation (2). The dependent variable is a dummy equal to 1 if the loan is issued with a public guarantee by the bank, and to 0 if the loan is issued through the bank's deselection. Column (1) controls for time-varying heterogeneity across loan type-province clusters (with province×loan×month fixed effects) as well as across banks (with bank×month fixed effects). The estimated coefficient of sector sales growth is negative and statistically significant at the 1% confidence level, implying that, when the sector's sales decrease by one standard deviation, the firm's likelihood of obtaining a guaranteed loan, relative to being deselected, rises by 5 basis points ($14\% = 0.05/0.35$). This is consistent with the related literature (Altavilla et al., 2022; Cascarino et al., 2022; Jiménez et al., 2022) and indicates that banks screened their borrowers and issued guaranteed loans to affected firms that were the target of the program.

Column (2) additionally includes loan amount fixed effects. Comparing loan outcomes across firms that demanded a similar loan amount is crucial for the interpretation of firm share. Firms with an ex-ante high share in the bank's lending portfolio are likely larger firms and thus are likely to demand higher loan amounts. At the same time, banks on average might be less willing to deselect larger loans to avoid overstepping the deselection threshold (see Equation (1)). Hence, to avoid that the effect on firm share merely reflects the bank's constraints coming from the deselection factor, we include loan-amount bin fixed effects. As such, firm share reflects a firm's relative importance to the bank, given its requested loan amount bin. In line with this, whereas the point estimate on firm share is not significant in column (1), it appears to be negative and significant at the 10% confidence level in column (2) once the demanded loan amount is controlled for.

Column (3) shows our benchmark model, which further restricts the model by including 2-digit sector×province×loan-type×month fixed effects to net out any variation in demand factors that are common to all borrowers in the same province and sector, and for the same loan type, in a given

month.[21] The estimated coefficient of firm share is now larger in magnitude and is significant at the 1% confidence level. Numerically, a one standard deviation increase in firm share reduces the likelihood of the loan being issued with a public guarantee by 3 basis points (8.6% = 0.03/0.35). This is in line with our hypothesis that banks granted their important borrowers loans outside of the guarantee program so that those borrowers did not have to pay guarantee fees.

Additionally, based on the estimates in column (3), the coefficient of firm risk is positive and significant at the 10% confidence level, indicating that riskier firms were more likely to obtain guaranteed loans. Specifically, a one standard deviation increase in the firm's probability of default raises the firm's likelihood of receiving a guaranteed loan by 1 basis point (3% = 0.01/0.35). Likewise, the point estimates on firm controls also signify risk-taking, i.e., smaller, younger, less profitable, and/or less liquid firms are more likely to obtain guaranteed loans. We also observe that firms with maturing debt were more likely to obtain loans through deselection.

In column (4), we include bank characteristics by excluding bank×month fixed effects. The point estimates on bank-firm and firm variables are overall consistent with those in column (3). The evidence demonstrates that better-capitalized banks, banks with a lower share of non-performing loans, and/or those with lower exposure to the affected sectors are more inclined to issue loans through deselection. This suggests that healthy banks might avoid guaranteed lending.

Overall, our results suggest that guaranteed loans were on average granted to borrowers that were adversely affected by the pandemic and/or risky. The evidence also indicates that less healthy banks were more inclined to disburse guaranteed loans. Concerning our main research question, we find that banks were more likely to deselect loan applications from their important borrowers, i.e., borrowers that had a larger initial share in their lending portfolio. This is in line with our hypothesis that banks might have helped their important borrowers avoid paying guarantee fees.

5.2.2. Probability of obtaining a guaranteed vis-a-vis marginally ineligible loan

We now examine how bank and/or firm factors affect the likelihood of obtaining a guaranteed loan vis-à-vis a marginally ineligible loan. To do so, we estimate Equation (2) with a dependent variable

[21] The inclusion of sector fixed effects subsumes *Sector growth* in column (3).

equal to 1 if the loan is issued with a public guarantee, and to 0 if the issued loan is marginally ineligible. Table 5 presents the results.

As before, column (1) includes province×loan×month fixed effects and bank×month fixed effects. The negative and significant coefficient of sector sales growth indicates that lenders were more likely to grant borrowers in affected sectors guaranteed loans than marginally ineligible loans, in line with the result in Table 4.

While the coefficient of firm share is positive and significant in column (1), the estimated effect becomes negative in column (2) once the demanded loan amount is controlled for through loan amount fixed effects. The magnitude of the estimated effect as well as the significance further increase with the incorporation of 2-digit sector fixed effects in column (3). Based on the estimate in column (3), when the firm's ex-ante share increases in the bank's total lending volume by one standard deviation, the firm's likelihood of obtaining a guaranteed loan decreases by 2 basis points ($4\% = 0.02/0.52$). As before, this indicates that banks were more likely to issue non-guaranteed loans to their important borrowers.

Additionally, in column (3), the point estimates on firm risk as well as on firm variables constructed through firms' financial accounts are broadly significant and suggest that riskier firms were more likely to obtain guaranteed loans than marginally ineligible loans. Based on the estimate on firm risk, a one standard deviation increase in the firm's probability of default raises the firm's likelihood of obtaining a guaranteed loan by 2 basis points ($4\% = 0.02/0.52$), relative to obtaining a marginally ineligible loan. The estimated effect is even higher than the one in Table 4, suggesting that the riskiness of lenders' deselected loan portfolio was on average higher than the riskiness of their marginally ineligible loan portfolio. This might be explained by the fact that deselected loans are part of the reference portfolio and guarantees kick in only if the bank's reference portfolio incurs more than a 3% loss (see the discussion in Section 2). Besides, consistent with Table 4, firms with a maturing debt and/or those borrowing from lenders with lower exposure to the pandemic (see column (4)) were more likely to obtain non-guaranteed loans.

Lastly, if banks grant their important borrowers loans with a maturity of just above 1 year to avoid the conditions of the program, then the effect should be more prominent when these

borrowers demand an eligible loan with a maturity close to 1 year. Column (5) investigates this by comparing the likelihood of obtaining a guaranteed loan with a maturity of 330 days to 1 year vis-à-vis a marginally ineligible loan (i.e., loans with a maturity of 367 to 400 days). The estimated effect of firm share is larger in magnitude than the one in column (3), corroborating that banks might push eligible loans demanded by their important borrowers into the ineligible category, so that those borrowers could avoid paying guarantee fees.

5.2.3. Bank and firm heterogeneity

We also examine how the effect of firm share on the likelihood of obtaining a (un)guaranteed loan varies with firm risk, exposure to the pandemic, and bank capital. To do so, we estimate Equation (2) by interacting firm share with those variables. Table 6 illustrates the results. In columns (1)-(3), the dependent variable is equal to 1 if the loan is issued with a public guarantee, and to 0 if the loan is issued through deselection. In columns (4)-(6), the dependent variable is equal to 1 if the loan is issued with a public guarantee, and to 0 if the issued loan is marginally ineligible.

In columns (1) and (4), we find that a risky firm's likelihood of obtaining a non-guaranteed loan increases with its ex-ante share in its lender's portfolio, yet the effect is barely significant. As shown in columns (2) and (5), the bank's likelihood of granting non-guaranteed loans to important borrowers does not tend to be driven by borrowers' exposure to the pandemic. In columns (3)-(6), the point estimates on the interaction of firm share and bank capital are negative and significant at the 5% and 1% confidence levels, respectively. The results indicate that a one standard deviation increase in the bank's capital ratio further decreases the effect of firm share on the likelihood of obtaining a guaranteed loan by 1 basis point.

In sum, we find significant evidence that (i) risky firms' probability of obtaining non-guaranteed loans increases with their importance, and (ii) banks with higher capital are more likely to grant non-guaranteed loans to their important borrowers.

5.3. Results: credit terms

We have shown that banks mainly granted non-guaranteed loans to borrowers that have a larger share in their lending portfolio (i.e., important borrowers).

Banks might disburse non-guaranteed loans for two reasons. First, banks might grant their borrowers non-guaranteed loans to charge them a higher interest rate than the capped rate of 1.25% for guaranteed loans. Second, banks might grant their borrowers non-guaranteed loans to help them avoid paying guarantee fees. If this is the case, then the interest rate of the non-guaranteed loan should be lower than what the total cost of a guaranteed loan (i.e., the sum of interest rate and fee) would be. In fact, non-guaranteed lending can be beneficial to both borrowers and lenders at the same time. This happens if the interest rate of the non-guaranteed loan is set higher than 1.25% but lower than the total cost of a guaranteed loan for the borrower, which is 1.5% for SMEs and 1.75% for large firms.[22]

We now examine which case is more likely for banks' important borrowers. To do so, we estimate Equation (3) with and without interaction terms, and present the results in Table 7. Just as we use interest rate (plus the fee for guaranteed loans) as the dependent variable in columns (1) and (2), we also assess the effect on the natural log of the committed loan amount in columns (3) and (4).[23]

Column (1) shows that the difference between the cost of guaranteed loans and the cost of deselected loans is negative but not significant. This implies that banks deselect borrowers and charge them the same as they would charge for a guaranteed loan. In this way, whereas the loan's cost for the borrower remains unchanged, deselection allows banks to avoid transferring a guarantee fee to the government. Besides, the negative coefficient of marginally ineligible loan identifier indicates that banks issued marginally ineligible loans to charge a higher interest rate.

[22]For example, the bank charges an SME 1.5% for a guaranteed loan, which is the sum of the capped interest rate of 1.25% and a fee of 0.25% for the public guarantee. Instead of a guaranteed loan, the bank, for example, might grant the same borrower a non-guaranteed loan with an interest rate of 1.35%. In this situation, both the lender and the borrower would be better off. That is, the borrower pays a lower interest rate than 1.5%, while the lender would obtain a higher return than 1.25%.

[23]In unreported tests, we also estimate model (3) using the committed loan amount scaled by the firm's pre-pandemic assets as the dependent variable, and the results are qualitatively similar to those presented in columns (3) and (4) of Table 7.

Numerically, marginally ineligible loans on average featured a 0.48 (0.43) percentage points higher interest rate than that of guaranteed (deselected) loans.

Column (2) shows that, even though non-guaranteed loans on average had a higher interest rate, it was not the case for important borrowers. A one standard deviation increase in the firm's ex-ante share in the bank's lending portfolio leads to a 0.31 percentage points reduction in the price of a marginally ineligible loan and 0.05 percentage points reduction in the price of a deselected loan. The difference between deselected and marginally ineligible loans suggests that banks might prefer to help their important borrowers mainly through issuing marginally ineligible loans rather than issuing loans through deselection. By doing so, banks might avoid overstepping the deselection threshold. At the same time, the results illustrate that the price of guaranteed loans tends to increase with firm share. This indicates that, when important borrowers obtain guaranteed loans, the interest rates of these loans are not favourable. Overall, the results suggest that lenders are more likely to provide their more important borrowers with loans at favorable conditions outside of the guarantee program.

Column (3) shows that guaranteed loans on average featured the highest committed amounts, followed by deselected loans, and marginally ineligible loans were overall smallest. Column (4), however, demonstrates that these results reverse for important borrowers. That is, a one standard deviation increase in firm share raises the committed loan amount by 60% for marginally ineligible loans, by 32% for deselected loans, and 27% for guaranteed loans. The results indicate that banks granted their important borrowers non-guaranteed loans, not only with lower interest rates, but also with higher amounts.

Taken together, our results suggest that banks are more likely to grant their important borrowers loans with an interest rate lower than the total cost of a guaranteed loan (i.e., the sum of the interest rate and the fee), implying that banks grant their important borrowers non-guaranteed loans to help them avoid paying guarantee fees. This is also corroborated by the evidence that non-guaranteed loans issued to important borrowers had also greater committed amounts.

5.3.1. Heterogeneity across bank capital

Lastly, we examine how the relation between firm share and credit terms is further driven by bank capital. To do so, we estimate Equation (3) through interacting bank capital with firm share and guaranteed/marginally ineligible loan identifiers. Table 8 presents the results. In column (1), the dependent variable is the interest rate (plus the fee for guaranteed loans). Only the point estimate on the triple interaction of firm share, marginally ineligible loan identifier, and bank capital is negative and significant at the 1% confidence level, indicating that banks with higher initial capital were more likely to grant their important borrowers marginally ineligible loans with lower interest rates. Numerically, a one standard deviation increase in bank capital on average reduces the interest rate of marginally ineligible loans for important borrowers by 0.27 percentage points.

In column (2), the dependent variable is the natural log of the committed loan amount. The results show that higher bank capital does not induce banks to issue important borrowers guaranteed loans with greater amounts, as the estimated effect is nearly zero ($0.01 = 0.07 - 0.06$). Higher bank capital, however, does lead banks to grant important borrowers deselected and marginally ineligible loans with greater amounts. Specifically, when the bank's capital ratio increases by one standard deviation, the amounts of deselected loans and marginally ineligible loans increase by 7% and 11%, respectively.

Overall, our results suggest that banks with higher capital can further help their important borrowers by granting them loans outside of the guarantee program with more favourable conditions.

5.4. Robustness

In this section, we conduct a series of tests to ensure the robustness of our main results.

5.4.1. Analysis at the bank-firm-month and bank-firm levels

As a benchmark, we analyse how the firm's ex-ante share in the lender's portfolio affects the likelihood of obtaining a guaranteed loan at the loan-level, along with loan-type (overdraft, revolving credit, credit line, or others including term loans) fixed effects. We do so to address the concern

that loan-type might be correlated with the firm's likelihood of obtaining a guaranteed loan (see Figure 4). However, when there are multiple loans (albeit with different types) issued from the same bank to the same firm, such loan-level analysis might artificially inflate significance levels due to the potential dependence between those loan observations. In our sample, there are multiple loans among 17% (22%) of bank-firm-month triplets (bank-firm pairs). To ensure that our results are not confounded by the potential dependence between multiple loans from the same bank to the same firm, we estimate Equation (2) at the bank-firm-month level as well as at the bank-firm level. As presented in Table B2, our results remain robust.

5.4.2. Defining "marginally ineligible" loans using alternative maturity dates

As the Belgian loan guarantee program covered only loans with a maturity of up to 12 months, we also take into account that lenders (borrowers) might find it favourable to issue (obtain) loans outside of the guarantee program to avoid guarantee fees. For this reason, we have also incorporated into our analysis granted loans with a maturity marginally higher than 12 months which were otherwise eligible. For such loans, we choose loans with a maturity of 367-400 days as a baseline. To ensure that our results are not sensitive to our baseline selection, we alternatively consider loans (i) with a maturity of 367-375 days, (ii) with a maturity of 367-450 days, (iii) with a maturity between 1 year and 2 years, (iv) with a maturity between 1 year and 3 years. Table B3 shows the results. Overall, those estimates are notably similar to our baseline results.

5.4.3. Using firm-size fixed effects

The Belgian loan guarantee program applied different interest rates and different fees to SMEs and large firms. Although our benchmark regressions include a firm size dummy (equal to 1 for large firms, and to 0 otherwise), we additionally interact it with 2-digit sector×province×loan-type×month fixed effects in our baseline Equations (2) and (3). By doing so, we aim to better control for loan demand, in the spirit of Degryse et al. (2019). Nevertheless, as shown in Table B4, our results broadly remain robust.

5.4.4. Using bank×sector×month fixed effects

In our main tests, we control for time-varying observed and unobserved bank heterogeneity by using bank×month fixed effects. Yet, our results might still be biased if there is a non-random selection between banks and sectors which can potentially affect banks' decision on guaranteed lending, for example, when banks specialize or have a high market share in some sectors (De Jonghe et al., 2020). To address this concern, we re-estimate Equations (2) and (3) by including bank×2-digit sector×month fixed effects. Those results are presented in Table B5 and are qualitatively similar to our main estimates.

5.4.5. Further controlling for firm risk

Examining non-linear effects of firm risk. Our results show that guaranteed loans were issued to risky borrowers. It might be the case that banks might have granted guaranteed loans to firms in the high-risk group, and non-guaranteed loans to firms in the medium(or low)-risk group and charged them higher interest rates. If this is the case, then the negative effect of firm share on the likelihood of obtaining a guaranteed loan might be driven by firms in the medium (or low)-risk group in Tables 4 and 5. To examine the possible non-linear impact of firm risk, we estimate Equation (2) by replacing our continuous firm risk variable with its quartiles and present the results in Table B6. We find that the magnitude of the effect tends to increase in the upper quartiles, suggesting that firm risk has a linear impact on the dependent variables.

Using alternative risk measures. Furthermore, to corroborate the estimated effect of firm share, we also estimate Equation (2) by replacing our main measure of risk (i.e., the firm's probability of default) with two alternative measures, in the spirit of Jiménez et al. (2014). The first measure (second measure) is a dummy variable equal to 1 if the firm had any arrears (the firm was provided with a forbearance measure) between September 2018 (the date when BECRIS became available) and February 2020, and equal to 0 otherwise. As demonstrated in Table B7, those results are broadly similar to our baseline estimates.

Controlling for firm risk in the effect of firm share on credit terms. Additionally, based on the estimates in Tables 4 and 5, riskier firms were more likely to obtain deselected loans rather than

marginally ineligible loans, presumably because deselected loans are part of the reference portfolio and guarantees kick in only if the bank's reference portfolio incurs more than a 3% loss (see the discussion in Section 2). Thus, firm risk might also drive the relation between firm share and the terms of granted loans, especially between deselected and marginally ineligible loans. To further control for the effect of firm risk, we estimate Equation (3) by including the interactions of firm risk and guaranteed/marginally ineligible loan identifiers. As illustrated in Table B8, the point estimates on firm share and its interaction terms remain almost identical to our baseline estimates in Table 7.

5.4.6. Controlling for bank-firm relationship length

One could argue that relationship borrowers might also be granted loans outside of the guarantee program (Petersen and Rajan, 1994; Berger and Udell, 1995), and the effect of firm share on loan allocation might be confounded by the bank's borrower-specific information.[24] To address this, we estimate Equation (2) using bank-firm relationship length (defined as the natural log of the number of years since the first bank-firm interaction) as an additional explanatory variable.[25,26] Table B9 shows the results. We find some evidence that relationship borrowers may also obtain non-guaranteed loans. Notwithstanding this, the point estimates on firm share are identical to our baseline estimates in Tables 4 and 5.

6. Additional tests

6.1. Does guaranteed lending substitute for non-guaranteed lending?

We additionally investigate whether banks used guaranteed lending as a substitute for prior existing non-guaranteed lending. For this analysis, we estimate the following difference-in-differences model

[24]For an overview of the literature on relationship lending during normal times as well during times of distress, see Kysucky and Norden (2016) and Berger et al. (2021).

[25]Similar to Berger et al. (2021), we are not able to incorporate information on non-credit products which are part of bank-firm relationships.

[26]Since 96% of Belgian firms are single-bank, we have little variation in other proxies traditionally used by the literature on relationship lending, such as a variable indicating whether or not the bank is the firm's main lender or the share of the bank in the firm's total borrowing.

at the bank-firm level:

$$\begin{aligned}\Delta\%\textit{Non-guaranteed loans}_{bf} = {} & \eta_1 \textit{Guaranteed}_{bf} \times \textit{Firm share}_{bf} \\ & + \eta_2 \textit{Guaranteed}_{bf} + \eta_3 \textit{Firm share}_{bf} \\ & + \Phi \textit{Bank-firm}_{bf} + (\Theta Firm_f) + \gamma_b + \theta_{sp(or\ f)} + \varepsilon_{bf}\end{aligned} \tag{4}$$

where the dependent variable, $\Delta\%$*Non-guaranteed loans*, is the change in the total of active and new non-guaranteed loans committed to firm f by bank b from 2020:2 to 2020:6. Guaranteed$_{bf}$ is equal to 1 if firm f obtained a guaranteed loan from bank b over 2020:4-2020:6. *Firm share*$_{bf}$, *Bank-firm*$_{bf}$, and $Firm_f$ are defined as before. We control for bank heterogeneity through bank fixed effects (γ_b). To control for demand factors, we either use 2-digit sector×province (i.e., firm-cluster) fixed effects (θ_{sp}) or more restrictively firm fixed effects (θ_f). The latter allows us to compare the growth in non-guaranteed loans extended to the same borrower between banks that granted a guaranteed loan and other banks that did not (as in Khwaja and Mian, 2008). We cluster standard errors at the bank×2-digit sector level. The coefficient, η_1, measures the degree to which the bank substitutes its pre-crisis exposure with new guaranteed loans across borrowers with varying ex-ante shares in its lending portfolio.

Panel A of Table B10 illustrates the summary statistics. Columns (1) and (2) of Panel A of Table 9 present the results from the estimation of Equation (4) without the interaction term using firm-cluster and firm fixed effects, respectively. The use of firm fixed effects results in a large reduction in the sample size. Nevertheless, the point estimates on the *guaranteed* dummy are negative and significant at the 1% confidence level in both columns, signifying that banks on average used guaranteed lending as a substitute for non-guaranteed lending. Specifically, non-guaranteed lending on average decreased by 18-21 percentage points among firms that obtained a guaranteed loan relative to those that did not. This result is consistent with other existing studies (Altavilla et al., 2022; Cascarino et al., 2022; Jiménez et al., 2022).

Columns (3) and (4) illustrate the results from the estimation of our full specification including the interaction term, with firm-cluster and firm fixed effects, respectively. In both columns, the estimated coefficients of the interaction term are negative and significant at the 1% confidence

level. This suggests that the degree of substitution between guaranteed and non-guaranteed loans decreases with the firm's ex-ante share in the bank's lending portfolio. Numerically, a one standard deviation increase in firm share leads to a 6-10 percentage points increase in the growth of non-guaranteed loans among firms that obtained a guaranteed loan vis-à-vis those that did not. This is consistent with our results showing that banks granted non-guaranteed loans to their important borrowers so that they did not have to pay a guarantee fee.

In column (5), we examine whether the effect of firm share on credit substitution is affected by the existence of a maturing debt between the bank and the firm. In column (6), we also examine heterogeneity across bank capital. However, the point estimates on the triple interaction terms are not significant at conventional levels in both columns.

Panel B of 9 repeats the same analysis by focusing only on the substitution of guaranteed loans for non-guaranteed *short-term* loans (see Panel B of Table B10 for the summary statistics). The results are qualitatively similar to those in Panel A. Lastly, we estimate Equation (4) by replacing the guaranteed loan dummy with the total amount of guaranteed loans, scaled by the new and active loans granted in February 2020. As shown in Table B11, those results are overall in line with the estimates in Table 9.

Overall, we find that banks use guaranteed lending as a substitute for prior existing non-guaranteed lending. However, when banks do issue guaranteed loans to their important borrowers, those loans less often serve the purpose of substitution. This corroborates our main result, i.e., banks tend to grant their important borrowers non-guaranteed loans so that those borrowers can avoid paying guarantee fees.

6.2. Real effects

We have shown that banks on average granted their important borrowers non-guaranteed loans to help them avoid paying guarantee fees. At the same time, guaranteed loans were granted to pre-pandemic risky borrowers (as shown in Tables 4 and 5). In this section, we analyse how borrowers

of guaranteed loans performed ex-post. To do so, we run the following model at the firm level:

$$\begin{aligned} Y_f = \zeta_1 Guaranteed_f + \zeta_2 M.Ineligible_f \\ + \Theta Firm_f + \delta_{(main)b} + \theta_{sp} + \varepsilon_f \end{aligned} \tag{5}$$

where Y_f first stands for the change in the natural log of sales from 2019:Q4 to 2020:Q2. Since we have quarterly data on sales, we use the last quarter-end before February 2020 (i.e., 2019:Q4) as the pre-period. As a dependent variable, we also use a dummy equal to 1 if firm *f*, provided with a new loan between April and June 2020, defaults after 1 year, and to 0 otherwise. $Guaranteed_f$ ($M.\ Ineligible_f$) is equal to 1 if firm f obtained a guaranteed loan (a marginally ineligible loan) over April-June 2020, and to 0 if the firm obtained a deselected loan. Note that, for this analysis, we focus only on firms that received only one loan type among guaranteed, deselected, and marginally ineligible loans. We net out any variation that is common to all firms in the same sector and in the same province through 2-digit sector×province fixed effects (θ_{sp}) and control for firms' pre-pandemic characteristics ($Firm_f$) including size, leverage, age, liquidity, and return on assets. We also include the firm's main bank fixed effects (δ_b) to control for bank factors, such as the bank's monitoring intensity. We cluster standard errors at the firm's main bank×2-digit sector level.

Panel C of Table B10 shows the summary statistics for the dependent variables. Columns (1) and (2) of Table 10 illustrate the estimates on sales, with and without main bank fixed effects, respectively. The point estimates on the *guaranteed* dummy are negative and significant at the 1% confidence levels in both columns. Based on the estimates in column (2), the sales of firms that obtained a guaranteed loan on average grew 20 percentage points less than the sales of firms that were deselected, as well as than the sales of those that obtained a marginally ineligible loan, given that the point estimate on the marginally ineligible dummy is nearly zero and not significant at conventional levels. Overall, the results suggest that guaranteed loans did not help borrowers improve performance.

Columns (3) and (4) similarly show the estimates on default, with and without main bank fixed effects, respectively. The point estimates on guaranteed loans are positive, significant at the 1% confidence level, and identical in magnitude. Specifically, we find that firms that obtained

guaranteed loans were on average 1.6 percentage points more likely to default, compared to firms that were deselected by their lenders. As in the case of sales, we do not find a statistically significant difference in the default rate between firms that were deselected and those that obtained marginally ineligible loans.

To elucidate whether the realized default rate of the borrowers of guaranteed loans is higher or lower than their expected default rate, we estimate Equation (5) with the firm's probability of default estimated by the lender at the time when the loan was granted (averaged at the firm-level for firms borrowing from multiple lenders). As shown in column (5) of Table 10, the expected default rate on average was 0.6 percentage points higher for the borrowers of guaranteed loans vis-a-vis the borrowers of non-guaranteed loans. Our estimates illustrate that the realized default rate is much higher than the expected default rate after controlling for various factors including the affectedness by the pandemic at the sector-province level. Thus, our results suggest that guaranteed loans did not help ex-ante risky firms survive ex-post.

In sum, we find that guaranteed loans neither helped borrowers improve performance nor helped them survive at the very least. At the same time, the latter implies that public guarantees did not lead to zombie lending.

7. Conclusion

This paper studies lending decisions under public loan guarantees. Specifically, we examine how guarantee fees affect loan allocation and pricing.

Public loan guarantee programs have become a widespread tool to facilitate firms' access to bank credit, especially since the 2007-08 financial crisis (Beck et al., 2010; OECD, 2017). Such programs have gained even more popularity during the COVID-19 pandemic (Cascarino et al., 2022). When lenders disburse a loan with a public guarantee, they typically charge the borrower an additional fee for the guarantee, and transfer this fee to the government in exchange for credit protection. Whereas existing studies examine the effect of public guarantees on loan allocation (e.g., Altavilla et al., 2022; Cascarino et al., 2022; Jiménez et al., 2022), the literature does not consider the role that the guarantee fee plays in loan outcomes.

In an attempt to fill this gap in the literature, we examine how guarantee fees affect loan allocation. For identification, we exploit the Belgian loan guarantee program implemented after the onset of the COVID-19 pandemic. Guaranteed lending to eligible borrowers was mandatory in Belgium, but banks could deselect some eligible loans, or issue loans by adjusting their terms such that they marginally fall outside of the scope of the mandatory program. Using loan-level data from the Belgian credit register, we show that banks are more likely to grant loans outside of the guarantee program to their important borrowers (proxied by the firm's pre-pandemic share in the bank's total lending portfolio). Furthermore, non-guaranteed loans granted to important borrowers on average have a lower interest rate than the total cost of a guaranteed loan (i.e., the sum of an interest rate and a fee) as well as feature higher committed amounts than those of guaranteed loans. Overall, our results indicate that banks are more likely to grant their important borrowers loans outside of the guarantee program with more favorable terms so that those borrowers can avoid paying guarantee fees.

We also investigate whether banks use guaranteed lending as a substitute for non-guaranteed lending. We find strong evidence of substitution, yet the degree of substitution between guaranteed and non-guaranteed loans decreases with the firm's ex-ante share in the bank's lending portfolio. That is, banks are less likely to substitute their pre-crisis exposure to their important borrowers with new guaranteed loans. This further corroborates the evidence that banks tend to grant their important borrowers non-guaranteed loans so that those borrowers can avoid paying guarantee fees.

Additionally, we show that bank capital plays an important role in loan allocation. More specifically, our estimates suggest that banks with a higher capital ratio can further help their important borrowers by granting them loans outside of the guarantee program with more favourable conditions.

Lastly, our estimates reveal that banks issued guaranteed loans to riskier and less important borrowers, and these borrowers on average experienced a lower sales growth and defaulted more frequently than expected, relative to the borrowers of non-guaranteed loans. In sum, the results indicate that guaranteed loans neither helped riskier borrowers improve performance nor helped them survive at the very least.

Overall, our results contribute to the literature by documenting novel evidence on the effect of guarantee fees, as well as provide insights for policy makers regarding the designs of public loan guarantee programs. In particular, banks (firms) may prefer to issue (obtain) non-guaranteed loans to avoid guarantee fees. Guarantee fees may thus have a negative effect on the take-up rate of guaranteed loans.

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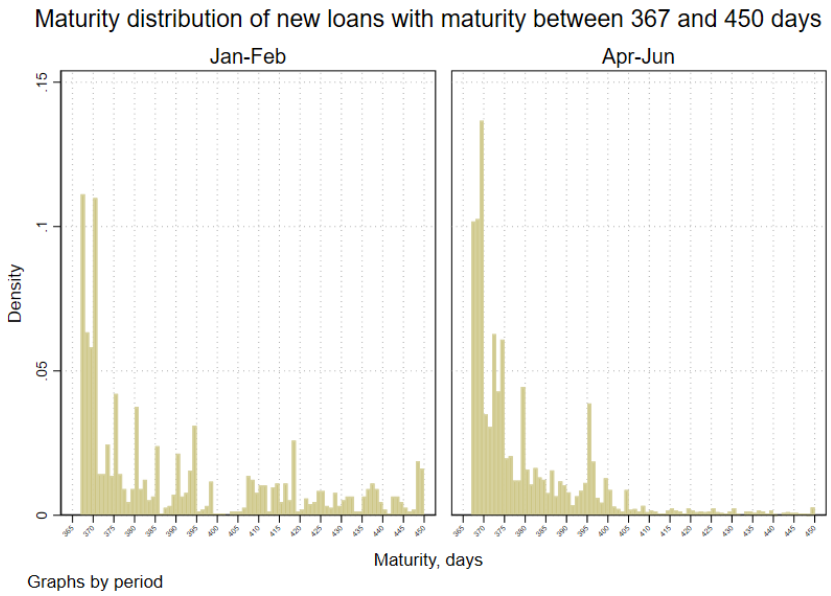
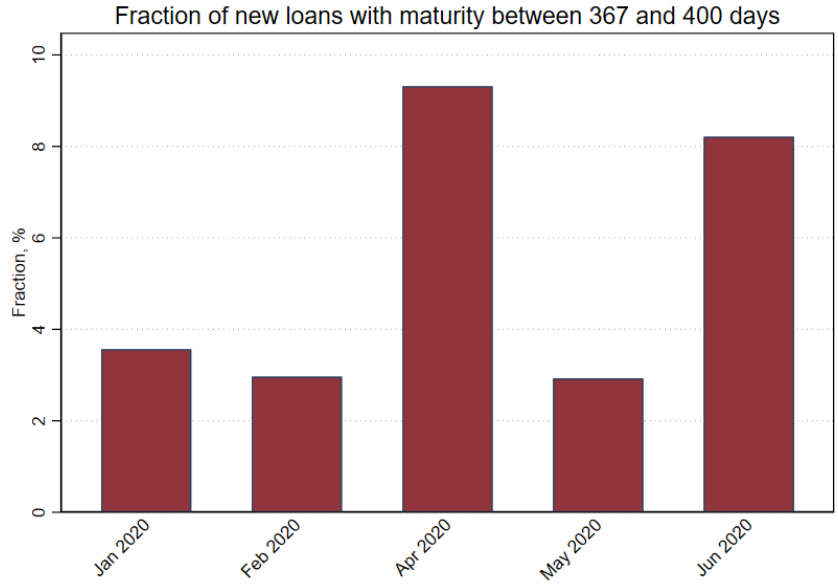


(a) Distribution of maturity of new loans (in days)



(b) Fraction of marginally ineligible loans per month

Figure 1: Evolution of the number of blue- and white-collar employees
Sub-figure (a) shows the maturity distribution of newly originated loans with a maturity of 367 to 450 days in the period before (January to February 2020) and during the COVID-19 pandemic (April to June 2020). Sub-figure (b) illustrates the evolution of the fraction of newly originated loans with a maturity between 367 and 400 days in the total number of short-term new loans (sub-figure b.)

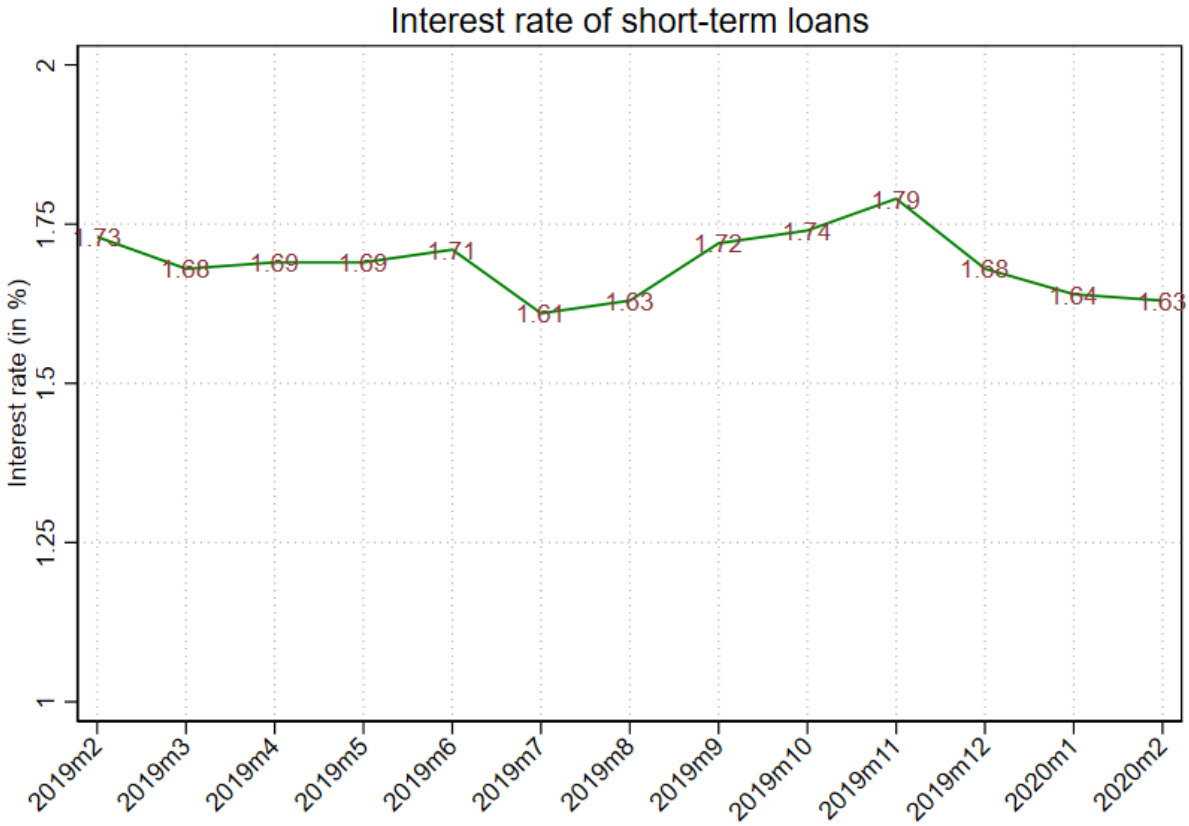
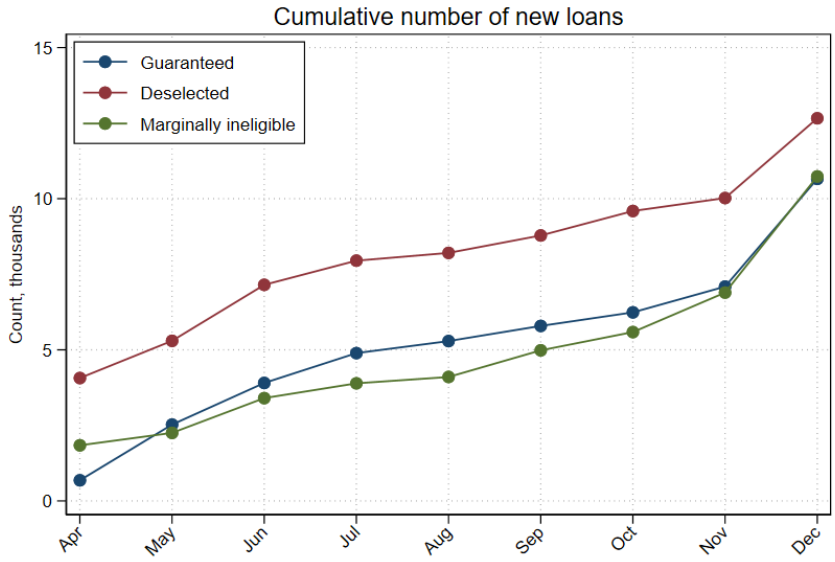
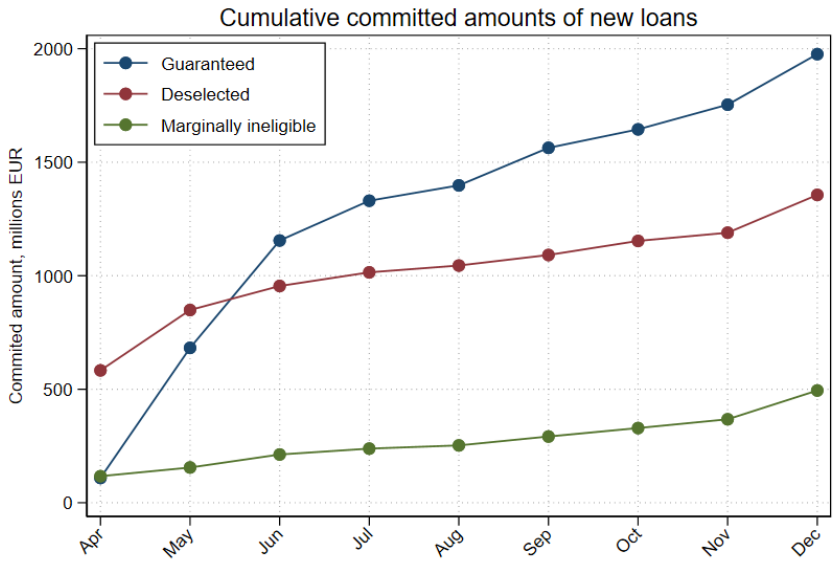


Figure 2: Evolution of the number of blue- and white-collar employees
This figure shows the evolution of the average interest rate of loans with a maturity of up to 1 year over the period of 2019:2 to 2020:2.



(a) Number of loans



(b) Committed amounts

Figure 3: Count and committed amounts of newly originated loans
This figure shows the evolution of the number of newly originated loans (sub-figure a) and the committed amounts of newly originated loans (sub-figure b) on a cumulative basis between April 2020 and December 2020.

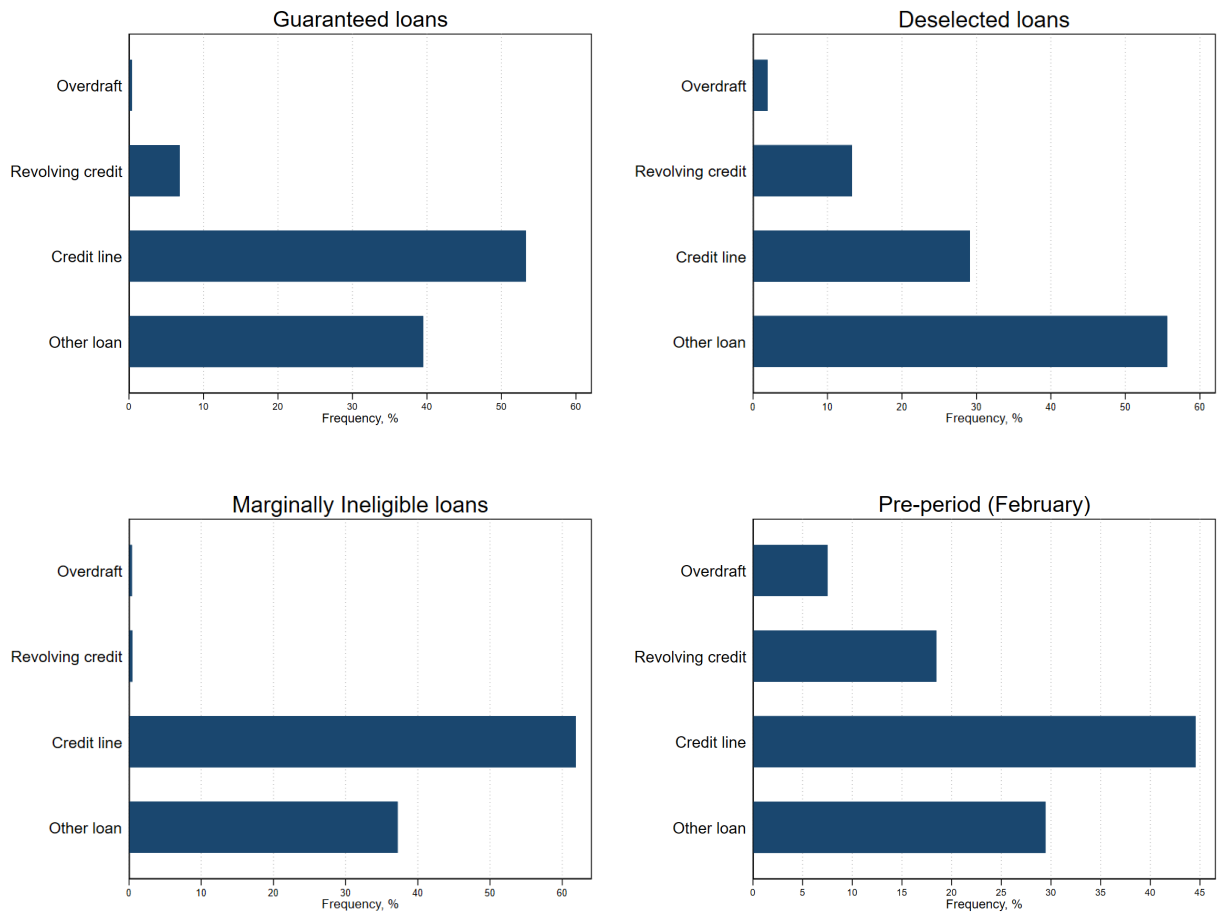


Figure 4: Distribution of loan types

This figure plots the distribution of loan types across the groups of guaranteed, deselected, marginally ineligible loans granted over April-June 2020. We also plot the loan type distribution of new loans granted in February 2020 (i.e., just before the pandemic).

Table 1
Features of guaranteed, deselected, and marginally ineligible loans

	Guaranteed loans	**Deselected loans**	**Marginally ineligible loans**
Loan type	New loans	New loans	New loans
Maturity	max. 12 months	max. 12 months	12 months + ε
Part of the reference portfolio	Yes	Yes	No
Losses are covered by the government	Yes, if losses on the reference portfolio > 3%	No	No
Guarantee fee	Yes, 25 (50) bps for SMEs (large firms)	No	No
Interest rate	max. 1.25%	No limit	No limit
Amount	Based on the borrower's liquidity needs, turnover, and wage costs	No limit (but the guarantee fee increases when the deselection factor exceeds 17.5%)	No limit

This table compares the features of guaranteed, deselected, and marginally ineligible loans.

Table 2
Summary statistics

	N	Mean	SD	p(25)	p(50)	p(75)
Loan level						
Ln(Amount)	11947	10.617	1.459	9.555	10.459	11.504
Interest rate+Fee (in %)	11947	1.442	0.959	0.95	1.25	1.5
Bank-firm level						
Firm share (%)	11947	0.003	0.007	0	0.001	0.002
Firm risk (%)	11947	2.07	3.577	0.374	0.804	2.256
Maturing debt	11947	0.601	0.49	0	1	1
Sector level						
Sector sales growth (%)	11947	-23.007	26.246	-22.179	-16.406	-9.066
Firm level						
Firm size	11947	0.143	0.35	0	0	0
Firm leverage	11947	0.196	0.198	0.03	0.139	0.31
Firm age	11947	2.812	0.79	2.398	2.944	3.401
Firm liquidity	11947	0.129	0.162	0.021	0.068	0.174
Firm RoA	11947	0.14	0.145	0.062	0.119	0.198
Bank-level						
Bank assets	11947	12.108	0.597	11.953	12.232	12.389
Bank capital (%)	11947	6.953	0.994	6.354	6.868	7.826
Bank NPL (%)	11947	0.234	0.239	0.137	0.137	0.211
Bank exposure (%)	11947	23.579	2.084	23.756	23.798	25.129

This table presents summary statistics for the variables used in the regressions incorporating guaranteed, deselected, and marginally ineligible loan categories together. Table A1 defines all variables.

Table 3
Sample means for guaranteed, deselected, and marginally ineligible loans

	Guaranteed loans		Deselected loans		M. Ineligible loans	
	N=3,185		N=5,852		N=2,910	
	Mean	SD	Mean	SD	Mean	SD
Loan level						
Ln(Amount)	11.383	1.452	10.507	1.399	10.002	1.207
Interest rate+Fee (in %)	1.303	0.14	1.443	1.008	1.593	1.291
Bank-firm level						
Firm share (%)	0.004	0.008	0.003	0.007	0.002	0.003
Firm risk (%)	2.666	3.778	2.152	3.85	1.254	2.458
Maturing debt	0.439	0.496	0.623	0.485	0.733	0.443
Sector level						
Sector sales growth (in %)	-28.388	32.609	-21.568	23.366	-20.013	22.849
Firm level						
Firm size	0.164	0.37	0.156	0.363	0.092	0.289
Firm leverage	0.206	0.204	0.199	0.198	0.181	0.189
Firm age	2.741	0.86	2.856	0.777	2.799	0.727
Firm liquidity	0.083	0.108	0.134	0.165	0.17	0.188
Firm RoA	0.112	0.134	0.141	0.147	0.168	0.146
Bank-level						
Bank assets	12.093	0.609	12.078	0.616	12.184	0.533
Bank capital (%)	6.906	1.021	6.891	1.099	7.13	0.668
Bank NPL (%)	0.238	0.239	0.254	0.286	0.189	0.066
Bank exposure (%)	23.559	1.987	23.257	2.468	24.247	0.775

This table presents the sample means of the variables used in the regressions, separately for guaranteed, deselected, and marginally ineligible loan categories. Table A1 defines all variables.

Table 4
Probability of granting a guaranteed loan vis-a-vis a deselected loan

	Guaranteed=1 (Deselected=0)			
	(1)	(2)	(3)	(4)
Bank-firm level				
Firm share	0.01	-0.02*	-0.03***	-0.02***
	(0.01)	(0.01)	(0.01)	(0.01)
Firm risk	0.01*	0.01	0.01*	0.01
	(0.01)	(0.01)	(0.01)	(0.01)
Maturing debt	-0.15***	-0.15***	-0.14***	-0.14***
	(0.02)	(0.02)	(0.02)	(0.02)
Firm level				
Firm size	-0.04	-0.16***	-0.15***	-0.15***
	(0.03)	(0.03)	(0.03)	(0.03)
Firm leverage	-0.02**	-0.01	-0.01	-0.00
	(0.01)	(0.01)	(0.01)	(0.01)
Firm age	-0.03***	-0.04***	-0.04***	-0.04***
	(0.01)	(0.01)	(0.00)	(0.01)
Firm RoA	-0.02***	-0.02***	-0.01**	-0.01*
	(0.01)	(0.01)	(0.01)	(0.01)
Firm liquidity	-0.07***	-0.07***	-0.06***	-0.06***
	(0.01)	(0.01)	(0.01)	(0.01)
Sector level				
Sector sales growth	-0.05***	-0.06***		
	(0.01)	(0.01)		
Bank-level				
Bank assets				-0.02
				(0.01)
Bank capital				-0.10***
				(0.03)
Bank NPL				0.14***
				(0.02)
Bank exposure				0.19***
				(0.03)
Observations	9037	9037	9037	9037
R-squared	0.38	0.44	0.60	0.58
Bank x Month FE	Yes	Yes	Yes	No
Province x Loan Type x Month FE	Yes	Yes	No	No
2-digit sector x Province x Loan Type x Month FE	No	No	Yes	Yes
Loan size FE	No	Yes	Yes	Yes

This table presents the results from the OLS estimation of Equation (2):

$$Y_{lbft} = \alpha Firm\ share_{bf} + \Phi Bank\text{-}firm_{bf} + \Theta Firm_f$$
$$(+\gamma Sector\ sales\ growth_s + \Psi Bank_b) + \gamma_{bt} + \theta_{splt} + \upsilon_{amount} + \varepsilon_{lbft}$$

The dependent variable is a dummy variable equal to 1 if the loan is issued with a public guarantee, and to 0 if the loan is issued through deselection by the lender. $Firm\ share_{bf}$ is defined as the ratio of total credit committed by b to firm f relative to bank b's total lending portfolio, averaged over 2019:3-2020:2. $Bank\text{-}firm_{bf}$ variables include *firm risk* and *maturing debt*. $Firm_f$ variables include pre-pandemic *firm size*, *firm leverage*, *firm age*, *firm liquidity*, and *firm RoA*. $Bank_b$ variables include *bank assets*, *bank capital*, *bank NPL*, and *bank exposure*. Table A1 defines all variables. All continuous independent variables are standardized. Standard errors are clustered at the bank×2-digit sector level. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Table 5
Probability of granting a guaranteed loan vis-a-vis a marginally ineligible loan

	Guaranteed=1 (M. Ineligible=0)				
					330 *days* $\leq$ *Maturity* $\leq$ 400 *days*
	(1)	(2)	(3)	(4)	(5)
Bank-firm level					
Firm share	0.019***	-0.011*	-0.019***	-0.018**	-0.023***
	(0.006)	(0.006)	(0.007)	(0.007)	(0.007)
Firm risk	0.023***	0.024***	0.021***	0.022***	0.021***
	(0.007)	(0.006)	(0.007)	(0.008)	(0.008)
Maturing debt	-0.189***	-0.178***	-0.164***	-0.168***	-0.172***
	(0.022)	(0.021)	(0.022)	(0.022)	(0.025)
Firm level					
Firm size	-0.008	-0.127***	-0.118***	-0.124***	-0.143***
	(0.029)	(0.035)	(0.040)	(0.040)	(0.050)
Firm leverage	-0.012*	-0.006	-0.006	-0.003	-0.007
	(0.006)	(0.006)	(0.006)	(0.007)	(0.007)
Firm age	-0.007	-0.020***	-0.025***	-0.032***	-0.023***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Firm liquidity	-0.068***	-0.064***	-0.060***	-0.063***	-0.063***
	(0.007)	(0.007)	(0.009)	(0.009)	(0.009)
Firm RoA	-0.037***	-0.032***	-0.028***	-0.030***	-0.029***
	(0.006)	(0.007)	(0.007)	(0.007)	(0.007)
Sector level					
Sector sales growth	-0.058***	-0.063***			
	(0.010)	(0.009)			
Bank-level					
Bank assets				-0.018	
				(0.021)	
Bank capital				-0.001	
				(0.038)	
Bank NPL				-0.000	
				(0.021)	
Bank exposure				0.081**	
				(0.033)	
Observations	6095	6095	6095	6095	5355
R-squared	0.487	0.563	0.666	0.647	0.633
Bank x Month FE	Yes	Yes	Yes	No	Yes
Province x Loan Type x Month FE	Yes	Yes	No	No	No
2-digit sector x Province x Loan Type x Month FE	No	No	Yes	Yes	Yes
Loan size FE	No	Yes	Yes	Yes	Yes

This table presents the results from the OLS estimation of Equation (2):

$$Y_{lbft} = \alpha Firm\ share_{bf} + \Phi Bank\text{-}firm_{bf} + \Theta Firm_f$$
$$(+\gamma Sector\ sales\ growth_s + \Psi Bank_b) + \gamma_{bt} + \theta_{splt} + \upsilon_{amount} + \varepsilon_{lbft}$$

The dependent variable is a dummy variable equal to 1 if the loan is issued with a public guarantee, and to 0 if the loan is issued with a maturity of 367-400 days which was otherwise eligible for the public guarantee (i.e., a marginally ineligible loan). Column (5) only includes granted loans with a maturity of 330 to 400 days. $Firm\ share_{bf}$ is defined as the ratio of total credit committed by b to firm f relative to bank b's total lending portfolio, averaged over 2019:3-2020:2. $Bank\text{-}firm_{bf}$ variables include *firm risk* and *maturing debt*. $Firm_f$ variables include pre-pandemic *firm size*, *firm leverage*, *firm age*, *firm liquidity*, and *firm RoA*. $Bank_b$ variables include *bank assets*, *bank capital*, *bank NPL*, and *bank exposure*. Table A1 defines all variables. All continuous independent variables are standardized. Standard errors are clustered at the bank×2-digit sector level. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Table 6
Probability of granting a guaranteed vis-a-vis marginally ineligible or deselected loan: Heterogeneity

	Guaranteed=1 (Deselected=0)	Guaranteed=1 (Deselected=0)	Guaranteed=1 (Deselected=0)	Guaranteed=1 (M. Ineligible=0)	Guaranteed=1 (M. Ineligible=0)	Guaranteed=1 (M. Ineligible=0)
	(1)	(2)	(3)	(4)	(5)	(6)
Firm share	-0.03***	-0.03***	-0.04***	-0.02***	-0.02***	-0.03***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Firm risk	0.01*	0.01*	0.01*	0.02**	0.02***	0.02***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Firm share x Firm risk	-0.01			-0.02*		
	(0.01)			(0.01)		
Firm share x Sector sales growth		0.01			0.00	
		(0.01)			(0.01)	
Firm share x Bank capital			-0.01**			-0.01***
			(0.01)			(0.00)
Observations	9037	9037	9037	6095	6095	6095
R-squared	0.61	0.61	0.61	0.67	0.67	0.67
Bank-firm controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm controls	Yes	Yes	Yes	Yes	Yes	Yes
Bank x Month FE	Yes	Yes	Yes	Yes	Yes	Yes
2-digit sector x Province x Loan Type x Month FE	Yes	Yes	Yes	Yes	Yes	Yes
Loan size FE	Yes	Yes	Yes	Yes	Yes	Yes

This table presents the results from the OLS estimation of Equation (2) through interacting firm share with firm risk, exposure to the pandemic, and bank capital:

$$Y_{lbft} = \alpha_1 Firm\ share_{bf} + \alpha_2 Firm\ share_{bf} \times (Firm\ risk_{bf}, Sector\ sales\ growth_s,\ Bank\ capital_b) + \Phi Bank\text{-}firm_{bf} + \Theta Firm_f + \gamma_{bt} + \theta_{splt} + \upsilon_{amount} + \varepsilon_{lbft}$$

In columns (1)-(3), the dependent variable is a dummy variable equal to 1 if the loan is issued with a public guarantee, and to 0 if the loan is issued through deselection by the lender. In columns (4)-(6), the dependent variable is a dummy variable equal to 1 if the loan is issued with a public guarantee, and to 0 if the loan is issued with a maturity of 367-400 days which was otherwise eligible for the public guarantee (i.e., a marginally ineligible loan). *Firm share*$_{bf}$ is defined as the ratio of total credit committed by b to firm f relative to bank b's total lending portfolio, averaged over 2019:3-2020:2. *Sector sales growth* is the median sale growth of firms operating in sector s in 2020:Q2 relative to 2019:Q2, detrended by subtracting the average of Q2-Q2 growth rates over 2015-2019. *Firm risk*$_{bf}$ is firm f's probability of default estimated by bank b's internal model in February 2020. *Bank capital*$_b$ is the ratio of bank b's common equity relative to its total assets, measured in February 2020. *Bank-firm*$_{bf}$ includes *maturing debt*. $Firm_f$ variables include pre-pandemic *firm size*, *firm leverage*, *firm age*, *firm liquidity*, and *firm RoA*. Table A1 defines all variables. All continuous independent variables are standardized. Standard errors are clustered at the bank×2-digit sector level. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Table 7
The effect on credit terms across firm share

	Interest rate+Fee (in %)	Interest rate+Fee (in %)	ln(Amount)	ln(Amount)
	(1)	(2)	(3)	(4)
Guaranteed=1	-0.05	-0.05	0.87***	0.87***
	(0.05)	(0.05)	(0.06)	(0.06)
M. Ineligible=1	0.43***	0.38***	-0.24***	-0.19***
	(0.11)	(0.10)	(0.04)	(0.05)
Firm share	-0.04***	-0.05***	0.33***	0.32***
	(0.01)	(0.02)	(0.03)	(0.03)
Firm share x Guaranteed=1		0.11***		-0.05
		(0.02)		(0.04)
Firm share x M. Ineligible=1		-0.26***		0.28***
		(0.06)		(0.08)
Observations	11947	11947	11947	11947
R-squared	0.54	0.55	0.60	0.61
Bank-firm controls	Yes	Yes	Yes	Yes
Firm controls	Yes	Yes	Yes	Yes
Bank x Month FE	Yes	Yes	Yes	Yes
2-digit sector x Province x Loan Type x Month FE	Yes	Yes	Yes	Yes

This table presents the results from the OLS estimation of Equation (3) in columns (2) and (4) as well as its version without the interaction terms in columns (1) and (3):

$$\begin{aligned} Y_{lbft} = {} & \beta_1 Firm\ share_{bf} \times Guaranteed_{lbft} + \beta_2 Firm\ share_{bf} \times M.\ Ineligible_{lbft} \\ & + \beta_3 Firm\ share_{bf} + \beta_4 Guaranteed_{lbft} + \beta_5 M.\ Ineligible_{lbft} \\ & + \Phi Bank\text{-}firm_{bf} + \Theta Firm_f + \gamma_{bt} + \theta_{splt} + \varepsilon_{lbft} \end{aligned}$$

In columns (1) and (2), the dependent variable is the loan's interest rate (in %). The interest rate also includes the fee for guaranteed loans. In columns (3) and (4), the dependent variable is the natural log of the committed loan amount. $Firm\ share_{bf}$ is defined as the ratio of total credit committed by b to firm f relative to bank b's total lending portfolio, averaged over 2019:3-2020:2. $Guaranteed_{lbft}$ is a dummy variable equal to 1 if the loan is issued with a public guarantee, and to 0 otherwise. $M.\ Ineligible_{lbft}$ is a dummy variable equal to 1 if the loan is issued with a maturity of 367-400 days which was otherwise eligible for the public guarantee (i.e., a marginally ineligible loan), and to 0 otherwise. Deselected loans are the reference category and thus are excluded. $Bank\text{-}firm_{bf}$ variables include *firm risk* and *maturing debt*. $Firm_f$ variables include pre-pandemic *firm size*, *firm leverage*, *firm age*, *firm liquidity*, and *firm RoA*. Table A1 defines all variables. All continuous independent variables are standardized. Standard errors are clustered at the bank×2-digit sector level. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Table 8
The effect on credit terms across firm share & bank capital

	Interest rate+Fee (in %)	Ln(Amount)
	(1)	(2)
Firm share	-0.06***	0.37***
	(0.02)	(0.04)
Firm share x Guaranteed=1	0.11***	-0.09**
	(0.03)	(0.04)
Firm share x M. Ineligible=1	-0.20***	0.29***
	(0.06)	(0.10)
Firm share x Bank capital	0.00	0.07**
	(0.01)	(0.03)
Firm share x Guaranteed=1 x Bank capital	0.03	-0.06**
	(0.02)	(0.03)
Firm share x M. Ineligible=1 x Bank capital	-0.27***	0.04
	(0.05)	(0.06)
Observations	11947	11947
R-squared	0.57	0.61
Other terms of interactions	Yes	Yes
Bank-firm controls	Yes	Yes
Firm controls	Yes	Yes
Bank x Month FE	Yes	Yes
2-digit sector x Province x Loan Type x Month FE	Yes	Yes

This table presents the results from the OLS estimation of Equation (3) with an interaction of bank capital:

$$
\begin{aligned}
Y_{lbft} = {} & \beta_1 Firm\ share_{bf} \times Guaranteed_{lbft} \times Bank\ capital_b + \beta_2 Firm\ share_{bf} \times M.\ Ineligible_{lbft} \times Bank\ capital_b \\
& + \beta_3 Firm\ share_{bf} \times Bank\ capital_b + \beta_4 Firm\ share_{bf} \times Guaranteed_{lbft} + \beta_5 Firm\ share_{bf} \times M.\ Ineligible_{lbft} \\
& + \beta_6 Firm\ share_{bf} + \beta_7 Guaranteed_{lbft} \times Bank\ capital_b + \beta_8 M.\ Ineligible_{lbft} \times Bank\ capital_b \\
& + \Phi Bank\text{-}firm_{bf} + \Theta Firm_f + \gamma_{bt} + \theta_{splt} + \varepsilon_{lbft}
\end{aligned}
$$

In column (1), the dependent variable is the loan's interest rate (in %). The interest rate also includes the fee for guaranteed loans. In column (2), the dependent variable is the natural log of the committed loan amount. $Firm\ share_{bf}$ is defined as the ratio of total credit committed by b to firm f relative to bank b's total lending portfolio, averaged over 2019:3-2020:2. $Guaranteed_{lbft}$ is a dummy variable equal to 1 if the loan is issued with a public guarantee, and to 0 otherwise. $M.\ Ineligible_{lbft}$ is a dummy variable equal to 1 if the loan is issued with a maturity of 367-400 days which was otherwise eligible for the public guarantee (i.e., a marginally ineligible loan), and to 0 otherwise. $Bank\ capital_b$ is the ratio of bank b's common equity relative to its total assets, measured in February 2020. Deselected loans are the reference category and thus are excluded. $Bank\text{-}firm_{bf}$ variables include *firm risk* and *maturing debt*. $Firm_f$ variables include pre-pandemic *firm size*, *firm leverage*, *firm age*, *firm liquidity*, and *firm RoA*. Table A1 defines all variables. All continuous independent variables are standardized. Standard errors are clustered at the bank×2-digit sector level. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Table 9
Guaranteed lending as a substitute for non-guaranteed lending
A. Change in ALL non-guaranteed loans

	Δ % Non-guaranteed loans (all loans)					
	(1)	(2)	(3)	(4)	(5)	(6)
Guaranteed$_{bf}$=1	-0.21***	-0.18***	-0.22***	-0.17***	-0.26***	-0.22***
	(0.01)	(0.05)	(0.01)	(0.05)	(0.02)	(0.01)
Firm share	-0.05***	-0.02	-0.07***	-0.08***	-0.06***	-0.07***
	(0.00)	(0.02)	(0.01)	(0.03)	(0.01)	(0.01)
Firm share x Guaranteed$_{bf}$=1			0.06***	0.10***	0.05***	0.06***
			(0.01)	(0.04)	(0.01)	(0.01)
Firm share x Guaranteed$_{bf}$=1 x Maturing debt					0.00	
					(0.01)	
Firm share x Guaranteed$_{bf}$=1 x Bank capital						0.00
						(0.00)
Observations	9863	374	9863	374	9863	9863
R-squared	0.22	0.65	0.22	0.65	0.23	0.22
Other terms of interactions	No	No	No	No	Yes	Yes
Bank-firm controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm controls	Yes	No	Yes	No	Yes	Yes
Bank FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	No	Yes	No	Yes	No	No
2-digit sector x Province FE	Yes	No	Yes	No	Yes	Yes

Table 9
(Continued)
B. Change in SHORT-TERM non-guaranteed loans

	Δ % Non-guaranteed loans (Only short-term loans)					
	(1)	(2)	(3)	(4)	(5)	(6)
Guaranteed$_{bf}$=1	-0.37***	-0.38***	-0.37***	-0.36***	-0.51***	-0.37***
	(0.02)	(0.08)	(0.02)	(0.08)	(0.03)	(0.02)
Firm share	-0.05***	-0.00	-0.08***	-0.12**	-0.09***	-0.08***
	(0.01)	(0.04)	(0.01)	(0.05)	(0.01)	(0.01)
Firm share x Guaranteed$_{bf}$=1			0.07***	0.20***	0.08***	0.09***
			(0.01)	(0.06)	(0.01)	(0.01)
Firm share x Guaranteed$_{bf}$=1 x Maturing debt					-0.02	
					(0.01)	
Firm share x Guaranteed$_{bf}$=1 x Bank capital						0.01
						(0.01)
Observations	7736	310	7736	310	7736	7736
R-squared	0.25	0.65	0.26	0.66	0.27	0.26
Other terms of interactions	No	No	No	No	Yes	Yes
Bank-firm controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm controls	Yes	No	Yes	No	Yes	Yes
Bank FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	No	Yes	No	Yes	No	No
2-digit sector x Province FE	Yes	No	Yes	No	Yes	Yes

This table presents the results from the OLS estimation of Equation (4):

$$\begin{aligned}\Delta\%\textit{Non-guaranteed loans}_{bf} = {} & \eta_1 \textit{Guaranteed}_{bf} \times \textit{Firm share}_{bf} \\ & + \eta_2 \textit{Guaranteed}_{bf} + \eta_3 \textit{Firm share}_{bf} \\ & + \Phi \textit{Bank-firm}_{bf} + \Theta \textit{Firm}_f + \gamma_b + \theta_{sp(or\ f)} + \varepsilon_{bf}\end{aligned}$$

Columns (1) and (2) estimate Equation (4) without the interaction terms. Columns (5) and (6) estimate Equation (4) by incorporating *maturing debt* and *bank capital* as an additional interaction term, respectively. The dependent variable is the change in the total of active and new non-guaranteed loans committed to firm f by bank b from 2020:2 to 2020:6. Panel A (B) looks at the change in total (short-term) non-guaranteed loans. Guaranteed$_{bf}$ is equal to 1 if firm f obtained a guaranteed loan from bank b over 2020:4-2020:6. *Firm share*$_{bf}$ is defined as the ratio of total credit committed by b to firm f relative to bank b's total lending portfolio, averaged over 2019:3-2020:2. Bank-firm controls are *firm risk* and *maturing debt*. Firm controls are pre-pandemic *firm size*, *firm leverage*, *firm age*, *firm liquidity*, and *firm RoA*. Table A1 defines all variables. All continuous independent variables are standardized. Standard errors are clustered at the bank×2-digit sector level. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Table 10
Performance of borrowers

	Δ ln(Sales)	Δ ln(Sales)	Default	Default	Firm risk (default probability)
	(1)	(2)	(3)	(4)	(5)
Guaranteed$_f$=1	-0.209***	-0.206***	0.017***	0.016***	0.006***
	(0.035)	(0.037)	(0.004)	(0.004)	(0.001)
M. Ineligible$_f$=1	-0.002	0.004	-0.000	0.000	-0.002
	(0.019)	(0.021)	(0.002)	(0.003)	(0.002)
Observations	8267	8267	9605	9605	9605
R-squared	0.207	0.208	0.093	0.098	0.114
Firm controls	Yes	Yes	Yes	Yes	Yes
Sector x Province FE	Yes	Yes	Yes	Yes	Yes
Main bank FE	No	Yes	No	Yes	Yes

This table presents the results from the OLS estimation of Equation (5):

$$Y_f = \zeta_1 Guaranteed_f + \zeta_2 M.Ineligible_f + \Theta Firm_f + \delta_{(main)b} + \theta_{sp} + \varepsilon_f$$

In columns (1) and (2), the dependent variable is the change in the natural log of sales from 2019:Q4 to 2020:Q2. In columns (3) and (4), the dependent variable is a dummy equal to 1 if the firm defaulted within one year after obtaining a loan, and to 0 otherwise. $Guaranteed_f$ ($M.\ Ineligible_f$) is equal to 1 if firm f obtained a loan with a public guarantee (a marginally ineligible loan) over April-June 2020, and to 0 if the firm obtained a deselected loan. In column (5), the dependent variable is firm f's default probability measured at the time when the loan was granted. $Firm_f$ variables are pre-pandemic *firm size*, *firm leverage*, *firm age*, *firm liquidity*, and *firm RoA*. Table A1 defines all variables. All continuous independent variables are standardized. Standard errors are clustered at the firm's main bank×2-digit sector level. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Appendix A. Variable definitions

Table A1
Variable definitions

Loan level	
Guaranteed (Deselected)	Dummy variable equal to 1 if the loan is issued with a public guarantee, and to 0 if the loan is issued through deselection by the lender
Guaranteed (M. Ineligible)	Dummy variable equal to 1 if the loan is issued with a public guarantee, and to 0 if the loan is issued with a maturity of 367-400 days which was otherwise eligible for the public guarantee (i.e., a marginally ineligible loan)
Guaranteed	Dummy variable equal to 1 if the loan is issued with a public guarantee, and to 0 otherwise.
M. Ineligible	Dummy variable equal to 1 if the loan is issued with a maturity of 367-400 days which was otherwise eligible for the public guarantee (i.e., a marginally ineligible loan), and to 0 otherwise.
Ln(Amount)	Natural log of the committed loan amount
Interest rate+Fee	Interest rate (in %). The interest rate also includes the fee for guaranteed loans.
Bank-firm level	
Firm share	Ratio of total credit committed by bank b to firm f relative to bank b's total lending portfolio, averaged over 2019:3-2020:2 (in %)
Firm risk	The firm's probability of default estimated by its bank's internal model in February 2020 (in %)
Maturing debt	Dummy variable equal to 1 if there is a maturing loan between the bank and the firm over April-June 2020, and to 0 otherwise
Relationship length	Natural log of the number of years since the first bank-firm interaction
Δ % Non-guaranteed loans	Change in the total of active and new non-guaranteed loans committed to firm f by bank b from 2020:2 to 2020:6.
$\text{Amount}^{Guaranteed}$	Total amount of guaranteed loans committed to firm f by bank b from 2020:2 to 2020:6, scaled by the new and active loans committed to firm f by bank b in 2020:2
$\text{Amount}^{Deselected}$	Total amount of deselected loans committed to firm f by bank b from 2020:2 to 2020:6, scaled by the new and active loans committed to firm f by bank b in 2020:2
$\text{Amount}^{M.\ Ineligible}$	Total amount of marginally ineligible loans committed to firm f by bank b from 2020:2 to 2020:6, scaled by the new and active loans committed to firm f by bank b in 2020:2
Sector level	
Sector sales growth	Median sale growth of firms operating in a sector in 2020:Q2 relative to 2019:Q2, detrended by subtracting the average of Q2-Q2 growth rates over 2015-2019 (in %)
Firm level	
Firm size	Dummy variable equal to 1 if the firm is large according to the Belgian loan guarantee program, and 0 to otherwise (measured pre-pandemic)
Firm leverage	Long-term debt/Total assets (measured pre-pandemic)
Firm age	Number of years since the incorporation date (measured pre-pandemic)
Firm liquidity	(Cash + liquid assets)/Total assets (measured pre-pandemic)
Firm RoA	Earnings before interest, taxes, depreciation, and amortization (EBITDA), divided by total assets (measured pre-pandemic)

Table A1
(Continued)

Firm-level	
Δ ln(Sales)	Change in the natural log of sales from 2019:Q4 to 2020:Q2
Default	Dummy variable equal to 1 if the firm defaulted within one year after obtaining a loan, and to 0 otherwise
Past arrears	Dummy variable equal to 1 if the firm had been in payment arrears at least once from September 2018 to February 2020, and to 0 otherwise
Past forbearance	Dummy variable equal to 1 if the firm had been provided with a forbearance measure at least once from September 2018 to February 2020, and to 0 otherwise
Bank-level	
Bank assets	Natural log of total assets, measured in February 2020
Bank capital	Common equity/Total assets, measured in February 2020 (in %)
Bank NPL	Non-performing loans/Total loans, measured in February 2020 (in %)
Bank exposure	Bank's exposure to the crisis measured as $= \sum_{s=1}^{S} \text{Sector share}_{bs} \times D_s$ where *Sector share* is the share of sector s in bank b's total committed credit granted to all sectors in February 2020; D is a dummy variable equal to 1 if a sector s's sales growth in 2020:Q2 relative to 2019:Q2 is below median across all sectors, and to 0 otherwise (in %)

Appendix B. Additional figures and tables

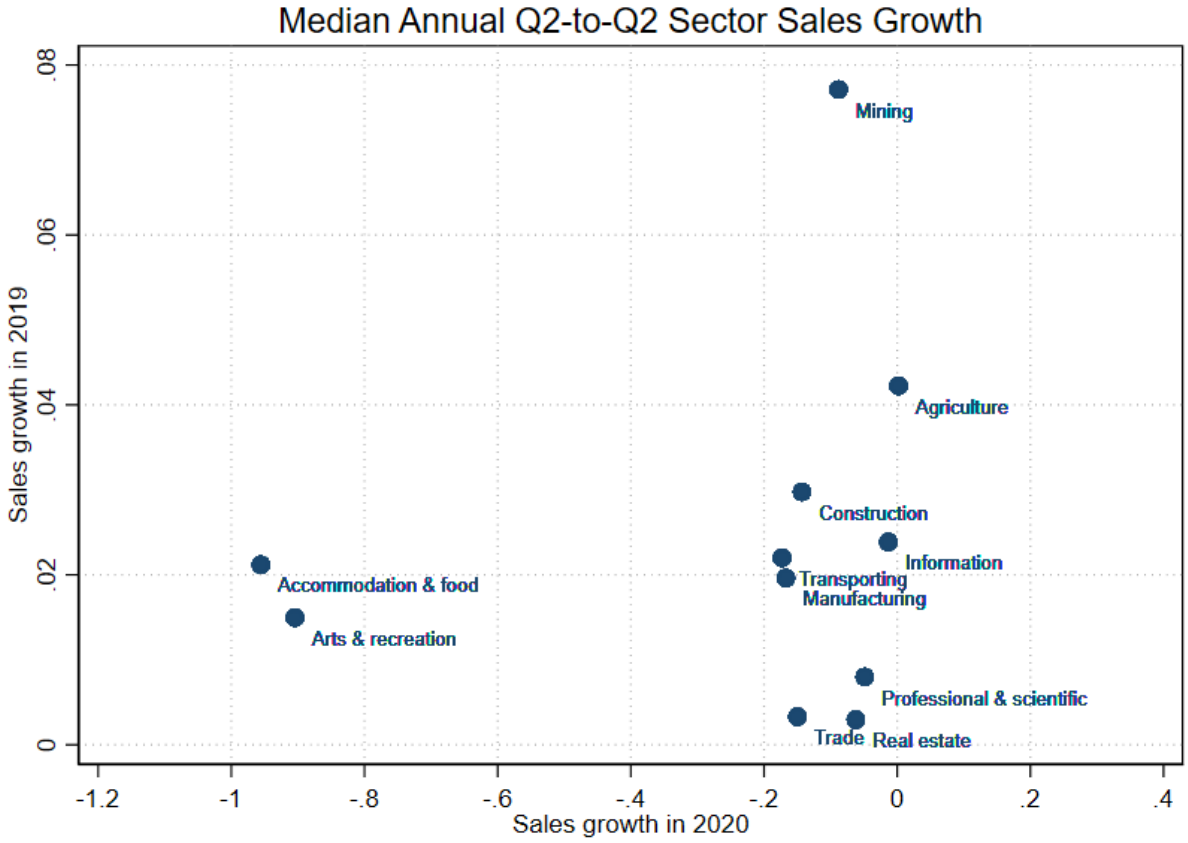


Figure B1: Evolution of the number of blue- and white-collar employees
This figure compares median (1-digit) sector sales growth in 2020:Q2 (x-axis) and 2019:Q2 (y-axis).

Table B1
Substitution with marginally ineligible loans

	$Amount^{M.Ineligible}$		
	Firm-cluster FE sample	Firm FE sample	Firm FE sample
	(1)	(2)	(3)
$Amount^{Guaranteed}$	-0.015***	-0.003*	-0.004*
	(0.002)	(0.002)	(0.002)
$Amount^{Deselected}$	-0.024***	-0.004*	-0.004**
	(0.003)	(0.003)	(0.002)
Observations	9863	374	374
R-squared	0.196	0.523	0.450
Bank-firm controls	Yes	Yes	Yes
Firm controls	Yes	No	Yes
Bank FE	Yes	Yes	Yes
Sector x Province FE	Yes	No	Yes
Firm FE	No	Yes	No

This table presents the results from the OLS estimation of the following equation:

$$Amount_{bf}^{M.Ineligible} = \zeta_1 Amount_{bf}^{Guaranteed} + \zeta_2 Amount_{bf}^{Deselected} + \Phi \textit{Bank-firm}_{bf} + \Theta Firm_f + \gamma_b + \theta_{spl(or\ f)} + \varepsilon_{bf}$$

The dependent variable is the total of committed marginally ineligible loans from bank b to firm f from April to June 2020, scaled by the total of active and new short-term loans committed from bank b to firm f in February 2020. $Amount_{bf}^{Guaranteed}(Amount_{bf}^{Deselected})$ is the total of committed guaranteed (deselected) loans from bank b to firm f from April to June 2020, scaled by the total of active and new short-term loans committed from bank b to firm f in February 2020. $\textit{Bank-firm}_{bf}$ variables include *firm share*, *firm risk*, and *maturing debt*. $Firm_f$ variables include pre-pandemic *firm size*, *firm leverage*, *firm age*, *firm liquidity*, and *firm RoA*. Table A1 defines all variables. All continuous independent variables are standardized. Standard errors are clustered at the bank×2-digit sector level. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Table B2
Analysis at the bank-firm-month and bank-firm levels

	Bank-firm-month level		Bank-firm level	
	Guaranteed=1 (Deselected=0)	Guaranteed=1 (M.Ineligible=0)	Guaranteed=1 (Deselected=0)	Guaranteed=1 (M.Ineligible=0)
	(1)	(2)	(3)	(4)
Bank-firm level				
Firm share	-0.02***	-0.02***	-0.02**	-0.02**
	(0.01)	(0.01)	(0.01)	(0.01)
Firm risk	0.01**	0.03***	0.02***	0.04***
	(0.01)	(0.01)	(0.01)	(0.01)
Maturing debt	-0.14***	-0.17***	-0.14***	-0.20***
	(0.02)	(0.02)	(0.02)	(0.02)
Firm level				
Firm size	-0.16***	-0.14***	-0.16***	-0.14***
	(0.03)	(0.04)	(0.03)	(0.04)
Firm leverage	-0.01	-0.01	-0.01**	-0.01
	(0.01)	(0.01)	(0.01)	(0.01)
Firm age	-0.04***	-0.02***	-0.05***	-0.03***
	(0.00)	(0.00)	(0.01)	(0.01)
Firm liquidity	-0.06***	-0.06***	-0.07***	-0.08***
	(0.01)	(0.01)	(0.01)	(0.01)
Firm RoA	-0.02***	-0.03***	-0.02***	-0.04***
	(0.01)	(0.01)	(0.01)	(0.01)
Observations	7737	5453	7526	5368
R-squared	0.44	0.59	0.35	0.48
Bank FE	No	No	Yes	Yes
Bank x Month FE	Yes	Yes	No	No
Sector x Province FE	No	No	Yes	Yes
Sector x Province x Month FE	Yes	Yes	No	No
Loan size FE	Yes	Yes	Yes	Yes

This table presents the results from the OLS estimation of Equation (2) at the bank-firm-month level in columns (1) and (2) and at the bank-firm level in columns (3) and (4):

$$Y_{bf(t)} = \alpha Firm\ share_{bf} + \Phi Bank\text{-}firm_{bf} + \Theta Firm_f + \gamma_{b(t)} + \theta_{sp(t)} + \upsilon_{amount} + \varepsilon_{bf(t)}$$

In columns (1) and (3), the dependent variable is a dummy variable equal to 1 if firm f obtained a guaranteed loan from bank b (in month t), and to 0 if the firm obtained a loan through deselection. In columns (2) and (4), the dependent variable is a dummy variable equal to 1 if firm f obtained a guaranteed loan from bank b (in month t), and to 0 if the firm obtained a loan with a maturity of 367-400 days which was otherwise eligible for the public guarantee (i.e., a marginally ineligible loan). *Firm share*$_{bf}$ is defined as the ratio of total credit committed by b to firm f relative to bank b's total lending portfolio, averaged over 2019:3-2020:2. *Bank-firm*$_{bf}$ variables include *firm risk* and *maturing debt*. $Firm_f$ variables include pre-pandemic *firm size*, *firm leverage*, *firm age*, *firm liquidity*, and *firm RoA*. Table A1 defines all variables. All continuous independent variables are standardized. Standard errors are clustered at the bank×2-digit sector level. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Table B3
Defining marginally ineligible loans using alternative maturity dates

	367 days≤Maturity$_{\text{M.Ineligible}}$≤375 days			**367 days≤Maturity$_{\text{M.Ineligible}}$≤450 days**		
	Guaranteed=1 (M. Ineligible=0)	Interest rate +Fee (in %)	ln(Amount)	Guaranteed=1 (M. Ineligible=0)	Interest rate +Fee (in %)	ln(Amount)
	(1)	(2)	(3)	(4)	(5)	(6)
Firm share	-0.02***	-0.06***	0.33***	-0.02***	-0.05***	0.31***
	(0.01)	(0.02)	(0.03)	(0.01)	(0.02)	(0.03)
Firm share x Guaranteed=1		0.10***	-0.05		0.10***	-0.04
		(0.02)	(0.04)		(0.02)	(0.04)
Firm share x M. Ineligible=1		-0.26***	0.31**		-0.26***	0.28***
		(0.06)	(0.12)		(0.06)	(0.08)
Observations	4999	10841	10841	6332	12185	12185
R-squared	0.70	0.59	0.61	0.66	0.54	0.60
Other terms of interactions	No	Yes	Yes	No	Yes	Yes
Bank-firm controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm controls	Yes	Yes	Yes	Yes	Yes	Yes
Bank x Month FE	Yes	Yes	Yes	Yes	Yes	Yes
2-digit sector x Province x Loan Type x Month FE	Yes	Yes	Yes	Yes	Yes	Yes
Loan size FE	Yes	No	No	Yes	No	No

Table B3
(Continued)

	1 year<Maturity$_{\text{M.Ineligible}}$≤ 2 years			1 year< Maturity$_{\text{M.Ineligible}}$≤3 years		
	Guaranteed=1 (M. Ineligible=0)	Interest rate +Fee (in %)	ln(Amount)	Guaranteed=1 (M. Ineligible=0)	Interest rate +Fee (in %)	ln(Amount)
	(7)	(8)	(9)	(10)	(11)	(12)
Firm share	-0.02**	-0.05***	0.31***	-0.01**	-0.05***	0.29***
	(0.01)	(0.01)	(0.03)	(0.01)	(0.01)	(0.03)
Firm share x Guaranteed=1		0.10***	-0.05		0.11***	-0.06
		(0.02)	(0.04)		(0.02)	(0.04)
Firm share x M. Ineligible=1		-0.18***	0.30***		-0.05	0.14***
		(0.05)	(0.06)		(0.03)	(0.05)
Observations	6939	12797	12797	9069	14947	14947
R-squared	0.59	0.52	0.60	0.53	0.47	0.57
Other terms of interactions	No	Yes	Yes	No	Yes	Yes
Bank-firm controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm controls	Yes	Yes	Yes	Yes	Yes	Yes
Bank x Month FE	Yes	Yes	Yes	Yes	Yes	Yes
2-digit sector x Province x Loan Type x Month FE	Yes	Yes	Yes	Yes	Yes	Yes
Loan size FE	Yes	No	No	Yes	No	No

Columns (1), (4), (7), and (10) of this table present the results from the OLS estimation of Equation (2):

$$Y_{lbft} = \alpha Firm\ share_{bf} + \Phi Bank\text{-}firm_{bf} + \Theta Firm_f + \gamma_{bt} + \theta_{splt} + \upsilon_{amount} + \varepsilon_{lbft}$$

where the dependent variable is a dummy variable equal to 1 if the loan is issued with a public guarantee, and to 0 if the loan is issued with a maturity of more than 1 year which was otherwise eligible for the public guarantee.
Columns (2), (3), (5), (6), (8), (9), (11), and (12) of this table present the results from the OLS estimation of Equation (3):

$$\begin{aligned} Y_{lbft} = {} & \beta_1 Firm\ share_{bf} \times Guaranteed_{lbft} + \beta_2 Firm\ share_{bf} \times M.\ Ineligible_{lbft} \\ & + \beta_3 Firm\ share_{bf} + \beta_4 Guaranteed_{lbft} + \beta_5 M.\ Ineligible_{lbft} \\ & + \Phi Bank\text{-}firm_{bf} + \Theta Firm_f + \gamma_{bt} + \theta_{splt} + \varepsilon_{lbft} \end{aligned}$$

where the dependent variable is either the loan's interest rate (in %) or the natural log of the committed loan amount. The interest rate also includes the fee for guaranteed loans. *Firm share*$_{bf}$ is defined as the ratio of total credit committed by b to firm f relative to bank b's total lending portfolio, averaged over 2019:3-2020:2. *Guaranteed*$_{lbft}$ is a dummy variable equal to 1 if the loan is issued with a public guarantee, and to 0 otherwise. *M. Ineligible*$_{lbft}$ is a dummy variable equal to 1 if the loan is issued with a maturity of more than 1 year which was otherwise eligible for the public guarantee, and to 0 otherwise. *Bank-firm*$_{bf}$ variables include *firm risk* and *maturing debt*. $Firm_f$ variables include pre-pandemic *firm size*, *firm leverage*, *firm age*, *firm liquidity*, and *firm RoA*. Table A1 defines all variables. All continuous independent variables are standardized. Standard errors are clustered at the bank×2-digit sector level. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Table B4
Incorporating size fixed effects

	Guaranteed=1 (Deselected=0)	Guaranteed=1 (M. Ineligible=0)	Interest rate +Fee (in %)	ln(Amount)
VARIABLES	(1)	(2)	(3)	(4)
Firm share	-0.04***	-0.02**	-0.05***	0.36***
	(0.01)	(0.01)	(0.02)	(0.04)
Firm share x Guaranteed=1			0.10***	-0.07*
			(0.02)	(0.04)
Firm share x M. Ineligible=1			-0.30***	0.29***
			(0.07)	(0.10)
Observations	8644	5857	11433	11433
R-squared	0.63	0.69	0.56	0.62
Other terms of interactions	No	No	Yes	Yes
Bank-firm controls	Yes	Yes	Yes	Yes
Firm controls	Yes	Yes	Yes	Yes
Bank x Month FE	Yes	Yes	Yes	Yes
2-digit sector x Province x Size x Loan Type x Month FE	Yes	Yes	Yes	Yes
Loan size FE	Yes	Yes	No	No

Columns (1) and (2) of this table present the results from the OLS estimation of Equation (2) with the incorporation of firm-size fixed effects:

$$Y_{lbft} = \alpha Firm\ share_{bf} + \Phi Bank\text{-}firm_{bf} + \Theta Firm_f + \gamma_{bt} + \theta_{sp(size)lt} + \upsilon_{amount} + \varepsilon_{lbft}$$

In column (1), the dependent variable is a dummy variable equal to 1 if the loan is issued with a public guarantee, and to 0 if the loan is issued through deselection by the lender. In column (2), the dependent variable is a dummy variable equal to 1 if the loan is issued with a public guarantee, and to 0 if the loan is issued with a maturity of 367-400 days which was otherwise eligible for the public guarantee (i.e., a marginally ineligible loan).
Columns (3) and (4) of this table present the results from the OLS estimation of Equation (3) with the incorporation of firm-size fixed effects:

$$\begin{aligned} Y_{lbft} = {} & \beta_1 Firm\ share_{bf} \times Guaranteed_{lbft} + \beta_2 Firm\ share_{bf} \times M.\ Ineligible_{lbft} \\ & + \beta_3 Firm\ share_{bf} + \beta_4 Guaranteed_{lbft} + \beta_5 M.\ Ineligible_{lbft} \\ & + \Phi Bank\text{-}firm_{bf} + \Theta Firm_f + \gamma_{bt} + \theta_{sp(size)lt} + \varepsilon_{lbft} \end{aligned}$$

where the dependent variable is the loan's interest rate (in %) in column (3) and the natural log of the committed loan amount in column (4). The interest rate also includes the fee for guaranteed loans. $Firm\ share_{bf}$ is defined as the ratio of total credit committed by b to firm f relative to bank b's total lending portfolio, averaged over 2019:3-2020:2. $Guaranteed_{lbft}$ is a dummy variable equal to 1 if the loan is issued with a public guarantee, and to 0 otherwise. $M.\ Ineligible_{lbft}$ is a dummy variable equal to 1 if the loan is issued with a maturity of 367-400 days which was otherwise eligible for the public guarantee (i.e., a marginally ineligible loan), and to 0 otherwise. $Bank\text{-}firm_{bf}$ variables include *firm risk* and *maturing debt*. $Firm_f$ variables include pre-pandemic *firm size*, *firm leverage*, *firm age*, *firm liquidity*, and *firm RoA*. Table A1 defines all variables. All continuous independent variables are standardized. Standard errors are clustered at the bank×2-digit sector level. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Table B5
Controlling for bank-sector factors

	Guaranteed=1 (Deselected=0)	Guaranteed=1 (M. Ineligible=0)	Interest rate + Fee (in %)	ln(Amount)
	(1)	(2)	(3)	(4)
Firm share	-0.03***	-0.02***	-0.06***	0.30***
	(0.01)	(0.01)	(0.02)	(0.03)
Firm share x Guaranteed=1			0.12***	0.01
			(0.03)	(0.05)
Firm share x M. Ineligible=1			-0.26***	0.31***
			(0.06)	(0.08)
Observations	8837	5975	11731	11731
R-squared	0.64	0.68	0.56	0.63
Other terms of interactions	No	No	Yes	Yes
Ban-firm controls	Yes	Yes	Yes	Yes
Firm controls	Yes	Yes	Yes	Yes
Bank x 2-digit sector x Month FE	Yes	Yes	Yes	Yes
2-digit sector x Province x Loan Type x Month FE	Yes	Yes	Yes	Yes
Loan size FE	Yes	Yes	No	No

Columns (1) and (2) of this table present the results from the OLS estimation of Equation (2) with the incorporation of bank×2-digit sector fixed effects:

$$Y_{lbft} = \alpha Firm\ share_{bf} + \Phi Bank\text{-}firm_{bf} + \Theta Firm_f + \gamma_{bt} + \theta_{splt} + \upsilon_{amount} + \mu_{bs} + \varepsilon_{lbft}$$

In column (1), the dependent variable is a dummy variable equal to 1 if the loan is issued with a public guarantee, and to 0 if the loan is issued through deselection by the lender. In column (2), the dependent variable is a dummy variable equal to 1 if the loan is issued with a public guarantee, and to 0 if the loan is issued with a maturity of 367-400 days which was otherwise eligible for the public guarantee (i.e., a marginally ineligible loan).
Columns (3) and (4) of this table present the results from the OLS estimation of Equation (3) with the incorporation of bank×2-digit sector fixed effects::

$$\begin{aligned} Y_{lbft} = {} & \beta_1 Firm\ share_{bf} \times Guaranteed_{lbft} + \beta_2 Firm\ share_{bf} \times M.\ Ineligible_{lbft} \\ & + \beta_3 Firm\ share_{bf} + \beta_4 Guaranteed_{lbft} + \beta_5 M.\ Ineligible_{lbft} \\ & + \Phi Bank\text{-}firm_{bf} + \Theta Firm_f + \gamma_{bt} + \theta_{splt} + \mu_{bs} + \varepsilon_{lbft} \end{aligned}$$

where the dependent variable is the loan's interest rate (in %) in column (3) and the natural log of the committed loan amount in column (4). The interest rate also includes the fee for guaranteed loans. $Firm\ share_{bf}$ is defined as the ratio of total credit committed by b to firm f relative to bank b's total lending portfolio, averaged over 2019:3-2020:2. $Guaranteed_{lbft}$ is a dummy variable equal to 1 if the loan is issued with a public guarantee, and to 0 otherwise. $M.\ Ineligible_{lbft}$ is a dummy variable equal to 1 if the loan is issued with a maturity of 367-400 days which was otherwise eligible for the public guarantee (i.e., a marginally ineligible loan), and to 0 otherwise. $Bank\text{-}firm_{bf}$ variables include *firm risk* and *maturing debt*. $Firm_f$ variables include pre-pandemic *firm size*, *firm leverage*, *firm age*, *firm liquidity*, and *firm RoA*. Table A1 defines all variables. All continuous independent variables are standardized. Standard errors are clustered at the bank×2-digit sector level. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Table B6
Probability of granting a guaranteed vis-a-vis deselected or marginally ineligible loan: Linear effects of firm risk

	Guaranteed=1 (Deselected=0)	Guaranteed=1 (M. Ineligible=0)
	(1)	(2)
Firm risk quartile=2	0.03***	0.05**
	(0.01)	(0.02)
Firm risk quartile=3	0.07***	0.14***
	(0.02)	(0.02)
Firm risk quartile=4	0.11***	0.16***
	(0.02)	(0.03)
Firm share	-0.03***	-0.02***
	(0.01)	(0.01)
Observations	9037	6095
R-squared	0.61	0.67
Bank-firm controls	Yes	Yes
Firm controls	Yes	Yes
Bank x Month FE	Yes	Yes
2-digit sector x Province x Loan Type x Month FE	Yes	Yes
Loan size FE	Yes	Yes

This table presents the results from the OLS estimation of Equation (2) through replacing the continuous *firm risk* variable with its quartiles:

$$Y_{lbft} = \alpha Firm\ share_{bf} + \Phi Bank\text{-}firm_{bf} + \Theta Firm_f + \gamma_{bt} + \theta_{splt} + \upsilon_{amount} + \varepsilon_{lbft}$$

In column (1), the dependent variable is a dummy variable equal to 1 if the loan is issued with a public guarantee, and to 0 if the loan is issued through deselection by the lender. In column (2), the dependent variable is a dummy variable equal to 1 if the loan is issued with a public guarantee, and to 0 if the loan is issued with a maturity of 367-400 days which was otherwise eligible for the public guarantee (i.e., a marginally ineligible loan). *Firm share*$_{bf}$ is defined as the ratio of total credit committed by b to firm f relative to bank b's total lending portfolio, averaged over 2019:3-2020:2. *Bank-firm*$_{bf}$ variables include the quartiles of *firm risk* and *maturing debt*. $Firm_f$ variables include pre-pandemic *firm size*, *firm leverage*, *firm age*, *firm liquidity*, and *firm RoA*. Table A1 defines all variables. All continuous independent variables are standardized. Standard errors are clustered at the bank×2-digit sector level. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Table B7
Different measures of firm risk

	Guaranteed=1 (Deselected=0)	Guaranteed=1 (M. Ineligible=0)
	(1)	(2)
Past arrears	0.04***	0.06***
	(0.01)	(0.01)
Past forbearance	0.06*	0.17***
	(0.03)	(0.03)
Firm share	-0.03***	-0.02***
	(0.01)	(0.01)
Observations	9037	6095
R-squared	0.61	0.67
Bank-firm controls	Yes	Yes
Firm controls	Yes	Yes
Bank x Month FE	Yes	Yes
2-digit sector x Province x Loan Type x Month FE	Yes	Yes
Loan size FE	Yes	Yes

This table presents the results from the OLS estimation of Equation (2) by replacing our benchmark *firm risk* variable with 2 alternative risk measures defined at the firm-level: *past arrears* and *past forbearance*:

$$Y_{lbft} = \alpha Firm\ share_{bf} + \Phi Bank\text{-}firm_{bf} + \Theta Firm_f + \gamma_{bt} + \theta_{splt} + \upsilon_{amount} + \varepsilon_{lbft}$$

In column (1), the dependent variable is a dummy variable equal to 1 if the loan is issued with a public guarantee, and to 0 if the loan is issued through deselection by the lender. In column (2), the dependent variable is a dummy variable equal to 1 if the loan is issued with a public guarantee, and to 0 if the loan is issued with a maturity of 367-400 days which was otherwise eligible for the public guarantee (i.e., a marginally ineligible loan). *Firm share*$_{bf}$ is defined as the ratio of total credit committed by b to firm f relative to bank b's total lending portfolio, averaged over 2019:3-2020:2. *Bank-firm*$_{bf}$ variables is only *maturing debt*. $Firm_f$ variables include *past arrears* (a dummy variable equal to 1 if the firm had been in payment arrears at least once from September 2018 to February 2020, and to 0 otherwise), *past forbearance* (a dummy variable equal to 1 if the firm had been provided with a forbearance measure at least once from September 2018 to February 2020, and to 0 otherwise); as well as pre-pandemic *firm size*, *firm leverage*, *firm age*, *firm liquidity*, and *firm RoA*. Table A1 defines all variables. All continuous independent variables are standardized. Standard errors are clustered at the bank×2-digit sector level. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Table B8
The effect on credit terms across firm share & firm risk

	Interest rate+Fee (in %)	ln(Amount)
	(1)	(2)
Firm share		
Firm share	-0.05***	0.31***
	(0.02)	(0.03)
Firm share x Guaranteed=1	0.10***	-0.05
	(0.02)	(0.04)
Firm share x M. Ineligible=1	-0.26***	0.28***
	(0.06)	(0.08)
Firm risk		
Firm risk	0.15***	0.06***
	(0.02)	(0.02)
Firm risk x Guaranteed=1	-0.15***	-0.08***
	(0.02)	(0.03)
Firm risk x M. Ineligible=1	0.09*	-0.05
	(0.05)	(0.03)
Observations	11947	11947
R-squared	0.55	0.61
Other terms of interactions	Yes	Yes
Bank-firm controls	Yes	Yes
Firm controls	Yes	Yes
Bank x Month FE	Yes	Yes
2-digit sector x Province x Loan Type x Month FE	Yes	Yes

This table presents the results from the OLS estimation of Equation (3) with the interactions of firm risk and guaranteed/marginally ineligible loan identifiers:

$$\begin{aligned} Y_{lbft} = {} & \beta_1 Firm\ share_{bf} \times Guaranteed_{lbft} + \beta_2 Firm\ share_{bf} \times M.\ Ineligible_{lbft} \\ & + \beta_3 Firm\ risk_{bf} \times Guaranteed_{lbft} + \beta_4 Firm\ risk_{bf} \times M.\ Ineligible_{lbft} \\ & + \beta_5 Firm\ share_{bf} + \beta_6 Firm\ risk_{bf} + \beta_7 Guaranteed_{lbft} + \beta_8 M.\ Ineligible_{lbft} \\ & + \Theta Firm\ Controls_f + \delta_{bt} + \theta_{splt} + \varepsilon_{lbft} \end{aligned}$$

In column (1), the dependent variable is the loan's interest rate (in %). The interest rate also includes the fee for guaranteed loans. In column (2), the dependent variable is the natural log of the committed loan amount. *Firm share*$_{bf}$ is defined as the ratio of total credit committed by b to firm f relative to bank b's total lending portfolio, averaged over 2019:3-2020:2. *Firm risk*$_{bf}$ is firm f's probability of default estimated by bank b's internal model in February 2020. *Guaranteed*$_{lbft}$ is a dummy variable equal to 1 if the loan is issued with a public guarantee, and to 0 otherwise. *M. Ineligible*$_{lbft}$ is a dummy variable equal to 1 if the loan is issued with a maturity of 367-400 days which was otherwise eligible for the public guarantee (i.e., a marginally ineligible loan), and to 0 otherwise. Deselected loans are the reference category and thus are excluded. *Bank-firm*$_{bf}$ variable is only *maturing debt*. $Firm_f$ variables include pre-pandemic *firm size*, *firm leverage*, *firm age*, *firm liquidity*, and *firm RoA*. Table A1 defines all variables. All continuous independent variables are standardized. Standard errors are clustered at the bank×2-digit sector level. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Table B9
Controlling for bank-firm relationship length

	Guaranteed=1 (Deselected=0)	Guaranteed=1 (M. Ineligible=0)
	(1)	(2)
Firm share	-0.03***	-0.02***
	(0.01)	(0.01)
Relationship length	-0.00	-0.02**
	(0.01)	(0.01)
Observations	9014	6088
R-squared	0.60	0.67
Bank-firm controls	Yes	Yes
Firm controls	Yes	Yes
Bank x Month FE	Yes	Yes
2-digit sector x Province x Loan Type x Month FE	Yes	Yes
Loan size FE	Yes	Yes

This table presents the results from the OLS estimation of Equation (2) by including *relationship length* as an additional explanatory variable:

$$Y_{lbft} = \alpha Firm\ share_{bf} + \Phi Bank\text{-}firm_{bf} + \Theta Firm_f + \gamma_{bt} + \theta_{splt} + \upsilon_{amount} + \varepsilon_{lbft}$$

In column (1), the dependent variable is a dummy variable equal to 1 if the loan is issued with a public guarantee, and to 0 if the loan is issued through deselection by the lender. In column (2), the dependent variable is a dummy variable equal to 1 if the loan is issued with a public guarantee, and to 0 if the loan is issued with a maturity of 367-400 days which was otherwise eligible for the public guarantee (i.e., a marginally ineligible loan). *Firm share*$_{bf}$ is defined as the ratio of total credit committed by b to firm f relative to bank b's total lending portfolio, averaged over 2019:3-2020:2. *Bank-firm*$_{bf}$ variables include *relationship length* (the natural log of the number of years since the first bank-firm interaction), *firm risk* and *maturing debt*. $Firm_f$ variables include pre-pandemic *firm size*, *firm leverage*, *firm age*, *firm liquidity*, and *firm RoA*. Table A1 defines all variables. All continuous independent variables are standardized. Standard errors are clustered at the bank×2-digit sector level. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Table B10
Summary statistics for bank-firm and firm level analyses

	N	Mean	SD	p(25)	p(50)	p(75)
A. Bank-firm level analysis: substitution (all loans)						
Firm-cluster fixed effects sample						
Δ % Non-guaranteed loans	9,863	-0.794	0.374	-0.995	-0.951	-0.798
Firm fixed effects sample						
Δ % Non-guaranteed loans	374	-0.856	0.316	-1	-0.984	-0.882
B. Bank-firm level analysis: substitution (short-term loans)						
Firm-cluster fixed effects sample						
Δ % Non-guaranteed loans	7,736	-0.71	0.492	-1	-0.983	-0.613
Firm fixed effects sample						
Δ % Non-guaranteed loans	310	-0.795	0.427	-1	-0.999	-0.807
C. Firm-level analysis						
Δ ln(Sales)	8,267	-0.386	0.771	-0.655	-0.26	0.017
Default	9,605	0.012	0.114	0	0	0

This table presents summary statistics for the analyses of credit substitution (Panel A) and borrower performance (Panel B). Table A1 defines all variables.

Table B11
Guaranteed lending as a substitute for non-guaranteed lending
A. Change in ALL non-guaranteed loans

	Δ% Non-guaranteed loans (all loans)					
	(1)	(2)	(3)	(4)	(5)	(6)
$Amount^{Guaranteed}$	-0.04***	-0.03***	-0.04***	-0.03***	-0.05***	-0.04***
	(0.00)	(0.01)	(0.00)	(0.01)	(0.00)	(0.00)
Firm share	-0.06***	-0.04*	-0.05***	-0.04*	-0.05***	-0.06***
	(0.00)	(0.02)	(0.00)	(0.02)	(0.01)	(0.01)
Firm share x $Amount^{Guaranteed}$			0.01***	0.01*	0.01***	0.01***
			(0.00)	(0.00)	(0.00)	(0.00)
Firm share x $Amount^{Guaranteed}$ x Maturing debt					-0.01	
					(0.01)	
Firm share x $Amount^{Guaranteed}$ x Bank capital						-0.00
						(0.00)
Observations	9863	374	9863	374	9863	9863
R-squared	0.19	0.63	0.19	0.63	0.19	0.19
Other terms of interactions	No	No	No	No	Yes	Yes
Bank-firm controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm controls	Yes	No	Yes	No	Yes	Yes
Bank FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	No	Yes	No	Yes	No	No
2-digit sector x Province FE	Yes	No	Yes	No	Yes	Yes

Table B11
(Continued)
B. Change in SHORT-TERM non-guaranteed loans

	Δ% Non-guaranteed loans (short-term loans)					
	(1)	(2)	(3)	(4)	(5)	(6)
$Amount^{Guaranteed}$	-0.09***	-0.06***	-0.09***	-0.07***	-0.10***	-0.09***
	(0.01)	(0.02)	(0.01)	(0.02)	(0.01)	(0.01)
Firm share	-0.06***	-0.04	-0.06***	-0.04	-0.07***	-0.06***
	(0.01)	(0.03)	(0.01)	(0.03)	(0.01)	(0.01)
Firm share x $Amount^{Guaranteed}$			0.01	0.02**	0.01**	0.01**
			(0.01)	(0.01)	(0.01)	(0.00)
Firm share x $Amount^{Guaranteed}$ x Maturing debt					-0.02	
					(0.02)	
Firm share x $Amount^{Guaranteed}$ x Bank capital						0.00
						(0.00)
Observations	7736	310	7736	310	7736	7736
R-squared	0.20	0.61	0.20	0.61	0.20	0.20
Other terms of interactions	No	No	No	No	Yes	Yes
Bank-firm controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm controls	Yes	No	Yes	No	Yes	Yes
Bank FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	No	Yes	No	Yes	No	No
2-digit sector x Province FE	Yes	No	Yes	No	Yes	Yes

This table presents the results from the OLS estimation of Equation (4) by replacing the guaranteed loan dummy with the guaranteed loan amount:

$$\begin{aligned}\Delta\%\textit{Non-guaranteed loans}_{bf} = {} & \eta_1 Amount_{bf}^{Guaranteed} \times Firm\ share_{bf} \\ & + \eta_2 Amount_{bf}^{Guaranteed} + \eta_3 Firm\ share_{bf} \\ & + \Phi \textit{Bank-firm}_{bf} + \Theta Firm_f + \gamma_b + \theta_{sp(or\ f)} + \varepsilon_{bf}\end{aligned}$$

Columns (1) and (2) show the estimates without the interaction term. Columns (5) and (6) incorporate *maturing debt* and *bank capital* as additional interaction terms, respectively. The dependent variable is the change in the total of active and new non-guaranteed loans committed to firm f by bank b from 2020:2 to 2020:6. Panel A (B) looks at the change in total (short-term) non-guaranteed loans. $Amount_{bf}^{Guaranteed}$ is the total amount of guaranteed loans, scaled by the new and active loans (only short-term loans in Panel B) granted in February 2020. $Firm\ share_{bf}$ is defined as the ratio of total credit committed by b to firm f relative to bank b's total lending portfolio, averaged over 2019:3-2020:2. Bank-firm controls are *firm risk* and *maturing debt*. Firm controls are pre-pandemic *firm size*, *firm leverage*, *firm age*, *firm liquidity*, and *firm RoA*. Table A1 defines all variables. All continuous independent variables are standardized. Standard errors are clustered at the bank×2-digit sector level. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.