The Bright Side of Relationship Lending: Cooperative Banks and Corporate Loans

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Abstract

This paper examines whether cooperative banks have different loan terms from commercial banks for corporate loans. We find that cooperative banks charge higher rates and require less collateral than commercial banks. However, we show that relationship lending has opposite effects on loan terms depending on the type of bank. Longer relationships reduce interest rates and collateral requirements for cooperative banks, but increase these lending conditions for commercial banks. Furthermore, we find that the beneficial effects of relationship lending for cooperative banks are amplified for financially fragile firms. We therefore support the view that cooperative banks are initially more expensive, but that relationship lending allows them to overcome this over time and ultimately pass on information gains to borrowers through better lending terms.

Keywords: cooperative banks, bank lending, relationship lending.

JEL codes: G21, D82.

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1 Introduction

Cooperative banks are key players in the European banking landscape. Their share of the credit market is 37.7% in Austria, 23.1% in Germany, 34.5% in Finland, 34.6% in Denmark and up to 63.3% in France (European Association of Cooperative Banks, 2022)[1].

These banks strongly differ from commercial banks in three main ways. The first is their ownership structure, since the owners of cooperative banks are their customers. The second is their control, based on the principle of "one member, one vote", regardless of the amount of capital held. The last is their local nature: most cooperative banks have specialised regional entities which aim to meet the financial needs of households and firms at a local level. As a result, cooperative banks are generally small banks that have entered into cooperation agreements with other banks in order to achieve economies of scale through the establishment of central institutions and network alliances, which can result in complex, multi-layered structures (Bülbül et al., 2013). [2]

The objective of this paper is to investigate whether cooperative banks have different loan terms to commercial banks for corporate loans. We want to know whether cooperative banks charge different interest rates, require more or less collateral, and lend higher or lower amounts to corporate customers than commercial banks. In sum, we examine whether cooperative banking is beneficial for corporate customers. This question is of major importance, given the fundamental role of bank credit in the financing of European firms (Langfield & Pagano, 2016) and the high market share of cooperative banks in many European countries (Ayadi et al., 2010; Bülbül et al., 2013). Better credit conditions terms can promote access to credit and increase investment for firms, thereby stimulating growth.

[1] https://www.eacb.coop/en/cooperative-banks/key-figures.html

[2] It should be emphasised that, despite similarities in terms of ownership structure and local nature, European cooperative banks as a whole are not comparable to US credit unions in that they are for-profit organisations providing services to members and non-members, whereas US credit unions are not-for-profit entities providing services solely to members (van Rijn, 2022).

The literature provides several arguments as to why cooperative banks may have different loan terms than commercial banks for corporate lending. One view is that cooperative banks could harm business lending by offering less favourable lending terms. There are two main reasons for this. On the one hand, as cooperative banks are generally smaller in size and do not benefit from geographic diversification, they suffer from higher costs due to lower economies of scale (Marqués & Anguren Martín, 2011). On the other hand, cooperative banks may also have less developed credit risk technologies to collect hard information on their borrowers and, more generally, to reduce the risk associated with information asymmetries. For instance, cooperative banks rely less on Internal Rating Based models than commercial banks (Ferri, 2017). They are therefore likely to charge higher interest rates on loans and generally offer more restrictive loan terms.

However, an opposing view suggests that cooperative banks could be more beneficial than commercial banks for firms. The first explanation relates to their ownership structure. In cooperative banks, managers act in the interests of the owners who are also the banks' customers. Accordingly, they have an incentive not to charge high interest rates on loans and, in general, to serve borrowers better than commercial banks (Taylor, 1971; Smith, 1984). The second explanation is based on the local nature of cooperative banks. The latter gives them a comparative advantage over commercial banks by enabling them to better assess borrower risk through more in-depth lending relationships (Ferri et al., 2014; Bartoli et al., 2013; Mocetti et al., 2017). By gradually acquiring information about the firm through multiple interactions over time, banks can reduce information asymmetries which allows them to have lower screening and monitoring costs (Petersen & Rajan, 1994; Boot, 2000). Cooperative banks could then see their costs improve relative to commercial banks as the lending relationship evolves and, because of their ownership structure, they could pass on to their customers the lower costs they have achieved. Hence, cooperative

banks could provide better loan terms than commercial banks by using the advantage of relationship lending.

To conduct our research, we use a unique dataset of about 233,000 corporate loans granted by all French private banks from September 2018 to December 2021. Our analysis focuses on the French credit market because this country has the largest market share of cooperative banks in Europe. It is therefore the ideal setting to compare cooperative banks and commercial banks in their corporate lending behavior. Our dataset includes all corporate loans granted by commercial and cooperative banks during this period to firms with an outstanding balance of at least 25,000 euros. It includes information on loan, firm and bank characteristics at a granular level.

Our empirical analysis is threefold. First, we examine the effect of cooperative banking on corporate loans by running regressions of new loan characteristics (interest rate, whether the loan is secured or not, and loan amount) on a set of variables including the cooperative nature of the granting bank. We find that cooperative banks apply higher lending rates to firms than commercial banks. We interpret this result by the fact that cooperative banks have less developed technologies and suffer from higher monitoring costs for assessing credit risk. As a result, they are more expensive for firms seeking to obtain credit. We also observe that cooperative banks require less collateral than commercial banks and do not differ in terms of the size of loans granted.

Second, we explore the effect of relationship lending on the behavior of cooperative banks and commercial banks. Interestingly, we find evidence that a longer relationship with the borrowing firm reduces the interest rate, but only for cooperative bank. In contrast, a longer relationship with a commercial bank does not bring benefits to the borrowing firm but rather turns into a hold-up problem (Sharpe, 1990; Rajan, 1992). We obtain the same results for collateral, where a longer relationship is associated with higher collateral

requirements for commercial banks and lower collateral requirements for cooperative banks.

Third, we investigate whether the benefits of relationship lending for cooperative banks depend on the characteristics of the firm, the bank or the credit market. In line with the hold-up problem, we find that commercial banks exploit their privileged relationships to apply higher rates to the riskiest firms, while cooperative banks share the relationship gains to reduce rates, particularly for financially fragile borrowers. In addition, smaller banks that are likely to be more specialised in relationship lending technologies and firms with more diversified borrowings are also associated with greater relationship lending benefits for cooperative banks.

These results show that relationship lending is always beneficial for firms under the cooperative banking model. We find evidence that cooperative banks are more expensive than commercial banks at the start of the lending relationship, but become cheaper as the relationship evolves over time. The local nature of cooperative banks enables them to obtain more soft information about borrowing firms through close links, while their ownership structure encourages them to use this information in a lending relationship for the benefit of borrowers.

Our results have salient policy implications for maintaining or even promoting the cooperative banking sector in EU countries. The results support the view that cooperative banks facilitate firms' access to credit over time by relaxing loan terms. At the same time, the finding that commercial banks charge lower initial interest rates supports the view that a diverse banking industry combining commercial banks and cooperative banks should be preserved in EU countries.

Our paper relates to several streams of literature. First, we contribute to the literature on the effects of cooperative banking in Europe. Many papers have examined the differences in performance and profitability between commercial banks and cooperative banks, with

a tendency to conclude that cooperative banks are more efficient (Altunbas et al., 2001; Girardone et al., 2009; Mäkinen & Jones, 2015) and more profitable (Goddard et al., 2013) than commercial banks. The impact of cooperative banks on financial stability has also been studied in a small number of papers, with support for higher financial stability for cooperative banks compared to commercial banks (Iannotta et al., 2007; Cihák & Hesse, 2007; Michie & Llewellyn, 2010; Chiaramonte et al., 2015). We make an innovative contribution to this literature by examining the differences in lending conditions between cooperative and commercial banks on a large dataset of corporate loans.

Second, we add to the extensive literature on relationship lending. The question of whether relationship lending offers benefits to borrowers is widely debated in the literature. As observed by Kysucky & Norden (2016), theoretical works have shown that relationship lending has a bright side and a dark side (Sharpe, 1990; Rajan, 1992; Boot & Thakor, 2000). Against this background, a number of studies have provided empirical evidence of the advantages of relationship lending, particularly in terms of access to finance for opaque borrowers (Petersen & Rajan, 1994; Cole, 1998) but also of its limitations in terms of financing costs, such as the hold-up problem (Farinha & Santos, 2002; Ioannidou & Ongena, 2010). We contribute to this debate by showing that the benefits of relationship lending for borrowers may depend on the cooperative nature of the bank. In this regard, we build on the seminal work of Angelini et al. (1998) who found that a longer relationship is associated with a higher cost of credit for loans granted by commercial banks and for loans granted by cooperative banks to non-member customers. However, our study makes several key contributions to this work. First, we make use of a comprehensive panel of firms rather than a small cross-section of firms. Second, we investigate multiple loan terms - rate, collateral, and amount - in order to have a more complete view of the contracts. Finally, France's mature cooperative sector, which holds a substantial share of the market, provides

an ideal laboratory.

The remainder of the paper proceeds as follows. Section 2 presents the French cooperative banking industry. Section 3 explains the data. Section 4 describes the methodology. Section 5 discusses the main results. Section 6 contains the additional estimations. Section 7 concludes.

2 The French cooperative banking industry

As in many European countries, the French banking sector is made up of commercial and cooperative banks. The latter belong to three major networks: the Crédit Agricole Group, the Crédit Mutuel Group and the BPCE Group, all of which have very different histories dating back to the second half of the 19th century, when they were created to provide access to credit for customers poorly served by the traditional banking system (Bülbül et al., 2013). Following the deregulation and liberalisation of the financial industry from the 1980s onwards, French cooperative banks evolved towards a universal banking model, leading to the emergence of hybrid models in which they are able to raise funds directly on the financial market via a listed parent bank that monitor a decentralised group of regional subsidiaries (Gurtner et al., 2009; Dereeper et al., 2020).

French cooperative banks have similarities and differences with cooperative banks in other European countries. They have in common a form of cooperative ownership that can be considered as a bottom-up phenomenon with specific features (Fonteyne, 2007). Their ownership structure allows customers, who are also the owners, to participate in the governance of the bank. This control is based on the principle of "one member, one vote", in line with the democratic structure advocated by the cooperative model. Their cooperative banking philosophy leads them to focus on local development. They are regional banks whose primary aim is to meet the financial needs of households and firms in their area. As

Bülbül et al. (2013) point out, they adhere to the regional principle, which enables them to cooperate within their respective networks.

However, French cooperative banks differ from cooperative banks in other European countries in several respects. First, they offer more diversified services than retail banking. The role of French cooperative banks has gained importance as a result of their expansion through mergers and acquisitions (Marqués & Anguren Martín, 2011). This development has made it possible to increase the number of financial services offered through participation in wholesale banking, asset management, insurance, etc. (activities carried out by specialised subsidiaries). Second, French cooperative banks hold a significant share of the corporate lending market. In this regard, they account for around 50% of outstanding corporate loans (Figure 3). In comparison, many German and Italian cooperative banks remain focused on savings and loans, and have a more limited share of the business lending market (McKillop et al., 2020). Finally, French cooperative banks have a centralised structure at the regional level. This contrasts with the more decentralised networks found in other European cooperative banking systems (Cornée et al., 2018). For example, in Germany and Austria, the cooperative banks belong to groups which coordinate shared functions, but the local banks remain autonomous legal entities, while in Italy and Spain, cooperative banks are organised as small independent banks.

3 Data

3 .1 Loan-level variables

We combine five different data sources: (i) The European Credit Registry (Anacredit); (ii) firm balance-sheet information from the Banque de France's FIBEN database; (iii) supervisory bank balance sheet information (SURFI); (iv) the French Credit Registry (SCR);

and (v) regional-level corporate credit information (CEFIT). The definitions of the variables of interest are presented in Table 1.

Core data come from the French data of AnaCredit[3] database (*Analytical Credit Dataset*), a proprietary and confidential database of the ECB which begins in September 2018. AnaCredit is a database that reports loan-level attributes on a monthly frequency in a harmonised way across all euro area countries. Each loan is uniquely identified by instrument, contract, debtor and creditor identifiers, which allows us to detect new loans with all their characteristics (outstanding amount, maturity, type of instrument, interest rate, collateral). For each country participating in the construction of the database, the minimum reporting threshold is 25,000 euros, to be calculated at the bank-firm relationship level and not at the individual loan level.

This database improves the level of information stemming from national credit registers that were already collected at country-level by several euro area members. For instance, since 1998 the French credit register has gathered monthly data on credit exposures of all banks operating in France to all firms whose total credit exposure is higher than €25,000.[4] Yet, the French credit register is not a loan-level database and granular information on new loans is not available. To ensure the representativeness of AnaCredit we perform a data quality check using bank balance sheet items (BSI) collected by the Banque de France. Figure 1, which provides a comparison of the outstanding amount of credit to non-financial corporations (NFC) between the Banque de France (BSI) and Anacredit, indicates that the latter represents on average 80% of total credit to NFC in France. In our analysis, we restrict the AnaCredit database to loans granted to non-financial corporations (NFCs) by private banks from September 2018 (the starting date of AnaCredit) to December 2021[5].

[3] An extensive description of AnaCredit is available in the AnaCredit reporting manuals: `https://www.ecb.europa.eu/stats/money_credit_banking/anacredit/html/index.en.html`

[4] Note that before 2006, this threshold was €75,000.

[5] Note that we exclude public banking groups such as La Banque Postale from the sample.

In doing so, we consider the total commitment of the bank to the debtor with respect to an instrument (i.e. the drawn and undrawn part of the credit) and we focus on investment loans, credit lines, overdrafts and trade receivables which represent 90% of all new loans to NFCs (Figure 2). In addition, as the attributes collected for each loan include extensive information on the protection that secures the bank's credit exposure, we remove from the sample all public-guaranteed loans during the pandemic in order to deal with standard loans [6].

3 .2 Firm-level variables

Firm balance sheet information is drawn from the FIBEN (Fichier bancaire des entreprises) database, which collects annual balance sheet data for all firms with a turnover of more than €750,000 since 1990. Information is collected by the Banque de France at the legal entity level (unconsolidated) through a unique national identifier called SIREN. Each year, this dataset contains the accounts of about 250,000 firms and thus covers a large part of the French economy[7]. A major advantage of FIBEN is that it allows the study of unlisted SMEs: 95 % of the firms in the database can be considered SMEs compared to the European definition based on the number of employees (less than 250), turnover (less than €50 million) and total assets (less than €43 million).

The FIBEN database also includes individual firm credit ratings calculated by the Banque de France. These ratings are one of the four Internal Credit Assessment Systems (ICAS) validated by the Eurosystem, which means that the Eurosystem can rely on them to assess the credit quality of eligible assets within its collateral framework. In our analysis, we create a dummy variable *Low BdF rating* that takes the value 1 if the firm has

[6] See Nicolas et al. (2022) for more details on this program.

[7] Note that the dataset is composed of 18% of observations coming from industry, 12% from construction, 52% from trade, 13% from services and 5% from other sectors.

a credit rating below 4+ (a low or average capacity to meet its financial obligations over a one to three-year horizon) and 0 otherwise.

3 .3 Bank-level variables

Regarding bank-level information, we rely on the French unified reporting system for financial institutions (SURFI) to assess how the strength of a bank's balance sheet is related to the amount of credit granted. The bank level database contains financial statements at the non-consolidated level on all commercial and cooperative banks in France. Following the bank balance sheet channel thesis, we control for the heterogeneous bank response to an unexpected adverse shock. We look at traditional indicators of bank financial strength, such as solvency (i.e. bank equity over total assets of the bank), liquidity (i.e. the sum of securities, balance with the central bank, loans and advances to credit institutions and repurchase agreements over total assets of the bank), non-performing-loans and bank size (Kashyap & Stein, 2000; Jiménez et al., 2012).

3 .4 Relationship lending variable

To capture the effects of relationship lending on loan granting, we use one measure from the French national credit register which gathers data on credit exposures of all banks operating in France to all firms whose total credit exposure is greater than €25,000. Our credit register starts in 1998. We compute the relationship length to capture the ability of lenders to accumulate soft information about their borrowers (Boot & Thakor, 2000). The longer the relationship, the more precise the lenders' knowledge of borrowers' credit risk. Throughout our analysis, the relationship length corresponds to the elapsed time between the first relationship established between a firm and a bank and the last one.

3 .5 Diversification of borrowing variables

Finally, to gauge the effect of diversification of borrowing on loan granting, we follow Nicolas (2023) and compute a consolidated concentration ratio (CR3) on a monthly basis using the *Centralisation Financière Territoriale* (CEFIT) dataset. This original dataset, which covers the 13 French regions, collects monthly information on loans and deposits for each individual bank at the regional level. Interestingly, CEFIT contains breakdowns by types of borrowers which enables us to collect data on corporate credit only. This CR3 corresponds to the sum of market shares of the three main banking groups at the regional level. The second variable we use corresponds to the structure of information available to lenders. Like the length of the relationship, single-banking has sometimes been used as a relationship lending measure in the seminal literature.[8] Thus, we consider a firm to be a single-bank firm if it has had a relationship with only one bank since the starting date of the French Credit Register.

4 Empirical strategy

To investigate the effect of cooperative banks on loan granting, we focus on new loans to determine whether cooperative banks lend on more advantageous terms. To do this, the amount, interest rate and guarantee of each new loan are alternately linked to the characteristics of the loan, the firm to which it was granted and the lending bank. Following Beatriz et al. (2022), we use a panel data structure on new loans using firm fixed effects in our linear regressions to control for time-invariant unobserved heterogeneity[9]. The advantage of focusing on new loans granted is twofold: on the one hand, they enable us to distinguish

[8] See Ongena & Smith (2000) for a review.

[9] Note that, contrary to the use of the within-firm estimator in the seminal work of Khwaja & Mian (2008), our fixed effects methodology does not control for all observed and unobserved time-varying firm heterogeneity.

directly between supply and demand for credit, without excluding single-bank firms, which are numerous in France (Degryse et al., 2019; Beatriz et al., 2022). On the other hand, new loan amounts and their associated characteristics make it possible to analyse banks' lending behavior at the finest level. As a result, the first specification that we estimate is at the new-loan-level:

$$Loan\ conditions_{ibrt} = \beta_1 COOP_{ibt} + \beta_2 L_{ibt} + \beta_3 F_{it_{-1}} + \beta_4 B_{bt_{-1}} \tag{1}$$

$$+\beta_5 R_{ibt_{-1}} + \beta_6 D_{ibt_{-1}} + \eta_i + \eta_t + \eta_l + \epsilon_{ibrt}$$

where *Loan conditions* corresponds to three different dependent variables: $Ln(amount)$ is the log of the total new credit amount (drawn and undrawn) granted by bank b to firm i located in region r at time t; *Interest rate* is the interest rate of the new loan; $Secured$ is a dummy variable that takes the value 1 whether the new loan is secured and 0 otherwise. Our main variable of interest $COOP$ takes the value 1 whether the lending bank is a cooperative bank and 0 otherwise. L, F, B and D are respectively matrices of loan, firm, bank and diversification of borrowing controls, while R is the relationship length between the firm and its lending bank. Finally, η_i, η_t and η_l are firm time and credit instrument fixed effects and ϵ_{jbr} is the error term[10]. Standard errors are clustered at the firm- and bank-level. Our three main specifications are estimated by OLS. In this regard, as the variable $Secured_{ibrt}$ is a binary response variable, the specification we use in that case is a linear probability model.

To study the effect of cooperative banks on credit conditions according to relationship lending, we add an interaction between the dummy $COOP$ and the length of the relationship

[10] Note that, as our main interest variable $COOP_{ibrt}$ is time-invariant, we do not include bank fixed effects.

R. The equation we estimate is the following:

$$Loan\ conditions_{ibrt} = \beta_1 COOP_{ibt} + \beta_2 COOP_{ibt} \times R_{ibt_{-1}} + \beta_3 F_{it_{-1}} \tag{2}$$

$$+\beta_4 B_{bt_{-1}} + \beta_5 R_{ibt_{-1}} + \beta_6 D_{ibt_{-1}} + \eta_i + +\eta_t + \eta_l + \epsilon_{ibrt}$$

where β_2 is the vector of coefficients of interest associated with interactions between $COOP$ and R.

Finally, as regards the differential effect of relationship lending according to firm and bank heterogeneities or diversification of borrowing (i.e. single banking, or concentrated local credit market), we include triple interactions and extend Eq. (2) as follows :

$$Loan\ conditions_{ibrt} = \beta_1 COOP_{ibt} + \beta_2 COOP_{ibt} \times R_{ibt_{-1}} \tag{3}$$

$$+\beta_3 COOP_{ibt} \times R_{ibt_{-1}} \times H_{ibt_{-1}} + \beta_4 F_{it_{-1}} + \beta_5 B_{bt_{-1}} +$$

$$+\beta_6 R_{ibt_{-1}} + \beta_7 D_{ibt_{-1}} + \beta_8 H_{ibtr_{-1}} + \eta_i + \eta_t + \eta_l + \epsilon_{ibrt}$$

Where H corresponds to variables that may have a heterogeneous effect on credit conditions. For instance, dealing with firm riskiness, H could take the value of 1 when the firm is considered as risky and 0 otherwise.

Merging our new loan-level database with firm and bank characteristics as well as relationship lending variables, we end up with 233,399 observations, composed of 47,454 firms and 131 banks. The latter represented 75% of corporate credit in Q4 2021. Table 2 provides summary statistics of this first database. The new loan amount has an average value of

€298,260 with a median of around €50,000, while the average interest rate is 1.86% and 19% of new loans are secured.

5 Results

5 .1 Main estimations

Table 3 reports the results of the main estimations of equation 1. In each column we present the results for a given credit condition such as amount, the interest rate or whether the loan is secured or not to find out whether there are any differences between the loans granted by cooperative banks and commercial banks. Several conclusions emerge.

First, we find evidence that the interest rate charged by cooperative banks is higher than the one charged by commercial banks (column (1)). In terms of economic significance, the credit rate is 0.349 percentage points higher for cooperative banks than for commercial banks. Given the mean (1.86%) and the median (1.2%) of the interest rate in the sample, this difference in loan rates between the two types of banks can be considered as sizeable. Second, we observe that collateral requirements are lower for cooperative banks than for commercial banks: a loan from a cooperative bank is 4.9 percentage points less likely to be secured than a loan from a commercial bank (column (3)). Third, in column (1) we do not find a difference in the amount of the loan granted by both types of banks (column (1)).

Moreover, we observe some results for the control variables. A higher capital ratio for the firm is positively related to the loan amount and negatively related to the interest rate. Higher capital and liquidity ratios for the bank are negatively related to the interest rate and positively related to the presence of collateral. Interestingly, a higher relationship lending duration is associated with a lower loan amount and a higher interest rate. Thus, we observe that a longer relationship with a bank is detrimental to the borrowing firm,

which, as far as the cost of financing is concerned, supports the view that relationship lending creates a hold-up problem.

Our main conclusion is therefore that cooperative banks are more expensive but require less collateral than commercial banks for corporate loans. The higher prices of cooperative banks may stem from the fact that these banks suffer from less developed technologies for measuring credit risk and more generally for reducing the risk associated with information asymmetries. They are more expensive because they have to invest more to obtain information about the borrower, which translates into higher lending rates. They do not have the same capacity to exploit raw information as commercial banks and must therefore invest to obtain information on borrowers. This finding, coupled with this interpretation, raises questions about the influence of the length of the relationship, given that a longer duration may provide better knowledge of the borrower and may be associated with benefits for the borrower. In other words, the impact of the duration of the relationship between the bank and the borrowing company needs to be examined more closely.

The fact that cooperative banks require less collateral may seem surprising, given that cooperative banks also charge higher borrowing rates. This may be due to the specific characteristics of cooperative banks. Their local nature, with the aim of meeting the financial needs of the local community, may contribute to requiring lower collateral in order to facilitate access to credit (Beck et al., 2006; Coluzzi et al., 2015) and, as such, the objectives of cooperative banks may lead them to have lower collateral requirements than commercial banks.

5 .2 The impact of relationship lending

Our main results show that cooperative banks charge higher loan rates than commercial banks. We then examine whether the length of the relationship influences this result.

Indeed, we have shown above that a longer relationship is associated with higher lending rates, which is consistent with the idea that the bank captures the borrowing firm to extract rents. However, we can ask whether this result is valid for cooperative banks and for commercial banks.

We test the hypothesis that the duration of the relationship has a different effect on the lending rates charged by cooperative banks and commercial banks. To put it differently, while commercial banks appropriate the information gain resulting from multiple interactions over time to capture the borrowing firm by charging higher lending rates, cooperative banks share this gain with the borrowing firm by charging lower lending rates. The different behaviour of cooperative banks would result from their ownership structure: because they are owned by their customers, cooperative banks have a greater incentive to pass on to their customers the benefits they derive from the lending relationship.

To explore this hypothesis, we add an interaction term between the cooperative bank dummy and the duration variable. A significant coefficient on this interaction term would imply a different impact on the duration of the relationship depending on the cooperative nature of the bank. Table 4 reports the results for the estimations of equation2.

First, we comment on the results for the interest rate. We observe a significant and negative coefficient for the interaction term, which indicates that the duration of the relationship does not have the same impact on the interest rate for commercial banks and for cooperative banks (column (2)). The coefficient of *Duration* is significant and positive. Thus, a longer relationship with a commercial bank has a positive impact on the interest rate. Yet, the effect of relationship lending goes in the opposite direction for cooperative banks. Indeed, as the effect of *Duration* on the interest rate for cooperative banks is the sum of the coefficient for *Duration* (0.013) and the coefficient for the interaction term between *COOP* and *Duration* (-0.016), the latter is negative and equal to -0.003. In other

words, the longer the relationship with a cooperative bank, the lower the interest rate.

This result suggests that the bright side of relationship lending may only appear in the presence of cooperative banks: longer lending relationships lead to lower lending rates, in the sense that cooperative banks share the benefits of information gains with the borrowing firm. This finding is highly relevant to the broad debate on the benefits of relationship lending. Are these benefits shared by banks with borrowers in the form of lower borrowing rates or are they appropriated by banks in the form of higher borrowing rates? Our results show that both situations can occur and that they depend on the type of bank.

At this stage, we have found that cooperative banks have higher overall lending rates than commercial banks and that a longer duration of the relationship reduces lending rates for cooperative banks. Therefore, the question that naturally arises is whether we can have situations where cooperative banks are cheaper than commercial banks. Can the duration of the relationship be long enough for the benefits of the relationship to outweigh the higher initial lending rates of the cooperative bank? To answer this question, let's look at the coefficients of the estimates.

The total impact of cooperative banks on the interest rate is the sum of the coefficient of *COOP* (0.330) and the coefficient of the interaction term between *COOP* and *Duration* (-0.016) multiplied by the value of the duration variable. This overall effect turns out to be negative, i.e. cooperative banks are cheaper, when the value of the duration variable is higher than 20.625 years. The analysis of the descriptive statistics in Table 2 shows that the duration variable ranges from 0.08 to 24 years. There are therefore some firm where the relationship length is long enough to allow lower borrowing rates from cooperative banks than from commercial banks.[11]

[11] It should be noted that, like most national credit registers, our credit register does not include the full history of each relationship (Ongena & Smith, 2001). Indeed, we are faced with a left censoring as our credit register starts in 1998. The distribution of the actual duration of the relationship is probably longer than that observed in the data, which potentially increases the number of companies that can

We now turn to the results for collateral requirements (column (3)). We find similar results to those for the interest rate regarding the opposite effect of duration for cooperative and commercial banks. Once again, the coefficient of the interaction term (-0.323) between *COOP* and *Duration* is significantly negative, while the coefficient of *Duration* is significant and positive (0.111). Once again, we see the dark side of relationship lending with commercial banks, with longer relationships associated with higher collateral requirements, and the positive side of relationship lending with cooperative banks, with longer relationships associated with lower collateral requirements.

Finally, we examine the results for the loan amount (column (1)). We observe no significant difference in the impact of duration between the two types of banks: the interaction term *COOP*×*Duration* is not significant.

In summary, we show that the effects of relationship lending differ greatly depending on whether the governance models are cooperative or commercial. Longer relationships increase interest rates in commercial banks, suggesting rent extraction. In cooperative banks, on the other hand, longer relationships reduce interest rates, meaning that the benefits are shared with borrowers. A similar pattern is observed for collateral requirements.

6 Additional estimations

Our previous results raise the question of whether there are firm, bank or credit market factors that may amplify or reduce the beneficial effect of relationship banking for cooperative banks. In this section, we present several additional estimates to further investigate how relationship lending may exert an impact on lending conditions according to the cooperative nature of the bank.

benefit from a long banking relationship with a cooperative bank.

6 .1 Relationship lending and firm riskiness

So far, we have found evidence that the effects of relationship lending differ for commercial and cooperative banks. We can ask whether the most fragile firm are those that benefit most from a longer relationship with cooperative banks. Indeed, on the one hand, relationship lending provides information to the bank, which reduces information asymmetries that are particularly serious for more opaque borrowers (Berger & Udell, 1995). On the other hand, we can also ask whether the informational rent is greater for those firms in a relationship with commercial banks. More specifically, commercial banks can exploit their monopoly power acquired through the establishment of a lending relationship to charge even higher rates to risky firms that cannot find other financing alternatives (Rajan, 1992; Beatriz et al., 2022).

To address these issues, we estimate equation 3 by adding the dummy variable *BdF weak* equal to one if the firm's ability to meet its financial obligations is considered average or weak according to the Banque de France credit rating and zero otherwise, and by interacting this variable with the cooperative bank dummy and with the duration variable. Table 5 presents these estimates.

Let's focus first on the interest rate (column (2)). While the coefficient of *Duration* is again significant and positive, in line with the view that a longer duration is associated with higher lending rates for commercial banks, the coefficient of *Duration×Low BdF rating* is also positive and significant. This last result suggests that the positive impact of duration is greater for risky firms. In other words, commercial banks make greater use of their informational advantage over the weakest firms.

To gauge the differential effect of relationship lending on interest rate according to risky firms and the cooperative nature of the bank, we now examine the coefficient of the triple interaction *COOP×Duration×Low BdF rating*. Importantly, the latter is negative and

significant. This means that the effect of relationship lending on reducing interest rates on loans granted by cooperative banks is greater for the weakest firms. In other words, it is the businesses that are associated with higher monitoring costs that benefit most from the advantages of relationship banking for cooperative banks.

As regards the estimates explaining the presence of collateral (column (3)), we observe no difference in the effect of the relationship length depending on the fragility of the firm and the *COOP* dummy: neither the coefficient of *Duration×Low BoF rating* of information for commercial banks, nor the coefficient of *COOP×Duration×Low BoF rating* are significant.

Finally, in terms of loan amount (column (3)), we observe only a slight difference for commercial banks. The coefficient of *Duration* is significantly negative, which means that a longer relationship is associated with a lower loan amount, while the coefficient of *Duration×Low BdF rating* is also significantly negative, thus showing that the negative effect of the relationship length on the loan amount is stronger for fragile firms. For the rest, we observe no effect of relationship lending on business fragility for cooperative banks.

In a nutshell, according to the cooperative nature of the bank, we find that the effects of relationship lending on loan rates are affected by the firm riskiness. The opposite effects for cooperative banks and commercial banks that we found in the previous subsection turn out to be amplified: commercial banks exploit relationship lending to charge higher rates to risky firms that cannot diversify their loans, while cooperative banks share the gains of a deeper relationship to reduce rates for these same borrowers.

6 .2 Relationship lending and business cycle

Following the literature, the effect of relationship lending can vary according to the business cycle. The main assumption is that a relationship bank could stipulate an implicit lending contract that includes insurance against fluctuations in lending rates, thus playing a

significant role as shock absorber(Berlin & Mester, 1999; Bolton et al., 2016; Beatriz et al., 2022). In Table 7, we investigate this issue by adding a dummy *Crisis* that takes the value 1 for the second quarter of 2020, the quarter most affected by the COVID-19 crisis in France, and zero otherwise.[12]

We find no significant effect of the business cycle in all estimations. However, this result may be linked to the characteristics of the COVID crisis: it was a very special crisis, as the massive state support for the French economy did not lead to a credit crunch (Nicolas et al., 2022). As a result, banks have not needed to compensate for the credit crunch, as has been the case in other crises.

6 .3 Relationship lending and bank heterogeneity

Like cooperative banks are not all the same, we now turn our attention to banks characteristics that can strengthen the beneficial effect of relationship lending for cooperative banks. For this purpose, we consider two key bank characteristics: size, and capitalisation. We create two dummy variables, respectively *Small Bank* which equals 1 if the bank's total assets belong to the first quartile of the distribution and zero otherwise, and *Well-capitalised* which equals 1 if the bank's capital ratio belongs to the last quartile of the distribution and zero otherwise. While small banks can be considered as less organisationally complex banks and tend to be more relationship-driven (Berger & Udell, 2002; Liberti & Mian, 2009), well-capitalised bank are associated with higher relationship lending benefits given their higher ability to finance monitoring costs (Holmstrom & Tirole, 1997; Bolton et al., 2016).

Table 7 presents the estimations of equation 3 in which, this time, we interact *COOP* and *Duration* with the dummy *Small Bank* (columns 1-3) or with the dummy *Well-capitalised*

[12] Note that we also test for alternative measures of the COVID-19 crisis which incorporate longer periods but our results remain the same.

(columns 4-6). We find that the negative impact of longer duration for commercial bank borrowers is exacerbated when the bank is small. More precisely, the triple interaction term *COOP×Duration×Small bank* is significantly negative (positive) and significant when explaining the interest rate (loan amount), thus indicating that the opposite effects of relationship lending for commercial and cooperative banks are amplified when the bank is small. Regarding bank capitalization, we find no significant effects for the coefficients associated with the triple interaction term, regardless of the loan condition we use.

6 .4 Relationship lending and borrowing diversification

We extend our study by examining the effect of borrower diversification. Greater diversification of the borrowing firm may influence the effect of relationship lending on lending terms (Beatriz et al., 2022). On the one hand, it may affect the bank's bargaining power and thus reduce the hold-up problem that penalizes the borrowing firm. Given our previous results, we should then observe that a longer relationship with a commercial bank would increase borrowing rates less when the bank's bargaining power is weaker. On the other hand, this may affect the bank's willingness to share the benefits of relationship lending with the borrowing company. The bank may be willing to grant a larger share of these benefits to a corporate borrower whose pool of borrowing opportunities is less diversified, as a reward for the exclusive relationship.

To this end, in Table 8 and Table 9 we interact the relationship length with the *COOP* dummy and three alternative measures of borrowing diversification. First, we consider the dummy variable *Single-bank* to take into account the fact that the borrowing firm is single-banked (columns 1-3). Second, we consider the degree of bank concentration in the credit market as information on the borrowing firm's ability to diversify its sources of bank financing (columns 4-6). We use the dummy variable *High CR3*, which equals one if the

sum of the market shares of the three main banking groups at regional level is in the last quartile of the distribution, and zero otherwise. Third, we take into account sources of financing other than bank debt with the dummy *High non-bank finance* that equals one if the share of non-bank debt ratio of the firm belongs to the last quartile of the distribution and zero otherwise (columns 7-9).

We obtain several results. First, we do not observe differences between single-banked firms and multiple-banked firms for cooperative banks. An increase in the duration of the relationship does not affect differently those two types of firms. Second, we find that the benefits of relationship lending for cooperative banks are lower in the most concentrated local credit markets but only when it comes to collateral requirements (column 6). Third, the firm ability to diversify its lending through trade credit makes it possible to reduce the interest rate charge by cooperative when the duration of the relationship increases(*High non-bank finance*): the triple interaction term $COOP \times Duration \times$ *High non-bank finance* appears significant and negative (column 8). Consequently, these results show that the beneficial effect of relationship lending for cooperative banks in terms of collateral requirements or interest rates could be reduced if the bank's bargaining power increases, i.e. if the firm's ability to diversify its borrowing is weaker.

6 .5 Alternative measure of firm riskiness

We complete our study of the effect of cooperative banking models on lending conditions by using an alternative measure of firm riskiness. Indeed, we have shown above that the effects of relationship lending are affected by the fragility of the firm, the opposite effects obtained for cooperative banks and commercial banks being amplified by the fragility of the firm. Our measure of firm riskiness is based on the Banque de France credit rating.

We now consider the probability of default of the firm according to the capital regulation

(PD) to measure the level of risk of the firm. The (PD) is provided by the AnaCredit database. Table 10 present the results. First of all, we do not obtain a significant coefficient for $Duration \times PD$ in any of the estimations. We therefore do not observe a different impact of the relationships depending on the degree of risk of the company for commercial banks. This is a different result from the one obtained above with the firm fragility measure. Second, we observe that the coefficient of $COOP \times Duration \times PD$ is significantly negative when explaining the interest rate (column (2)). This confirms that the effect of relationship lending on reducing interest rates on loans granted by cooperative banks is greater for the most fragile firms. Thus, it supports the conclusion that risky firms benefit most from relationship lending by cooperative banks.

7 Conclusion

This article examines whether cooperative banks have different lending terms from commercial banks for corporate loans. We conduct our analysis on a unique dataset of approximately 233,000 corporate loans granted by all French private banks. Three main results emerge from the analysis.

First, we find that cooperative banks charge higher lending rates and require less collateral than commercial banks. We interpret the higher lending rates by the fact that cooperative banks have less developed technologies than commercial banks to measure credit risk, and that they have to invest more to obtain information on the borrowing firm.

Second, relationship lending turns out to have divergent effects depending on the type of bank. For commercial banks, longer ties are associated with higher lending rates and collateral, which is consistent with rent extraction. This confirms the theories on relationship maintenance problems. However, in cooperative banks, longer relationships reduce lending rates and collateral. This means that cooperative banks share the benefits of relationship

lending by reducing information asymmetries with corporate borrowers. The reduction in lending rates is sufficiently large that, after a sufficiently long period, cooperative bank lending rates become cheaper than those of commercial banks.

Third, we find that the differential effects of relationship lending for commercial banks and cooperative banks are amplified for fragile businesses. Risky firms are those that benefit most from a longer relationship with cooperative banks. At the same time, it is firms that are most affected by the opportunistic behaviour of commercial banks when the length of the relationship increases.

In summary, we find that cooperative banks are initially more expensive, but that lending relationships allow them to overcome this over time and ultimately pass on information gains to borrowers through better lending terms. Local ties and member ownership may explain the behaviour of cooperative banks. In contrast, commercial banks take advantage of proprietary information in their relationships to extract more rents, which worsens lending conditions.

Our work has policy implications for the cooperative banking sector in EU countries. We support the idea that cooperative banks can make it easier for firms to access credit over time by relaxing lending conditions. At the same time, the fact that commercial banks charge lower initial interest rates supports the idea that a diversified banking sector, combining commercial and cooperative banks, should be preserved in EU countries.

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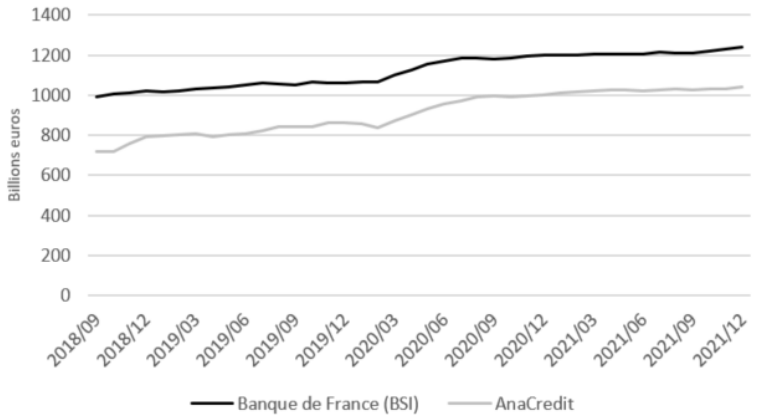
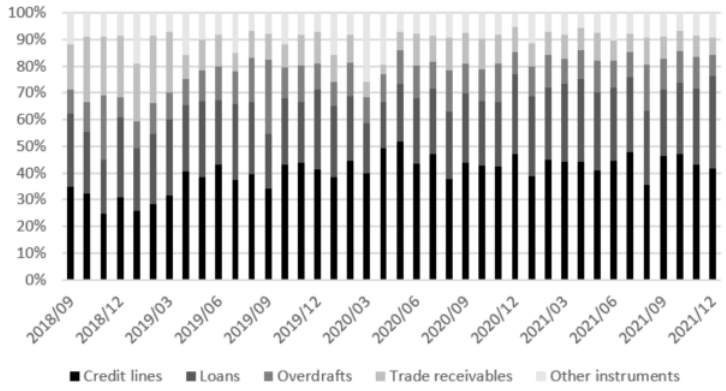
8 Figures and Tables

Figure 1: Outstanding amount of credit to NFCs: BDF vs AnaCredit



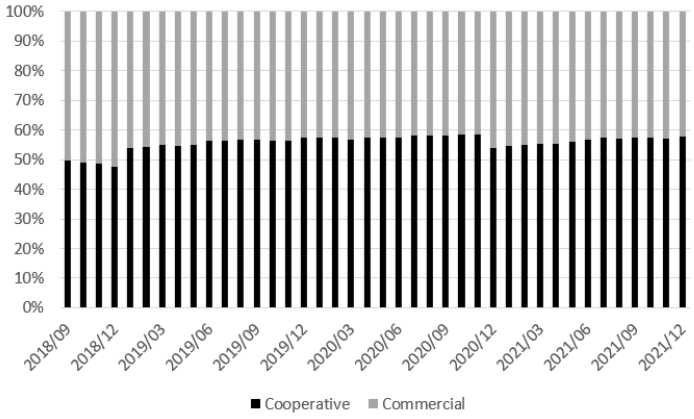
Note: The outstanding credit amounts are in billion euros. Sources: the author calculations based on AnaCredit and Webstat (Banque de France).

Figure 2: Share of credit instruments in new loans to NFCs



Source: The author calculations based on AnaCredit.

Figure 3: Share in outstanding amounts of credit to NFCs : cooperative vs commercial banks



Source: The author calculations based on AnaCredit.

Table 1: Variables definitions

	Definition
Loan variables	
Ln(amount)	The log of amount of euros granted for the new loan (drawn and undrawn).
Interest rate	The annualised agreed rate or narrowly defined interest rate of the loan in accordance with Regulation (EU) No 1072/2013 of the ECB.
Secured	A dummy that takes the value 1 whether the new loan is secured and 0 otherwise
Maturity	The number of month at which the final repayment of the loan is due.
Variable rate	A dummy that takes the value 1 whether the interest rate on the new loan is variable and 0 otherwise
Firm variables	
Capital ratio	The ratio of own funds over total assets of the firm.
Cash ratio	The ratio of cash holdings over total assets of the firm.
Cash flow ratio	The ratio of cash flow over total assets of the firm.
Age	The number of years since funding.
Ln(total assets)	The log of the total assets of the firm.
Low BdF rating	A dummy that takes the value 1 whether the firm ability to meet its financial obligations is considered average or low according to the Banque de France credit rating and 0 otherwise.
PD	The firm probability of default in accordance with the Capital Requirements Regulation(CRR).
Non-bank debt ratio	The ratio of non-bank debt (trade credit and bonds) over total assets of the firm.
Bank variables	
Capital ratio	The ratio of own funds over total assets of the bank.
Liquidity ratio	The ratio of securities over total assets of the bank.
ROA	The total net income over total assets of the bank.
NPL ratio	The non performing loan ratio of the bank.
Ln(total assets)	The log of the total assets of the bank.
COOP	A dummy that takes the value 1 whether the bank is a cooperative bank and 0 otherwise.
Relationship lending variable	
Duration	The elapsed time between the first relationship established between a firm and a bank and the last one.
Diversification of borrowing variables	
Single-bank	A dummy that takes the value 1 whether the firm is single-bank and 0 otherwise.
CR3	The sum of the market shares of the three main banking groups at the regional level.

Table 2: Summary statistics

	All sample					Cooperative	Commercial
	Mean	Median	Sd	Min	Max	Mean	
Dependent variable							
Amount*(thousand euros)*	298.26	50	835.41	0.2	6093.75	284.48	309.02
Ln(amount)	11.05	11.51	2.35	3.13	15.76	10.98	11.13
Interest rate(*%*)	1.86	1.2	1.91	0.09	10.4	2.14	1.63
Secured(*0/1*)	0.19	0	0.30	0	1	0.15	0.22
Credit variables							
Maturity(*months*)	45.56	12.03	97.56	1	618	63.64	31.46
Variable rate(*0/1*)	0.33	0	0.47	0	1	0.27	0.38
Firm variables							
Capital ratio(*%*)	25.67	23.73	15.65	0	72.25	25.74	25.62
Cash ratio(*%*)	9.62	5.50	11.01	0	50.44	9.76	9.51
Cash flow ratio(*%*)	6.62	5.68	6.74	-12.32	30.59	7.12	6.24
Age(*years*)	27	23	18	3	98	25	28
Total assets(*thousand euros*)	25,485	3,959	97,358	385	818,517	21,790	28,366
Ln(total assets)	8.50	8.28	1.52	5.95	13.61	8.17	8.76
Low BDF rating(*0/1*)	0.68	1	0.46	0	1	0.72	0.65
PD(*%*)	6.69	1.32	17.09	0	1	7.63	5.84
Non-bank debt ratio(*%*)	20.37	15.84	16.04	0.18	66.62	17.21	22.83
Bank variables							
Capital ratio(*%*)	7.01	6.61	3.36	2.19	18.02	9.53	5.02
Liquidity ratio(*%*)	15.70	9.05	19.31	0.28	63.81	12.06	18.53
ROA(*%*)	0.21	0.29	0.65	-2.26	1.16	0.33	0.09
NPLR(*%*)	2.67	2.29	1.47	0	8.47	2.08	3.14
Total assets(*billion euros*)	231	27.98	464	3.62	1,612	66.17	359
Ln(total assets)	17.65	17.14	1.67	15.10	21.20	17.51	17.76
COOP(*0/1*)	0.43	0	0.49	0	1		
Relationship lending variable							
Duration(*years*)	10.17	9.16	6.83	0.08	24	9.78	14.48
Diversification of borrowing variables							
Single-bank(*0/1*)	0.15	0	0.36	0	1	0.18	0.14
CR3(*%*)	73.65	81.59	17.58	29.17	89.72	74.41	73.06

Table 3: Cooperative banks and credit conditions

Dependent variable$_t$ =	Ln(amount)	Interest rate	Secured
	(1)	(2)	(3)
COOP$_t$	-0.055	0.349***	-4.926**
	(0.081)	(0.102)	(2.665)
Loan controls$_t$			
Maturity	0.001***	-0.000	0.009
	(0.000)	(0.000)	(0.006)
Variable rate		1.480***	
		(0.347)	
Firm controls$_{t-1}$			
Capital ratio	0.004***	-0.003***	0.021
	(0.001)	(0.001)	(0.027)
Cash ratio	0.001	-0.002**	-0.019
	(0.001)	(0.001)	(0.023)
ROA	0.000	0.000	0.001
	(0.001)	(0.001)	(0.017)
Age	-0.016	0.039	0.309
	(0.028)	(0.037)	(0.573)
Total assets(log)	0.052	-0.043	-1.061
	(0.039)	(0.033)	(0.987)
Bank controls$_{t-1}$			
Capital ratio	0.015	-0.021**	1.419***
	(0.013)	(0.009)	(0.453)
Liquidity ratio	0.002	-0.006**	0.158***
	(0.002)	(0.002)	(0.054)
ROA	0.060***	-0.052	-1.396***
	(0.016)	(0.035)	(0.485)
NPLR	0.044	-0.062**	3.498***
	(0.029)	(0.029)	(1.026)
Total assets (log)	0.004	-0.005	-2.637***
	(0.028)	(0.042)	(0.706)
Relationship lending control$_{t-1}$			
Duration	-0.008***	0.006***	-0.023
	(0.002)	(0.002)	(0.047)
Diversification of borrowing controls$_t$			
Single-bank	-0.059***	-0.020	-0.653
	(0.011)	(0.020)	(0.518)
CR3	0.050	-0.367	3.906
	(0.137)	(0.178)	(4.853)
Firm, time and credit instrument FE	Yes	Yes	Yes
Obs.	233,399	233,399	233,399
Number of firms	47,454	47,454	47,454
adj. R2	0.733	0.715	0.404

Notes : This table shows the regression results of a within estimation of equation 1 for the three different dependent variable that capture firms' credit conditions. The definitions of the variables are summarized in Table 1. All regressions include loan, firm, bank, relationship lending and credit market controls as well as firm, time and credit instrument fixed effects (coefficients are not reported but available upon request). The Hausman test rejects the null hypothesis of random effect estimator consistency. Standard errors (in brackets) are double clustered at firm and bank and are heteroscedasticity consistent. *, ** and *** indicate significance levels at 10%, 5% and 1% respectively.

Table 4: Cooperative banks and relationship lending

Dependent variable =	Ln(amount)	Interest rate	Secured
	(1)	(2)	(3)
COOP	-0.052	0.330***	-5.282**
	(0.082)	(0.102)	(2.688)
Duration	-0.008***	0.013***	0.111**
	(0.002)	(0.002)	(0.057)
COOP x Duration	0.001	-0.016***	-0.323***
	(0.003)	(0.003)	(0.107)
All time-varying controls	Yes	Yes	Yes
Firm, time and credit instrument FE	Yes	Yes	Yes
Obs.	233,399	233,399	233,399
Number of firms	47,454	47,454	47,454
adj. R2	0.734	0.716	0.402

Notes : This table shows the regression results of a within estimation of equation 2 for the three different dependent variable that capture firms' credit conditions. The definitions of the variables are summarized in Table 1. All regressions include loan, firm, bank, relationship lending and credit market controls as well as firm, time and credit instrument fixed effects (coefficients are not reported but available upon request). The Hausman test rejects the null hypothesis of random effect estimator consistency. Standard errors (in brackets) are double clustered at firm and bank and are heteroscedasticity consistent. *, ** and *** indicate significance levels at 10%, 5% and 1% respectively.

Table 5: Cooperative banks, relationship lending and firm riskiness

Dependent variable =	Ln(amount)	Interest rate	Secured
	(1)	(2)	(3)
COOP	-0.033	0.307***	-4.121*
	(0.078)	(0.084)	(2.657)
Duration	-0.004**	0.008***	0.007*
	(0.002)	(0.002)	(0.057)
Low BdF rating	-0.020	0.061	0.121
	(0.199)	(0.074)	(0.521)
Duration x Low BdF rating	-0.006*	0.007***	0.068
	(0.003)	(0.002)	(0.049)
COOP x Low BdF rating	-0.015	0.171	-1.712**
	(0.032)	(0.041)	(0.832)
COOP x Duration	-0.007	-0.009***	-0.288***
	(0.003)	(0.003)	(0.091)
COOP x Duration x Low BdF rating	0.003	-0.009***	-0.076
	(0.004)	(0.003)	(0.096)
All time-varying controls	Yes	Yes	Yes
Firm, time and credit instrument FE	Yes	Yes	Yes
Obs.	233,399	233,399	233,399
Number of firms	47,454	47,454	47,454
adj. R2	0.725	0.725	0.412

Notes : This table shows the regression results of a within estimation of equation 3 for the three different dependent variable that capture firms' credit conditions. The definitions of the variables are summarized in Table 1. All regressions include loan, firm, bank, relationship lending and credit market controls as well as firm, time and credit instrument fixed effects (coefficients are not reported but available upon request). The Hausman test rejects the null hypothesis of random effect estimator consistency. Standard errors (in brackets) are double clustered at firm and bank and are heteroscedasticity consistent. *, ** and *** indicate significance levels at 10%, 5% and 1% respectively.

Table 6: Cooperative banks, relationship lending and business cycle

Dependent variable =	Ln(amount)	Interest rate	Secured
	(1)	(2)	(3)
COOP	-0.069	0.377***	-3.036*
	(0.084)	(0.097)	(2.975)
Duration	-0.008***	0.012***	0.235**
	(0.003)	(0.002)	(0.101)
Crisis	0.001	0.001	0.001
	(0.002)	(0.002)	(0.002)
Duration x Crisis	0.001	-0.001	-0.312
	(0.002)	(0.003)	(0.235)
COOP x Crisis	0.030	-0.081	-3.918
	(0.026)	(0.086)	(2.845)
COOP x Duration	0.002	-0.015***	-0.382***
	(0.003)	(0.003)	(0.121)
COOP x Duration x Crisis	-0.003	0.001	0.280
	(0.003)	(0.003)	(0.228)
All time-varying controls	Yes	Yes	Yes
Firm, time and credit instrument FE	Yes	Yes	Yes
Obs.	233,399	233,399	233,399
Number of firms	47,454	47,454	47,454
adj. R2	0.732	0.733	0.394

Notes : This table shows the regression results of a within estimation of equation 3 for the three different dependent variable that capture firms' credit conditions. The definitions of the variables are summarized in Table 1. All regressions include loan, firm, bank, relationship lending and credit market controls as well as firm, time and credit instrument fixed effects (coefficients are not reported but available upon request). The Hausman test rejects the null hypothesis of random effect estimator consistency. Standard errors (in brackets) are double clustered at firm and bank and are heteroscedasticity consistent. *, ** and *** indicate significance levels at 10%, 5% and 1% respectively.

Table 7: Cooperative banks, relationship lending and bank heterogeneity

Bank variable =	Small Bank			Well-capitalised		
Dependent variable =	Ln(amount)	Interest rate	Secured	Ln(amount)	Interest rate	Secured
	(1)	(2)	(3)	(4)	(5)	(6)
COOP	-0.079	0.394***	-5.211**	0.154	0.404***	-2.036*
	(0.085)	(0.082)	(2.776)	(0.067)	(0.117)	(1.975)
Duration	-0.004**	0.009***	0.119***	-0.008***	0.014***	0.093*
	(0.002)	(0.002)	(0.045)	(0.003)	(0.002)	(0.055)
Bank variable	-0.135	0.428***	0.714	0.044	-0.065	1.347**
	(0.094)	(0.137)	(2.227)	(0.095)	(0.084)	(0.673)
Duration x Bank variable	-0.032***	0.031***	-0.030	-0.002	-0.005	0.370
	(0.008)	(0.011)	(0.249)	(0.005)	(0.005)	(0.247)
COOP x Bank variable	0.140*	-0.544***	-1.995	-0.241**	-0.260**	-1.760***
	(0.082)	(0.138)	(2.325)	(0.114)	(0.109)	(0.640)
COOP x Duration	-0.003	-0.013***	-0.338***	0.001	-0.013***	-0.367***
	(0.003)	(0.003)	(0.094)	(0.003)	(0.005)	(0.101)
COOP x Duration x Bank variable	0.035***	-0.023**	0.106	-0.004	0.001	-0.111
	(0.009)	(0.011)	(0.273)	(0.006)	(0.003)	(0.272)
All time-varying controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm, time and credit instrument FE	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	233,399	233,399	233,399	233,399	233,399	233,399
Number of firms	47,454	47,454	47,454	47,454	47,454	47,454
adj. R2	0.734	0.715	0.404	0.733	0.715	0.408

Notes : This table shows the regression results of a within estimation of equation 3 for the three different dependent variable that capture firms' credit conditions. The definitions of the variables are summarized in Table 1. All regressions include loan, firm, bank, relationship lending and credit market controls as well as firm, time and credit instrument fixed effects (coefficients are not reported but available upon request). The Hausman test rejects the null hypothesis of random effect estimator consistency. Standard errors (in brackets) are double clustered at firm and bank and are heteroscedasticity consistent. *, ** and *** indicate significance levels at 10%, 5% and 1% respectively.

Table 8: Cooperative banks, relationship lending and diversification of borrowing (part 1)

Diversification of borrowing variable =	Single-bank			High CR3		
Dependent variable =	Ln(amount)	Interest rate	Secured	Ln(amount)	Interest rate	Secured
	(1)	(2)	(3)	(4)	(5)	(6)
COOP	-0.051	0.404***	-5.270**	-0.044	0.419***	-5.199*
	(0.082)	(0.101)	(2.683)	(0.083)	(0.103)	(2.710)
Duration	-0.008***	0.012***	0.106***	-0.008***	0.012***	0.135**
	(0.002)	(0.002)	(0.046)	(0.003)	(0.002)	(0.058)
Diversification of borrowing variable	-0.036**	-0.022	-0.426	0.016	0.029*	0.278
	(0.014)	(0.024)	(0.766)	(0.013)	(0.016)	(0.466)
Duration x Diversification of borrowing variable	0.001	0.004	0.223*	-0.001	0.002	-0.105
	(0.002)	(0.005)	(0.129)	(0.002)	(0.005)	(0.076)
COOP x Diversification of borrowing variable	-0.048**	-0.005	-0.556	-0.041	-0.062**	-0.512
	(0.023)	(0.046)	(0.888)	(0.052)	(0.032)	(0.647)
COOP x Duration	0.002	-0.015***	-0.314***	0.001	-0.016***	-0.366***
	(0.003)	(0.003)	(0.105)	(0.003)	(0.004)	(0.112)
COOP x Duration x Diversification of borrowing variable	0.002	-0.011	-0.301	0.005	0.001	0.177**
	(0.003)	(0.008)	(0.296)	(0.004)	(0.003)	(0.093)
All time-varying controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm, time and credit instrument FE	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	233,399	233,399	233,399	233,399	233,399	233,399
Number of firms	47,454	47,454	47,454	47,454	47,454	47,454
adj. R2	0.733	0.719	0.404	0.733	0.715	0.404

Notes : This table shows the regression results of a within estimation of equation 3 for the three different dependent variable that capture firms' credit conditions. The definitions of the variables are summarized in Table 1. All regressions include loan, firm, bank, relationship lending and credit market controls as well as firm, time and credit instrument fixed effects (coefficients are not reported but available upon request). The Hausman test rejects the null hypothesis of random effect estimator consistency. Standard errors (in brackets) are double clustered at firm and bank and are heteroscedasticity consistent. *, ** and *** indicate significance levels at 10%, 5% and 1% respectively.

Table 9: Cooperative banks, relationship lending and diversification of borrowing (part 2)

Diversification of borrowing variable =	High non-bank finance		
Dependent variable =	Ln(amount)	Interest rate	Secured
	(7)	(8)	(9)
COOP	-0.036	0.381***	-4.298*
	(0.0824)	(0.101)	(2.698)
Duration	-0.007***	0.009***	0.094**
	(0.002)	(0.002)	(0.048)
Diversification of borrowing variable	0.027	-0.014	1.602**
	0.016	(0.033)	(0.732)
Duration x Diversification of borrowing variable	-0.004	0.007**	0.055
	(0.004)	(0.003)	(0.098)
COOP x Diversification of borrowing variable	-0.035	0.051	-2.323**
	(0.028)	(0.034)	(0.925)
COOP x Duration	-0.001	-0.011***	-0.328***
	(0.003)	(0.003)	(0.102)
COOP x Duration x Diversification of borrowing variable	0.007	-0.011**	-0.029
	(0.005)	(0.004)	(0.117)
All time-varying controls	Yes	Yes	Yes
Firm, time and credit instrument FE	Yes	Yes	Yes
Obs.	233,399	233,399	233,399
Number of firms	47,454	47,454	47,454
adj. R2	0.733	0.719	0.404

Notes : This table shows the regression results of a within estimation of equation 3 for the three different dependent variable that capture firms' credit conditions. The definitions of the variables are summarized in Table 1. All regressions include loan, firm, bank, relationship lending and credit market controls as well as firm, time and credit instrument fixed effects (coefficients are not reported but available upon request). The Hausman test rejects the null hypothesis of random effect estimator consistency. Standard errors (in brackets) are double clustered at firm and bank and are heteroscedasticity consistent. *, ** and *** indicate significance levels at 10%, 5% and 1% respectively.

Table 10: Robustness: alternative measure of firm riskiness

Dependent variable =	Ln(amount)	Interest rate	Secured
	(1)	(2)	(3)
COOP	0.091	0.281***	-4.252*
	(0.065)	(0.095)	(2.540)
Duration	-0.008***	0.011***	0.008*
	(0.002)	(0.002)	(0.054)
PD	-0.273**	0.092	-2.741
	(0.140)	(0.078)	(4.058)
Duration x PD	-0.003	0.013	0.049
	(0.013)	(0.011)	(0.274)
COOP x PD	0.180	0.036	1.971
	(0.142)	(0.127)	(3.844)
COOP x Duration	0.003	-0.015***	-0.222**
	(0.003)	(0.003)	(0.108)
COOP x Duration x PD	0.010	-0.034***	-0.077
	(0.014)	(0.013)	(0.316)
All time-varying controls	Yes	Yes	Yes
Firm, time and credit instrument FE	Yes	Yes	Yes
Obs.	233,399	233,399	233,399
Number of firms	47,454	47,454	47,454
adj. R2	0.731	0.734	0.391

Notes : This table shows the regression results of a within estimation of equation 3 for the three different dependent variable that capture firms' credit conditions. The definitions of the variables are summarized in Table 1. All regressions include loan, firm, bank, relationship lending and credit market controls as well as firm, time and credit instrument fixed effects (coefficients are not reported but available upon request). The Hausman test rejects the null hypothesis of random effect estimator consistency. Standard errors (in brackets) are double clustered at firm and bank and are heteroscedasticity consistent. *, ** and *** indicate significance levels at 10%, 5% and 1% respectively.