What I do is what I think: Loan officer perceptions and loan spread

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Abstract

This paper investigates how loan officers' perceptions of spread decision criteria affect spreads. Using data from a large French bank, we document the impact of discrepancies among loan officers' perceptions according to the types of information they consider, emphasizing the importance of loan officers in loan outcomes. Officers who consider borrower grade and relationship length to be important criteria are more lenient, offering lower loan spreads, whereas officers who consider bank status to be important are stricter, offering higher loan spreads. Moreover, loan officers' perceptions affect the ways they use information: Those who consider soft information to be important are more lenient in their spread decisions when their clients develop real relationships with their banks, whereas those who rely on hard information are stricter in their evaluations of clients, despite client quality. Finally, we show that these results depend on loan officer characteristics such as gender, experience, and educational degree.

JEL Codes: G21, G32, J10

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1. Introduction

Loan transactions take place between loan officers and potential borrowers, who are looking for sources of funds to finance projects. The final outcomes of these interactions depend on several parameters,[1] and perhaps especially the characteristics of borrowers (Besanko and Thakor, 1987) and loan officers (Bellucci et al., 2010). Prior literature emphasizes the importance of the exchange of information between these parties, which can take two forms, according to Stein (2002): hard or soft. Hard information relates to transactional lending and includes quantitative data, often summarized as a borrower grade (Berger et al., 2011). Soft information consists of qualitative information collected through relationship lending, often measured as the duration of a bank–borrower relationship or a bank's place in its client's banking pool (Boot and Thakor, 1994; Calomiris and Pornrojnangkool, 2009). Uchida et al. (2012) identify the importance of the loan officer–entrepreneur relationship in relationship lending, emphasizing the role of the loan officer in the credit granting process.

However, even if information is available at the bank level, not all loan officers use it systematically or in the same way. Therefore, we investigate discrepancies among loan officers, not only in their perceptions of the various information they use to assess the risk levels of projects (hard and soft) but also in the ways they use the information to adjust loan terms. Our objective is three-fold. First, we seek to identify how loan officers' perceptions of loan spread decision criteria affect loan spreads. Second, we test how these differences influence their uses of hard and soft information in determining loan costs. Third, we classify loan officers

[1] They include the features of the project (e.g., Dennis et al., 2000), the financial position of the banks (e.g., Hubbard et al., 2002), and the macroeconomic environment in which the bank and the firm operate (Antoniades, 2016; Giannetti and Laeven, 2012; Popov and Udell, 2012).

according to three characteristics established by existing literature, to provide additional insights into the unique role of loan officers in the lending process.

To run our estimations, we use a unique data set that results from combining the private database of a French cooperative bank with the results of a survey of loan officers' perceptions of the spread determination process. One of the biggest advantages of the bank's database is that it contains all loans granted by banks to small- and medium-sized enterprises (SMEs) located in the north of France. By combining it with survey data, we have a unique opportunity to analyze the behavioral biases of loan officers empirically. We gather granular information about 5,938 loans, provided by 32 loan officers between 2012 and 2017.

We find loan officers' perceptions affect loan outcomes. More precisely, loan spreads differ significantly from one loan officer to another, depending on officers' perceptions of hard and soft information. If loan officers consider borrower grade (hard information) as an important decision criterion in the lending process, they tend to lower the spreads on the loans they grant. In line with relationship theory, when the lengths of relationships between borrowers and their banks (soft information) is important to loan officers, those officers are more inclined to decrease loan spreads. In contrast, loan officers tend to be stricter and significantly increase loan spreads when they consider bank status (i.e., being the borrower's main bank) important. This finding highlights a negative outcome of relationship lending.

In further analyses, we determine that the use of information differs among loan officers who do not emphasize the same loan spread decision criteria. For example, loan officers who consider client relationships important tend to grant loans with lower spreads when relationship lengths increase or they know their bank is the main bank for the borrower. However, loan officers who place more value on hard information—such as borrower grade—tend to be stricter, increasing loan spreads for borrowers despite borrower quality.

Finally, we highlight three significant differences among loan officers according to their differing characteristics, particularly with regard to how their considerations of soft information affect the spreads on the loans they grant. First, our results confirm previous findings of gender biases; women are more other-oriented than men. That is, we find female loan officers use their relationships with borrowers to grant loans with better terms when they think relationships matter in the lending process. Conversely, male loan officers tend to take advantage of their strategic positions as relationship lenders to extract additional rents from customers by increasing loan spreads. Second, existing bank–firm relationships seem to be the most significant determinants of the lending processes of loan officers according to their levels of experience. Our results show that loan officers who have little experience, and who value their relationships with borrowers, provide the borrowers with lower loan spreads, whereas more senior loan officers do not adjust loan terms according to the relationship criterion. Third, with regard to educational level, we find that loan officers with master's degrees are more likely to decrease loan spreads when they think relationships with their borrowers are important.

Our paper thus contributes to several strands of literature. In particular, it adds to literature on the lending process and the determinants of credit conditions. Although many studies address factors that influence loan outcomes for borrowers (e.g., Agarwal and Hauswald, 2010; Aiyar et al., 2014; Beck, Degryse, et al., 2018; Burietz and Ureche-Rangau, 2020; Dennis et al., 2000; Giannetti and Laeven, 2012; Hubbard et al., 2002), to the best of our knowledge, our research is the first to investigate the impact of loan officers' perceptions of various spread decision criteria on loan spreads.

This study contributes to the debate about the potential outcomes of bank–firm relationships. On the one hand, relationship lending theory argues that strong ties between borrowers and banks can lead to better loan terms (Berger et al., 2005; Cressy and Toivanen, 2010) and higher credit availability (Bartoli et al., 2013; Petersen and Rajan, 1994), especially

during crises (Ferri et al., 2019), because such ties allow banks to reduce information asymmetry (Berger and Udell, 2002). On the other hand, Rajan (1992) and Dupire et al. (2020) argue that banks may take advantage of their strategic positions as relationship lenders to extract additional rents from their loyal customers (hold-up theory). Our findings suggest that final outcomes also depend on loan officers themselves, reinforcing the importance of considering the characteristics of loan officers in the lending process.

Finally, our paper contributes to the limited literature that studies the profiles of loan officers and their influence on banking activities (Beck, Behr et al., 2018; Behr et al., 2020; Campbell et al., 2019). It highlights significant differences among loan officers according to gender, experience, and educational level, with important economic and managerial implications.

The remainder of this paper proceeds as follows: Section 2 reviews prior literature; Section 3 describes the data required for the study, as well as the methodology used; Section 4 presents the main findings of the impact of loan officers' perceptions on their use of information and determination of loan costs; Section 5 investigates whether the effects we find differ according to loan officers' characteristics; and Section 6 concludes.

2. Literature review

2.1. Information asymmetry and the loan market: A conceptual framework

According to prior literature, information asymmetry shapes the lending behaviors of loan officers, either through adverse selection or moral hazard. In the case of adverse selection, loan officers are at risk of providing loans to borrowers for whom they do not have all information, which may lead them to select borrowers who are riskier than they perceive. In the case of moral hazard, loan officers face the risk of borrowers taking risks with granted loans. One solution for managing these information asymmetry problems is to adjust loan terms

to improve their ability to screen and precisely determine the credit risks of borrowers.[2] Bester (1985) argues that borrowers with low probabilities of default prefer loans with lower interest rates associated with higher collateral requirements (Besanko and Thakor, 1987). In a comparison of private to public firms, Ackert et al. (2007) find higher borrowing costs for private firms associated with the presence of collateral and sweep covenants because of higher levels of opacity and risk (Wittenberg-Moerman, 2010).[3]

High-quality borrowers may have incentives to signal their true levels of quality to the loan market by adjusting their debt structures and maturities to reduce their borrowing costs and/or ensure their access to future liquidity (Diamond, 1991; Flannery, 1986). With regard to low-risk firms, Berger et al. (2005) provide empirical evidence of a positive link between level of credit quality and loan maturity; they also show that a reduction in information asymmetry between low-risk firms and lenders contributes to increased loan maturities. However, they show contradictory results with regard to high-risk firms that may be related to the use of private loans rather than corporate debt. The authors argue that banks may benefit from their strategic positions as private lenders to collect more information about borrowers, thereby reducing information asymmetry and leading to better assessments of credit risk. In the same vein, Cressy and Toivanen (2010) empirically assess the existence of adverse selection in the design of loan contracts, as proposed by Bester (1985); they show that borrowers with good credit enjoy loans of larger sizes and lower interest rates. However, they also show that level

[2] Aside from loan term adjustments, loan officers can opt for credit rationing (Stiglitz and Weiss, 1981). Jaffee and Russell (1976) show that in a world of imperfect information, with a high level of uncertainty, lenders have limited ability to identify and differentiate "honest" and "dishonest" borrowers before a default occurs, leading to credit crunches in loan markets.

[3] In the context of syndicated loans, Ivashina (2009) shows that information asymmetry between the lead who has a direct contact with the borrower and other participants in the loan accounts for 4% of the loan spread.

of collateral does not reflect borrower risk—that is, there is no adverse selection in loan contracts. Cressy and Toivanen (2010) argue that compared with financial institutions in the bond market, banks have the ability to make better use of both quantitative and qualitative information to determine borrower risk—such as adjusting loan terms appropriately.

2.2. Role of relationship lending

The preceding findings support the model of relationship lending developed by Berger and Udell (2002), as well as banks' use of both hard and soft information in the lending process to reduce information asymmetries between lenders and borrowers. Repeated contacts between borrowers and loan officers allow loan officers to accumulate qualitative (soft) information, which they add to the quantitative (hard) information provided by borrowers (Sharpe, 1990). In this context, prior literature identifies two lending technologies: transaction-based lending that uses hard information and relationship lending that uses soft information (Berger and Udell, 2002; Berger et al., 2005; Stein, 2002). Bartoli et al. (2013), Ferri et al. (2019), and Uchida et al. (2006) highlight banks' simultaneous and more efficient use of the two lending technologies, as complementary ways to limit agency problems. The reduction in information asymmetry associated with the use of soft information is even more significant for small banks than for large banks that have more layers (Uchida et al., 2012). Agarwal and Hauswald (2010) and Presbitero and Zazzaro (2011) emphasize that the physical distances and organizational structures of local credit markets also may affect the collection and the interpretation of private information. Agarwal and Hauswald (2010) argue that local banks are better able to gather soft information about local borrowers, which enhances their abilities to assess credit risks and provides them with local informational advantages. These small local banks, which rely heavily on relationship lending technology, have even more incentive to strengthen their relationships with their customers following increases in competition (Presbitero and Zazzaro, 2011).

From the lender's perspective, maintaining relationships with borrowers may prove to be highly beneficial and profitable, especially for loans of larger sizes (Stanton, 2002) and in contexts of intense competition related to the emergence of FinTech or other new information technologies (Jakšič and Marinč, 2019). Puri et al. (2011) analyze a sample of over one million loans provided to retail customers by savings banks in Germany; they show a significant decrease in borrowers' defaults as the result of having prior relationships with their savings banks. The authors explain that the development of relationships improves loan officers' abilities to collect private information to evaluate borrower risk and reduce the probability of default (Campbell et al., 2019; Herpfer, 2020).

From the borrower's perspective, establishing long-term relationships with their banks enhances their financial welfare (Behr et al., 2011; Bui et al., 2018; Herpfer, 2020). Boot and Thakor (1994) develop a theoretical model with an infinitely repeated bank–borrower relationship to highlight a breaking point in loan terms following first-project success. After this achievement, borrowers benefit from better credit conditions, including the ability to borrow without collateral requirements at rates below spot-market costs, whereas they previously had to accept secured loans at higher costs. Berger and Udell (1995) focus on bank lines of credit granted to small firms, empirically investigating the link between banking relationships and loan terms. In line with Boot and Thakor (1994), they find a decrease in both interest rates and collateral requirements for borrowers with longer relationships, thereby highlighting the role of relationships in reducing information asymmetry. Bharath et al. (2011) confirm these results and estimate that the reduction in loan spreads as the result of past relationships with same lenders equals 10 to 17 basis points. However, Petersen and Rajan (1994), in their study of a sample of 1,389 small U.S. firms, find the bank–borrower relationship has a greater impact on the availability of credit than on price (Bartoli et al., 2013; Calomiris and Pornrojnangkool, 2009; Chakravarty and Yilmazer, 2009). The authors even

find an association between an increase in costs of funds and a reduction in credit availability for borrowers looking for new banking relationships.[4] Cole (1998) reaches the same conclusions and goes a step further by arguing that though preexisting relationships are important, their lengths are not. Bolton et al. (2016) add to the debate by showing that banks that rely on relationship lending technology transfer cost increases to loan prices in normal times but offer credit to profitable firms at more favorable terms in times of crisis (Ferri et al., 2019).

2.3. Importance of loan officers in the lending process

One of the main assumptions in the previously described literature is that loan officers use both hard and soft information homogenously.[5] However, we challenge this assumption by reasoning that loan officers, who have individual characteristics and emotions, interpret the accumulated information in different ways, resulting in differing outcomes of bank–borrower relationships (Bellucci et al., 2011; Bushman et al., 2020; Rodgers, 1991, 1992). Uchida et al. (2012) use a unique data set drawn from a management survey of corporate finance issues in the Kansai area, conducted in Japan in 2005, to enrich literature on the more specific role of loan officers in the production of soft information. Their findings clearly identify that the loan officer–entrepreneur relationship in relationship lending is more important than the bank–entrepreneur relationship. Moreover, Drexler and Schoar (2014) provide evidence that disruptions in bank–borrower relationships as the result of employee turnover significantly affect borrowers' outcomes. More precisely, the authors show that firms have lower

[4] Chakravarty and Yilmazer (2009) minimize this conclusion, arguing that when researchers account for selection bias, the negative effect of multiple relationships on loan costs disappears. Borrowers with several credit sources are more likely to apply for loans and use competition among banks to get the best interest rates.

[5] In their analysis of the glass ceiling faced by female entrepreneurs on loan size provided by microfinance institutions, Agier and Szafarz (2013) confirm the absence of the effect of gender on loan officers.

probabilities of getting new loans if their loan officers are on leave, because soft information is difficult to transfer to replacement loan officers. There are interpersonal ties between loan officers and their clients, and clients are reluctant to share private information with new loan officers whom they do not know (Uzzi and Lancaster, 2003). The only exception is when officers take maternity leave or voluntarily resign; in such cases, the incentive to transfer soft information is higher. Therefore, the relationship proximity of loan officers and their clients leads us to question the assumption that loan office behavior is homogenous and ask: If loan officer behavior is not homogenous, what affects their lending behaviors, and how?

2.3.1. Working environment of the loan officer

Literature highlights incentive schemes provided at the bank level as determinants of individual loan officers' lending decisions. Qian et al. (2015) use a banking reform implemented in China between 2002 and 2003 to study how a change in the incentive scheme of loan officers affected their lending behavior. This reform transferred the authority and responsibility for lending decisions from committees to loan officers. The authors show that, after the reform, loan officers displayed more incentive to produce high-quality information that improved their assessment of credit risk, which resulted in lower loan spreads and better ability to predict default. In line with this result, Cole et al. (2015) find that in contrast to loan officers who are incentivized according to the quality of their loan portfolios, loan officers who are incentivized according to volume tend to reduce their screening efforts and inflate internal ratings, thereby granting more loans of lower quality. In the context of credit expansions of the 2000s in the United States, Agarwal and Ben-David (2018) study the implementation of a new compensation scheme based on loan volume that encourages loan officers to find new business. Although the authors do not observe significant differences in the characteristics of approved loans, they identify deterioration of both the default rate and the predictive power of the bank's credit default model as a result of a shift in the use of soft information. Berg et al. (2020) show

that when loan officers rely solely on hard data to solve misrepresentation of soft information, those who are incentivized according to volume manage to manipulate their use of hard information. The effect is even more significant for low-success loan officers toward the end of the year.

2.3.2. Characteristics of the loan officer

In addition to examining the organizational structure of the bank, Campbell et al. (2019) investigate the impact of cognitive constraints and behavioral biases on lending decisions, using a unique and detailed data set provided by a large federal credit union that uses a relationship, soft information–based lending model. The authors provide evidence for the inattention hypothesis. They find a deterioration of loan quality when the loans are granted by busy loan officers, as well as before weekends and around holidays when loan officers are more distracted (and therefore more likely to misinterpret soft information). Gao et al. (2018) argue that loan officers who are comparatively more inattentive become less efficient in screening and evaluating credit risks, pricing loan applications, and monitoring borrowers. Campbell et al. (2019) further show that loan officers who have past experience as salespeople tend to be more optimistic than others about their tasks, leading them to focus their attention on positive information cues about borrowers without considering all information available. Because of this behavioral bias, they grant loans of lower quality.

Literature also highlights that loan officers behave differently depending on their gender.[6] Bellucci et al. (2010) explore the gender gap and find that female loan officers are

[6] Meyers-Levy and Loken (2015) describe four theories related to gender differences (i.e., socio-cultural, evolutionary, hormone-brain, and selectivity) and provide an extensive review of literature in various fields, such as marketing and psychology, for the period 2000–2013. Palvia et al. (2015) investigate the gender-based behavioral differences that literature widely documents (e.g., Croson and Gneezy 2009; Nettle 2007; Schmitt et al. 2008); they examine whether the strategic and financial decisions made by CEOs and board chairs of banks

more sensitive to negative data and thus more risk averse than male loan officers (Meyers-Levy and Loken, 2015; Rad et al., 2014). They argue that women tend to be less confident than their male counterparts when they receive loan applications from new borrowers, resulting in greater restrictions of credit availability (Croson and Gneezy, 2009). More generally, Agarwal and Ben-David (2018) confirm the higher propensity of male loan officers, compared with female loan officers, to behave competitively and approve loan applications. However, Bellucci et al. (2010) do not find any price effect of gender differences, even though they emphasize that relationship lending is more important to female loan officers, who are more other-oriented than male loan officers (Carter et al., 2007; Meyers-Levy and Loken, 2015). Beck et al. (2013) show that compared with male loan officers, female loan officers have higher capacities to build trust relationships with borrowers, which allow them to screen and monitor firms more efficiently and result in lower average default rates. Nevertheless, van den Berg et al. (2015), who analyze microfinance borrowers in Mexico, find male officers are more likely than female officers to make borrowers repay; they explain their finding in terms of gender differences related to authority, risk-taking behavior, men's tendency to travel to more unsafe places, and balancing between professional and personal life, with men being more willing to work late. Beck, Behr, et al. (2018) combine the genders of loan officers and borrowers who are applying for loans for the first time, finding a significant difference in terms of borrowing experience and loan terms when the loan officers and the borrowers are of the opposite sex; they show that not only are the borrowers less likely to ask for second loans but also that they have higher borrowing costs, lower loan amounts, and lower maturities for female (male) borrowers who are assigned to male (female) loan officers. The magnitude of the effect is even more significant

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are affected by the differences between women and men, showing that women are more conservative; this difference results in higher levels of capital and lower probabilities of default during times of crisis.

when the loan officers have little experience with borrowers of the other gender, a finding that suggests the learning effect may diminish the impact of gender differences. Campbell et al. (2019) complement these findings by identifying significant differences in loan outcomes as the result of gender bias, showing that male loan officers' use of soft information reduces the quality of loans granted to male borrowers, that is, the officers are more supportive men than women (e.g., Brass, 1985; Grunspan et al., 2016). In contrast, loan quality improves when both the loan officers and the borrowers are women or of different genders, which highlights that male officers are likely to be more questioning and demanding of loan applications made by women (Carter et al., 2007).

Literature also identifies level of experience as a significant discriminator of loan officer behavior (Behr et al., 2020; Shanteau, 1992).[7] Rodgers (1999) develops a theoretical model to understand how novices, compared with experienced loan officers, process conflicting information and tests this model using a sample of 67 MBA students and 40 commercial lending officers. The author finds a significant difference between novices and experienced officers, showing that novices rely more on accounting data to process loan applications and suggesting this reliance may relate to their lack of experience compared with officers who seem to give priority to their perceptions of economic and management risks. In contrast, Andersson (2004) shows that compared with novices or less experienced loan officers, senior loan officers tend to collect more financial information to form their loan judgments. The author discusses three potential explanations for this finding: access to a vast number of cues, absence of search costs, and level of risk aversion and responsibility. Agarwal and Ben-David (2018) argue that loan officers who have been on the job for longer not only approve loans at a higher rate but

[7] Rodgers and Housel (1987) develop a two-stage cognitive processing model of decision making, showing no significant difference in performance between experienced loan officers and novice students.

also grant larger loans. Agarwal and Ben-David's (2018) explanation for this behavioral bias is that more experienced loan officers have greater familiarity with the lending origination process and fewer career concerns (Cole et al., 2015). Dupire et al. (2020) focus on the seniority of loan officers working for a French cooperative bank and provide evidence of a significant increase in loan spreads when loans are granted by senior loan officers who have strong relationships with their customers (hold-up theory) and in less favorable business climates. Accordingly, with this paper, we add to the debate about the use of borrowers' information by loan officers and officers' perceptions of how they use it, according to a unique and private source of data provided by one of the main French banks.

3. Data and Methodology

3.1. Loan-level data

We rely on a private database from a French cooperative bank. One of the biggest advantages of this database is that it contains all loans granted by the bank to SMEs in the north of France from 2012 to 2017. According to French criteria, an SME is as a company with fewer than 250 employees and an annual turnover not exceeding €50 million or total assets not exceeding €43 million. The database is divided into four sections: (1) all loan characteristics, such as spread and maturity; (2) all accounting characteristics of the firm issuing the loan (balance sheet and income statement); (3) characteristics of the loan officer in charge of the loan, such as gender and experience; and (4) answers to a survey sent to the loan officer in charge of the loan application. The fourth section is extremely interesting, because it includes information on loan officers' perceptions of the credit granting process and on the ways they manage the information included in loan applications during the credit/spread decision processes.

Considering our focus on perceptions of the use of hard and soft criteria, we use the firm's (borrower's) grade as hard information. For soft information, we use the length of the bank–firm relationship and bank status. The three questions in the survey that interest us are:

During the spread determination process, how important is the firm's rating to you?

During the spread determination process, how important is the length of the relationship with the firm to you?

During the spread determination process, how important is the bank status[8] *of the firm to you?*

Loan officers answered these questions according to five modalities: "no importance," "low importance," "average importance," "some importance," and "high importance."

The initial database contains more than 8,000 loans. We remove all loans provided to the financial and public sectors, due to their unique specificities. Moreover, because we focus on the perceptions of the loan officers who grant credit, we retain only loans for which the credit decision and conditions have been decided by a loan officer. Finally, we remove from our sample all loans that lack the information needed in our analysis. Our final sample thus consists of 5,938 loans, provided by 32 loan officers.

3.2. Methodology and variables

To investigate whether and how loan officers' perceptions of spread decision criteria affect loan spreads, we run the following ordinary least squares (OLS) cross-section regression:

$$\boldsymbol{Spread_{i,l} = \alpha + \beta * Criterion_i + \gamma * Criterion\ Importance_l + \theta * Controls_{i,l} + \varepsilon_{i,l},} \quad (1)$$

where $Spread_{i,l}$ is the spread of loan i provided by the loan officer l, and $Criterion_i$ gathers the three loan characteristics on which we focus. First, we consider the grade of the borrower, which is the grade of the firm in the bank at the time of the credit application. This grade ranges

[8] Within the bank, the two possible statuses are "main bank" and "other bank."

from 0 to 18, such that the higher the value, the less risky the firm. Second, we take the natural logarithm of the length of the bank–firm relationship, which is a proxy of relationship lending (Ogura, 2010); the higher the length, the more the loan is a relationship loan. Third, we study the bank status of the borrower. The bank is the borrower's main bank if it holds the majority of the borrower's loans and flows. The variable $Criterion\ Importance_l$ represents the perception of the loan officer with regard to these three aspects (*Grade Importance*, *Length Importance* and *Main Importance)*. Starting with the questions presented in section 3.1, we build each of these three variables by using the following scale: "no importance" = 1; "low importance" = 2; "average importance" = 3; "some importance" = 4; and "high importance" = 5.

We then examine how the importance a loan officer gives to a criterion influences the officer's use of that criterion during the spread decision. We create an interaction term between the two variables $Criterion_i$ and $Criterion\ Importance_l$, which leads to our second OLS cross-section regression:

$$\boldsymbol{Spread_{i,l} = \alpha + \beta * Criterion_i + \gamma * Criterion\ Importance_l + \delta} \\ \boldsymbol{* (Criterion_i * Criterion\ Importance_l) + \theta * Controls_{i,l}} \\ \boldsymbol{+ \varepsilon_{i,l}}. \qquad (2)$$

In Equation (2), we adjust the format of the Equation (1) variable $Criterion\ Importance_l$ and transform it into a dummy variable to make the interpretation easier. Accordingly, we set the three dummy variables (one for each criterion) equal to 1 if the loan officer answers "high importance" or "some importance" to the relevant question, and 0 otherwise.[9]

[9] We also test our analysis taking only "high importance" answers into account. Our results remain substantially the same and are available on request.

In Equations (1) and (2), we use the same set of control variables, which we classify into three categories: loan characteristics, firm characteristics, and loan officer characteristics. To control for loan characteristics, we use three variables: logarithm of loan maturity, type of rate associated with the loan (with a dummy variable equal to 1 if the loan is a fixed rate loan, and 0 if it is a variable loan), and presence of loan collateral (with a dummy variable equal to 1 if the loan is secured by any collateral, and 0 otherwise). With regard to firm characteristics, we control for firm leverage, defined as the debt-to-equity ratio, because it measures firm quality. We add firm size, measured by the natural logarithm of the firm's total assets. Finally, we control for potential past delinquency with a dummy equal to 1 if the firm has already defaulted on a previous loan. Furthermore, in our focus on loan officer perceptions, we must control for loan officer characteristics that can influence perceptions. Accordingly, we add to our regression the gender of the loan officer, with a dummy equal to 1 if the loan officer is a woman. We also add the officer's experience as a loan officer (in years) and control for the officer's educational degree with a dummy equal to 1 if the loan officer holds a master's degree, and 0 if the officer holds a bachelor's degree.[10] Finally, we introduce industry (using the 3-digit *Nomenclature des Activités Françaises* [NAF] code, the French equivalent of the Standard Industrial Classification [SIC] code) and year fixed effects into our model to account for changes in the environment.

3.3. Summary statistics

Table 1 displays the summary statistics. First, with regard to our perception variables, on average, loan officers perceive that when they decide on loan spreads, they use a firm's grade (3.343) more than they use relationship length (2.744) or bank status (2.734). That is, loan officers seem to assign more importance to hard information than soft information. Table 2

[10] We provide all variable definitions in the Appendix.

presents the results of a mean difference test for our perception variables according to loan officer characteristics. Compared with other loan officers, female loan officers, less experienced loan officers, and loan officers with master's degrees tend to grant more importance to soft information. Conversely, compared with other loan officers, male loan officers, more experienced loan officers, and loan officers with bachelor's degrees tend to give more importance to hard information.

With regard to the characteristics of the firms in our sample, we note that on average, firms have total assets of almost €1.1 million and a leverage of 15.8%. Their average grade is close to 12, corresponding to firms with fairly good quality. Moreover, about 5% of firms in our sample already had defaulted on past loans, more than 34% of the firms consider the loaning banks as their main banks, and the average relationship length is 5 years. Finally, with regard to loans, 71% are fixed rate loans, 51% are collateralized, and 71% have been granted by male loan officers or by loan officers with an average 11 years of experience.

The correlation matrix in Table 3 shows that the correlations are below the threshold of 0.8, with the exception of that between the variables *Main Importance* and *Grade Importance*, which emphasizes the importance of testing the two variables separately before combining them. The three main variables of interest (i.e., *Grade Importance*, *Length Importance*, and *Main Importance*) all correlate significantly with the dependent variable *Spread*, which highlights our interest in analyzing their impacts on loan cost determination.

4. Main results

4.1. Loan officer perception and spread

Table 4 reports the estimation results for the impact of loan officer perceptions on spread. The first three columns consider each perception individually, whereas the last column combines the perceptions together. With regard to *Grade Importance*, we note the variable always is negative and significant at the 1% level, such that the more a loan officer believes

that grade is an important criterion in spread determination, the lower the spread. This result suggests that loan officers who rely on quantitative data grant loans with lower spreads than those who rely on qualitative data. As a potential explanation, we note that loan officers who use quantitative data more are male and have little experience (Rodgers, 1999)—that is, those who often are more lenient in their analysis.

We observe similar results for *Length Importance*, such that the coefficient is negative and significant at the 1% level for all specifications. Therefore, when relationship length is important to loan officers, they tend to decrease loan spreads. This result is consistent with relationship lending behavior; loan officers who believe relationship length is important may be willing to gather qualitative data in addition to quantitative information, resulting in better and more efficient assessment of borrower risk and leading to lower rates (Berger and Udell, 1995; Bharath et al., 2011; Boot and Thakor, 1994).

Finally, the results related to *Main Importance* contrast with the prior findings: Compared with other loan officers, officers who perceive bank status to be important to the spread determination process significantly increase loan spreads. This result can be explained by the hold-up theory, which is a possible negative outcome of relationship lending. Firms that find themselves "captured" by their banks, because of the costs associated with switching banks, are charged higher loan rates (Rajan, 1992). Thus, compared with other loan officers, loan officers who find this information important may be more likely to take advantage of this private information to raise loan rates.

These interesting results confirm that loan officers' perceptions matter significantly in the loan granting process. Our finding of disparity in the impact of loan officers' perceptions according to the type of information considered emphasizes the role and importance of loan officers in loan outcomes. Loan officers who regard borrower grade and relationship length

important tend to be more lenient and offer lower spreads than other officers, whereas those who find bank status to be important tend to be stricter, imposing higher spreads on loans.

With regard to our control variables, we observe that the higher a firm's grade—that is, the higher its credit quality—the lower its loan spread, because its risk of defaulting is lower. In line with relationship lending theory, firms with longer relationships with their banks and those that consider the banks to be their main banks obtain lower spreads on average. Surprisingly, the higher a firm's leverage, the lower its spread. Consistent with Dupire et al. (2020), our results confirm that compared with other loan officers, loan officers with high levels of experience tend to offer higher spreads.

4.2. Loan officer perception and use of information

As previously explained, we go a step further by analyzing interaction terms, to determine how a loan officer's perception of a criterion influences the use of that criterion in the spread decision. Table 5 displays our results for Equation (2). Models (1) to (3) present the results for each interaction, and Model (4) displays all interactions together. We find our previous conclusions with regard to the impact of loan officers' perceptions of borrower grade, relationship length, and bank status on loan spread remain; that is, the consideration of the first two criteria by loan officers reduces loan spreads significantly, whereas the third criterion (bank status) continues to be associated with increases in loan spreads.

With regard to the link between loan officer perceptions and their use of each criterion, we find significant coefficients in all specifications. First, with regard to borrower grade, the interaction term remains positive and significant at the 1% level. That is, loan officers for whom grade is an important criterion tend to raise loan spreads when grades are higher. Two firms with the same grade—and therefore the same quality—obtain different spreads according to the perception of their respective loan officer. The firm that deals with a loan officer who focuses on hard information obtains a higher spread than the firm that deals with a loan officer

who focuses on soft information. This result provides further evidence that loan officers' perception matters; it influences not only the officer's behavior (as previously shown) but also the officer's use of information during the lending process. That is, loan officers who find hard information to be important to include in their evaluations of borrower risk use such information to be stricter and increase loan spreads.

Second, with regard to relationship length, the interaction term is negative and significant at the 5% level: Loan officers who give importance to relationship length tend to reduce spreads even more when relationship length increases. This result is consistent with the relationship lending hypothesis. The development of strong relationships between banks and firms provides firms with advantages in terms of loan costs.

Third, the coefficient for the interaction term related to bank status is negative and significant at the 1% level. In line with relationship theory, when loan officers both pay attention to bank status and know their banks are the main banks of borrowers (i.e., main bank equals 1), loan spreads significantly decrease. That is, loan officers who consider this criterion to be important tend to provide lower spreads when their banks are firms' main banks. According to this finding, borrowers who are willing to maintain good relationships with their banking partners are more likely to achieve positive outcomes. In contrast, but in line with hold-up theory, loan officers who do not pay attention to this information—but who know their banks are the main banks of borrowers—significantly increase the costs of loans.

A potential interpretation of these findings is that loan officers who consider soft information important, and who therefore rely more on relationship lending technology, tend to be more lenient in their spread decisions when their clients actually develop real relationship with their banks—that is, when relationships are long or the banks are the main banks of the clients. In contrast, loan officers who rely more on transactional lending technology, and who therefore use more hard information, tend to be stricter in evaluating their clients, regardless of

the clients' quality, and impose higher spreads than those who do not consider this criterion important.

5. Understanding the mechanism

In our literature review, we learn that some loan officer characteristics, such as gender (Beck, Behr, et al., 2018), experience (Dupire et al., 2020), and educational degree (Cole et al., 2015), can have substantial roles during the credit process. Therefore, we investigate the extent to which our results vary when we differentiate loan officers according to these characteristics. We seek a better understanding of whether there are significant differences among loan officers of different genders or with different levels of experience or education with regard to their determinations of loan costs when they make their lending decisions.

5.1. Loan officer gender

Table 6 displays our results with regard to loan officer gender. In Models (1) to (3), we reestimate Equation (1), interacting each perception variable with loan officer gender using a dummy variable equal to 1 when the loan officer is a woman. In Models (4) and (5), we reestimate Equation (2) by splitting our sample according to loan officer gender, with female loan officers in Column (4) and male loan officers in Column (5).

With regard to loan perceptions, we observe that female loan officers are stricter than male loan officers when they consider borrower grade an important criterion but are more lenient when they consider both relationship indicators important. Loan spreads decrease significantly when male loan officers consider the grade important but increase significantly when loans are granted by female loan officers who consider the grade important. In contrast, the two criteria associations with the relationships between loan officers and their borrowers show that male loan officers' behavior is in line with the hold-up theory; that is, they tend to take advantage of their relationships with borrowers to significantly increase loan spreads. Yet female loan officers who consider relationships important significantly decrease the costs of

loans when relationship length increases or borrowers identify the banks as their main banks. These results are in line with Carter et al. (2007) and Meyers-Levy and Loken (2015), who argue that women are more relationship lending–oriented than men. Columns (4) and (5) confirm these conclusions. Female loan officers who consider relationship indicators to be important are more lenient than male loan officers when they use this information. Overall, women are more other-oriented than men (Bellucci et al., 2010). Thus, companies with long relationships with banks or that consider the banks to be their main banks are well-advised to deal with female loan officers. Yet the gender of loan officers is of little importance with regard to borrower grade.

5.2. Loan officer experience

In Table 7, Models (1) to (3) display the results when we distinguish loan officers by their levels of experience, using the number of years of experience. In Models (4) and (5), we follow the previous logic and split our sample according to the average number of years of loan officer experience. In Columns (4) and (5), we examine loan officers with low levels of experience (less than the mean) and high levels of experience (more than the mean).

Loan spreads significantly decrease when loans are granted by more experienced loan officers who consider borrower grade to be important in the lending process. We observe the opposite trend with regard to relationship indicators such relationship length and bank status. That is, loan officers with high levels of experience who consider hard information to be highly relevant are more lenient when they grant loan spreads and less lenient if they consider soft information important. This result supports the findings of Andersson (2004), who shows that experienced loan officers are more prone to collect financial information to form their loan judgments and therefore more comfortable using hard information. Our conclusions also are in line with Dupire et al. (2020) and the hold-up theory: Loan officers with more experience tend

to take advantage of their positions as relationship lenders to extract additional rents from the loans they grant.

When we consider how loan officer experience and perception affect the use of information, we observe that loan officers with both high and low levels of experience use borrower grade in much the same way, regardless of their perceptions of the importance of this criterion (though less experienced loan officers are a bit stricter). In contrast, loan officers' behaviors differ significantly with regard to qualitative information: Those with little experience who find qualitative information important are more lenient in granting loans with lower spreads when relationships are long or when their banks are the borrowers' main banks. Conversely, loan officers with long experience do not change their use of relationship length as a criterion, no matter how important relationship are to them; they are even stricter when the borrower's banks are their main banks (if this criterion is important to them). They impose greater spreads, thereby validating the hold-up theory.

Therefore, according to our findings, two companies with the same borrower grade have little to gain in choosing their loan officers according to the officers' levels of experience. However, companies that have long relationships with their banks or that consider the banks to be their main banks have an interest in dealing with less experienced loan officers.

5.3. Loan officer educational degree

Finally, we follow the same logic in Table 8 with regard to loan officer's educational degree. Officers with master's degrees exhibit the same behavior as female loan officers: They are stricter when borrower grade is important but more lenient when relationship criteria (i.e., relationship length, bank status) are important.

With regard to the use of information according to perceptions, we find loan officers with master's degrees are less strict (more lenient) when they analyze hard information (soft information), if such information is important to them. Therefore, if firms develop relationships

with their banks, it is better for them to find account managers who have master's degrees rather than bachelor's degrees.

Because loan officers with bachelor's degrees are less experienced in finance than those with master's degree, we can draw a parallel between these conclusions and the previous loan experience results. Our findings also are in line with Andersson's (2004) conclusions with regard to the use of financial information by loan officers with master's degrees.

6. Conclusion

This paper assesses the impact of loan officers' perceptions during the credit process on loan spreads. We study whether the importance that loan officers assign to three criteria—one hard criterion (firm grade) and two soft criteria (bank–firm relationship length and bank status)—affects the spread they grant. We also examine how loan officers' perceptions of the importance of a criterion influence their use of the criterion during their spread decisions. Using a private database from a bank that includes questions about loan officers' perceptions, we show that perceptions of the loan granting process and of the various types of information influence the spreads these officers ultimately grant.

Compared with other loan officers, officers who consider borrower grade and relationship length to be important tend to be more lenient, granting loans with lower spreads. In contrast, loan officers who consider bank status to be important tend to be stricter, taking advantage of their strategic positions to increase loan spreads and thus extract additional rents on lending activities. The results related to borrower grade are interesting, because they show that loan officers who rely on hard information tend to be more lenient (perhaps because they regard this information as more accurate than soft information and thus more trustworthy). With regard to the two proxies that we use to evaluate the link between firms and banks, our findings support relationship lending theory. Longer relationships between borrowers and their

banks reduce the information asymmetry, which leads to decreased loan costs; the hold-up theory instead explains our results with regard to bank status.

We provide new evidence that loan officers who consider soft information to be important (relationship length and bank status) rely more than other officers on relationship lending technology and accordingly are more lenient in their spread decisions when clients develop real relationships with the banks. If relationships are long or clients' banks are their main banks, loan officers significantly decrease loan spreads. In contrast, when loan officers rely more on transactional lending technology—and therefore on hard information—they tend to be stricter in evaluating their clients, regardless of their quality, imposing higher spreads than those who do not consider this criterion important.

Loan officer characteristics also affect the results. For example, we find that male loan officers are stricter when they use hard information, whereas female loan officers, who tend to be more other-oriented, are more lenient when they consider soft information important. We also observe that more experienced loan officers tend to have the same behavior as those with a master's degree, such that they are more lenient when they use hard information.

These results have managerial implications for banks, which should help their loan officers realize the importance of certain variables in the spread process, according to the banks' commercial policies. If it is not possible for banks to train their loan officers, they should ensure homogeneity in the lending process by putting rigid decision-making structures in place that leave little room for the influence of loan officers' perceptions. Our results also have important implications for companies, in that they identify the types of loan officers to which companies should direct their applications to minimize their loan spreads. Our article raises many questions about the place of psychology in banks' credit-granting process. Accordingly, we suggest that a valuable research avenue would be to investigate whether similar results emerge for other credit conditions, or even for the acceptance of credit.

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Table 1 – Summary statistics

This table displays the summary statistics for all variables.

	Mean	Std. Dev.
Dependent variable		
Spread	0.854	0.461
Independent variables		
Perception variables		
Grade Importance	3.343	1.201
Length Importance	2.744	1.573
Main Importance	2.734	1.539
Spread decision criteria		
Grade	12.025	2.589
Log(Length)	1.728	0.693
Main Bank	0.344	0.475
Loan characteristics		
Log(Maturity)	1.898	0.526
Fixed Rate	0.709	0.454
Collateral	0.510	0.500
Firm characteristics		
Leverage	0.158	2.175
Log(Asset)	7.001	46.406
Past Delinquency	0.054	0.226
Loan officer characteristics		
L.O. Female	0.290	0.454
L.O. Experience	11.183	3.971
L.O. Master's Degree	0.520	0.450
Observations	5,938	

Table 2 – Mean difference test by loan officer gender, experience, and educational degree

	Gender			Experience			Educational degree		
	Male (1)	Female (2)	Mean diff. test (1) – (2)	Low (1)	High (2)	Mean diff. test (1) – (2)	Bachelor's (1)	Master's (2)	Mean diff. test (1) – (2)
Grade Importance	3.45	2.50	0.95**	2.43	3.61	-1.18***	3.73	2.53	1.20***
Length Importance	2.60	3.50	-0.90*	2.57	3.22	-0.65	2.07	3.71	-1.64***
Main Importance	3.10	2.50	0.60	3.43	2.44	0.98**	2.13	5.53	-1.40***
Observations	20	12		14	18		15	17	

Table 3 – Correlation matrix

	Spread	Grade Importance	Length Importance	Main Importance	Grade	Log(Length)	Main Bank	Log(Maturity)	Fixed Rate	Collateral	Leverage	Log(Asset)	Past Delinquency	L.O. Female	L.O. Experience	L.O. Master's Degree
Spread	1.000															
Grade Importance	-0.045***	1.000														
Length Importance	0.087***	-0.525***	1.000													
Main Importance	0.053***	-0.855***	0.509***	1.000												
Grade	-0.279***	0.034***	-0.028**	0.037***	1.000											
Log(Length)	0.012	0.025*	-0.250***	-0.173***	-0.335***	1.000										
Main Bank	-0.031**	-0.004	0.007	-0.033**	-0.017	0.027**	1.000									
Log(Maturity)	0.240***	-0.015	0.149***	0.040***	-0.148***	0.046***	0.024*	1.000								
Fixed Rate	-0.016	-0.006	-0.040***	0.007	-0.019	0.033**	0.126***	-0.046***	1.000							
Collateral	0.177***	0.099***	0.036***	-0.117***	-0.333***	0.215***	0.002	0.389***	-0.067***	1.000						
Leverage	-0.046***	-0.063***	-0.005	0.078***	0.080***	0.057***	0.070***	-0.027**	0.087***	-0.081***	1.000					
Log(Asset)	-0.002	-0.005	0.031**	0.032**	0.068***	-0.103***	-0.442***	-0.041***	-0.300***	-0.082***	-0.312***	1.000				
Past Delinquency	-0.015	-0.013	0.009	0.011	0.021	0.002	-0.060***	-0.015	-0.023*	0.003	0.065***	0.004	1.000			
L.O. Female	-0.008	0.226***	-0.251***	0.270***	0.128***	-0.230***	-0.052***	0.013	0.016	-0.070***	0.032**	0.020	-0.003	1.000		
L.O. Experience	0.122***	0.077***	0.456***	0.186***	0.039***	-0.211***	-0.076***	0.066***	-0.071***	0.034***	-0.006	0.077***	-0.005	0.230***	1.000	
L.O. Master's Degree	0.080***	-0.338***	0.421***	0.376***	-0.014	-0.231***	0.017	0.078***	-0.049***	-0.033**	-0.018	-0.027**	0.002	0.203***	0.258***	1.000

Table 4 – Loan officer perceptions and spread

These regressions show the impact of loan officer perceptions on loan spread, using OLS regressions. Specifications (1) to (3) consider loan officer perception of each criterion (grade, relationship length, and bank status) separately whereas Specification (4) combines the three criteria. We control for firm, loan officer, and loan characteristics as described in the Appendix. The regressions are robust to heteroscedasticity. * $p < 0.10$; ** $p < 0.05$; and *** $p < 0.01$ (p-values are in brackets).

	(1)	(2)	(3)	(4)
	Spread	Spread	Spread	Spread
Grade Importance	-0.015***			-0.106***
	(0.006)			(0.003)
Length Importance		-0.017***		-0.025***
		(0.000)		(0.000)
Main Importance			0.009**	0.059**
			(0.028)	(0.049)
Grade	-0.047***	-0.048***	-0.047***	-0.047***
	(0.000)	(0.000)	(0.000)	(0.000)
Log(Length)	-0.044***	-0.052***	-0.044***	-0.060***
	(0.000)	(0.000)	(0.000)	(0.000)
Main Bank	-0.033**	-0.032**	-0.033**	-0.030**
	(0.019)	(0.021)	(0.018)	(0.033)
Log(Maturity)	0.162***	0.168***	0.162***	0.171***
	(0.000)	(0.000)	(0.000)	(0.000)
Fixed Rate	0.003	0.005	0.003	0.005
	(0.839)	(0.675)	(0.830)	(0.709)
Collateral	0.027**	0.023*	0.026*	0.032**
	(0.041)	(0.087)	(0.050)	(0.016)
Leverage	-0.000**	-0.000	-0.000**	-0.000**
	(0.027)	(0.166)	(0.036)	(0.032)
Log(Asset)	-0.002	-0.001	-0.001	-0.001
	(0.606)	(0.814)	(0.626)	(0.663)
Past Delinquency	-0.016	-0.014	-0.016	-0.014
	(0.495)	(0.542)	(0.496)	(0.548)
L.O. Female	-0.008	-0.047***	-0.025*	0.058
	(0.558)	(0.003)	(0.072)	(0.250)
L.O. Experience	0.012***	0.015***	0.012***	0.021***
	(0.000)	(0.000)	(0.000)	(0.000)
L.O. Master's Degree	0.008	0.042***	0.015	0.045
	(0.552)	(0.002)	(0.258)	(0.158)
Industry dummies	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes
Constant	0.904***	0.856***	0.848***	1.238***
	(0.000)	(0.000)	(0.000)	(0.000)
Observations	5,938	5,938	5,938	5,938
R^2	0.140	0.140	0.139	0.144
Adjusted R^2	0.138	0.138	0.137	0.142

Table 5 – Loan officer information, use of information, and loan spread

These regressions show the impact of how loan officer perceptions influence the use of each criterion on the loan spread, using OLS regressions. Specifications (1) to (3) consider loan officer perceptions of each criterion (grade, relationship length, and bank status) separately, whereas Specification (4) combines the three criteria. We control for firm, loan officer, and loan characteristics as described in the Appendix. The regressions are robust to heteroscedasticity. * $p < 0.10$; ** $p < 0.05$; and *** $p < 0.01$ (p-values are in brackets);

	(1)	(2)	(3)	(4)
	Spread	Spread	Spread	Spread
Grade Importance (0/1)	-0.616***			-0.748***
	(0.000)			(0.000)
Grade Importance (0/1) x Grade	0.051***			0.052***
	(0.000)			(0.000)
Length Importance (0/1)		-0.211***		-0.241***
		(0.000)		(0.000)
Length Importance (0/1) x Log(Length)		-0.038**		-0.047**
		(0.047)		(0.014)
Main Importance (0/1)			0.027*	0.041**
			(0.051)	(0.048)
Main Importance (0/1) x Main Bank			-0.065***	-0.067***
			(0.008)	(0.006)
Grade	-0.073***	-0.048***	-0.047***	-0.074***
	(0.000)	(0.000)	(0.000)	(0.000)
Log(Length)	0.031***	-0.065***	-0.043***	-0.038***
	(0.001)	(0.000)	(0.000)	(0.001)
Main Bank	-0.031**	-0.033**	-0.003	0.004
	(0.024)	(0.018)	(0.883)	(0.810)
Log(Maturity)	0.162***	0.171***	0.163***	0.169***
	(0.000)	(0.000)	(0.000)	(0.000)
Fixed Rate	-0.005	0.007	0.003	-0.005
	(0.705)	(0.580)	(0.818)	(0.682)
Collateral	0.019	0.023*	0.023*	0.027**
	(0.159)	(0.084)	(0.081)	(0.042)
Leverage	-0.000	-0.000	-0.000*	-0.000
	(0.713)	(0.157)	(0.076)	(0.486)
Log(Asset)	-0.001	-0.001	-0.001	-0.000
	(0.859)	(0.825)	(0.768)	(0.898)
Past Delinquency	-0.022	-0.015	-0.015	-0.019
	(0.354)	(0.514)	(0.528)	(0.421)
L.O. Female	-0.017	-0.031**	-0.022	-0.065***
	(0.202)	(0.029)	(0.104)	(0.000)
L.O. Experience	0.014***	0.013***	0.012***	0.013***
	(0.000)	(0.000)	(0.000)	(0.000)
L.O. Master's Degree	0.013	0.058***	0.025*	0.099***
	(0.294)	(0.000)	(0.057)	(0.000)
Industry dummies	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes
Constant	1.203***	0.793***	0.855***	1.293***
	(0.000)	(0.000)	(0.000)	(0.000)
Observations	5,938	5,938	5,938	5,938
R^2	0.158	0.141	0.140	0.165
Adjusted R^2	0.156	0.139	0.138	0.162

Table 6 – Estimations by loan officer gender

These regressions show the impact of loan officer perceptions on loan spread, using OLS regressions and distinguishing loan officers according to their gender. Specifications (1) to (3) consider loan officer perceptions of each criterion (grade, relationship length, and bank status) separately, whereas Specifications (4) and (5) combine the three criteria in two subsamples, i.e., female and male loan officers respectively. We control for firm, loan officer, and loan characteristics as described in the Appendix. The regressions are robust to heteroscedasticity. * $p < 0.10$; ** $p < 0.05$; and *** $p < 0.01$ (p-values are in brackets).

				Female	Male
	(1)	(2)	(3)	(4)	(5)
	Spread	Spread	Spread	Spread	Spread
Grade Importance (0/1)	-0.072**			-0.556***	-0.641***
	(0.017)			(0.000)	(0.000)
Grade Importance (0/1) x L.O. Female	0.101**				
	(0.028)				
Grade Importance (0/1) x Grade				0.041***	0.050***
				(0.000)	(0.000)
Length Importance (0/1)		0.089**		-0.101**	-0.179**
		(0.039)		(0.045)	(0.013)
Length Importance (0/1) x L.O. Female		-0.097**			
		(0.028)			
Length Importance (0/1) x Log(Length)				-0.034*	-0.007
				(0.067)	(0.759)
Main Importance (0/1)			0.058**	0.034**	0.032**
			(0.012)	(0.012)	(0.021)
Main Importance (0/1) x L.O. Female			-0.072**		
			(0.017)		
Main Importance (0/1) x Main Bank				-0.159***	-0.056**
				(0.001)	(0.050)
Grade	0.171***	0.171***	0.171***	-0.073***	-0.071***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Log(Length)	-0.047***	-0.047***	-0.047***	-0.141***	-0.010
	(0.000)	(0.000)	(0.000)	(0.000)	(0.442)
Main Bank	-0.060***	-0.060***	-0.060***	-0.141***	0.080***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Log(Maturity)	-0.030**	-0.030**	-0.030**	0.069**	0.217***
	(0.033)	(0.033)	(0.033)	(0.014)	(0.000)
Fixed Rate	0.005	0.005	0.005	0.010	0.002
	(0.709)	(0.709)	(0.709)	(0.687)	(0.888)
Collateral	0.032**	0.032**	0.032**	-0.013	0.039**
	(0.016)	(0.016)	(0.016)	(0.597)	(0.010)
Leverage	-0.000**	-0.000**	-0.000**	-0.000	0.000
	(0.032)	(0.032)	(0.032)	(0.466)	(0.573)
Log(Asset)	-0.001	-0.001	-0.001	-0.020***	0.008**
	(0.663)	(0.663)	(0.663)	(0.000)	(0.021)
Past Delinquency	-0.014	-0.014	-0.014	-0.017	-0.008
	(0.548)	(0.548)	(0.548)	(0.682)	(0.782)
L.O. Female	-0.330**	0.299**	0.146**		
	(0.025)	(0.041)	(0.035)		
L.O. Experience	-0.246***	-0.168***	-0.218***	0.023***	0.031***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
L.O. Master's Degree	-0.045	0.005	-0.031	0.023	0.005
	(0.167)	(0.802)	(0.236)	(0.324)	(0.268)
Industry dummies	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes
Constant	1.243***	0.685***	0.895***	1.383***	0.939***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	5,938	5,938	5,938	1,720	4,218
R^2	0.144	0.144	0.144	0.145	0.208
Adjusted R^2	0.142	0.142	0.142	0.138	0.206

Table 7 – Estimations by loan officer's experience

These regressions show the impact of loan officer perceptions on loan spread, using OLS regressions and distinguishing loan officers according to their experience level. Specifications (1) to (3) consider loan officer perceptions of each criterion (grade, relationship length, and bank status) separately, whereas Specifications (4) and (5) combine the three criteria in two subsamples, i.e., less and more experienced loan officers, respectively. We control for firm, loan officer, and loan characteristics as described in the Appendix. The regressions are robust to heteroscedasticity. * $p < 0.10$; ** $p < 0.05$; and *** $p < 0.01$ (p-values are in brackets).

				Low	High
	(1)	(2)	(3)	(4)	(5)
	Spread	Spread	Spread	Spread	Spread
Grade Importance (0/1)	0.028*			-0.644***	-0.475***
	(0.095)			(0.000)	(0.000)
Grade Importance (0/1) x L.O. Experience	-0.076**				
	(0.028)				
Grade Importance (0/1) x Grade				0.052***	0.041***
				(0.000)	(0.000)
Length Importance (0/1)		-0.007*		-0.002	-0.001
		(0.095)		(0.918)	(0.988)
Length Importance (0/1) x L.O. Experience		0.032**			
		(0.028)			
Length Importance (0/1) x Log(Length)				-0.077**	-0.003
				(0.043)	(0.897)
Main Importance (0/1)			-0.014*	0.023***	0.041**
			(0.095)	(0.005)	(0.019)
Main Importance (0/1) x L.O. Experience			0.072**		
			(0.017)		
Main Importance (0/1) x Main Bank				-0.384***	0.065**
				(0.000)	(0.018)
Grade	-0.047***	-0.047***	-0.047***	-0.074***	-0.074***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Log(Length)	-0.060***	-0.060***	-0.060***	-0.062**	-0.040***
	(0.000)	(0.000)	(0.000)	(0.023)	(0.002)
Main Bank	-0.030**	-0.030**	-0.030**	0.080**	-0.040**
	(0.033)	(0.033)	(0.033)	(0.014)	(0.043)
Log(Maturity)	0.171***	0.171***	0.171***	0.346***	0.074***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Fixed Rate	0.005	0.005	0.005	0.003	-0.001
	(0.709)	(0.709)	(0.709)	(0.924)	(0.919)
Collateral	0.032**	0.032**	0.032**	-0.090***	0.079***
	(0.016)	(0.016)	(0.016)	(0.001)	(0.000)
Leverage	-0.000**	-0.000**	-0.000**	0.000	0.000
	(0.032)	(0.032)	(0.032)	(0.351)	(0.673)
Log(Asset)	-0.001	-0.001	-0.001	-0.010*	0.007**
	(0.663)	(0.663)	(0.663)	(0.079)	(0.043)
Past Delinquency	-0.014	-0.014	-0.014	-0.026	-0.017
	(0.548)	(0.548)	(0.548)	(0.585)	(0.509)
L.O. Female	0.073*	0.009	0.073*	-0.032	0.026
	(0.066)	(0.657)	(0.066)	(0.127)	(0.127)
L.O. Experience	0.132	-0.200***	-0.291***	0.007	0.054***
	(0.262)	(0.000)	(0.000)	(0.423)	(0.000)
L.O. Master's Degree	-0.045	0.005	-0.031	0.010	0.015
	(0.167)	(0.802)	(0.236)	(0.873)	(0.130)
Industry dummies	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes
Constant	0.839***	0.974***	0.967***	0.818***	1.463***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	5,938	5,938	5,938	1,565	4,373
R^2	0.144	0.144	0.144	0.237	0.160
Adjusted R^2	0.142	0.142	0.142	0.231	0.157

Table 8 – Estimations by loan officer's educational degree

These regressions show the impact of loan officer perceptions on loan spread, using OLS regressions and distinguishing loan officers according to educational degree. Specifications (1) to (3) consider loan officer perceptions of each criterion (grade, length of relationship, and bank status) separately, whereas Specifications (4) and (5) combine the three criteria in two subsamples, i.e., loan officers with bachelor's degrees and master's degrees, respectively. We control for firm, loan officer, and loan characteristics as described in the Appendix. The regressions are robust to heteroscedasticity. * $p < 0.10$; ** $p < 0.05$; and *** $p < 0.01$ (p-values are in brackets).

				Bachelor's	Master's
	(1)	(2)	(3)	(4)	(5)
	Spread	Spread	Spread	Spread	Spread
Grade Importance (0/1)	-0.032**			-1.028***	-0.226*
	(0.011)			(0.000)	(0.069)
Grade Importance (0/1) x L.O. Master's Degree	0.061**				
	(0.028)				
Grade Importance (0/1) x Grade				0.071***	0.035***
				(0.000)	(0.000)
Length Importance (0/1)		-0.006		-0.002	-0.001
		(0.170)		(0.918)	(0.988)
Length Importance (0/1) x L.O. Master Degree		-0.018**			
		(0.032)			
Length Importance (0/1) x Log(Length)				-0.050*	-0.070***
				(0.083)	(0.003)
Main Importance (0/1)			0.013**	0.032**	0.019**
			(0.021)	(0.026)	(0.034)
Main Importance (0/1) x L.O. Master Degree			-0.027**		
			(0.017)		
Main Importance (0/1) x Main Bank				0.007	-0.080**
				(0.882)	(0.013)
Grade	-0.047***	-0.048***	-0.047***	-0.089***	-0.067***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Log(Length)	-0.060***	-0.057***	-0.060***	-0.077***	0.011
	(0.000)	(0.000)	(0.000)	(0.000)	(0.549)
Main Bank	-0.030**	-0.030**	-0.030**	0.002	-0.015
	(0.033)	(0.031)	(0.033)	(0.930)	(0.574)
Log(Maturity)	0.171***	0.170***	0.171***	0.105***	0.224***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Fixed Rate	0.005	0.006	0.005	-0.017	-0.005
	(0.709)	(0.666)	(0.709)	(0.384)	(0.782)
Collateral	0.032**	0.028**	0.032**	-0.005	0.055***
	(0.016)	(0.039)	(0.016)	(0.773)	(0.004)
Leverage	-0.000**	-0.000*	-0.000**	-0.000	0.000
	(0.032)	(0.063)	(0.032)	(0.697)	(0.246)
Log(Asset)	-0.001	-0.001	-0.001	-0.003	-0.004
	(0.663)	(0.711)	(0.663)	(0.551)	(0.354)
Past Delinquency	-0.014	-0.014	-0.014	-0.023	-0.017
	(0.548)	(0.554)	(0.548)	(0.498)	(0.600)
L.O. Female	-0.048**	-0.025*	-0.036**	-0.171***	0.076***
	(0.034)	(0.094)	(0.027)	(0.000)	(0.003)
L.O. Experience	-0.065**	-0.129***	-0.109***	0.041***	0.051***
	(0.034)	(0.000)	(0.000)	(0.000)	(0.000)
L.O. Master's Degree	-0.166*	0.035***	0.105***		
	(0.053)	(0.009)	(0.004)		
Industry dummies	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes
Constant	1.082***	0.991***	0.940***	1.752***	1.028***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	5,938	5,938	5,938	2,849	3,089
R^2	0.144	0.143	0.144	0.120	0.221
Adjusted R^2	0.142	0.142	0.142	0.116	0.218

Appendix – Variables definitions

	Definition
Dependent variable	
Spread	Loan spread over the internal refinancing rate
Independent variables	
Perception variables	
Grade Importance	Importance the loan officer gives to the grade in the spread decision (1 = "no importance" – 5 = "high importance").
Grade Importance (0/1)	Dummy variable equal to 1 if loan officer answers either "high importance" or "some importance" to the question about the grade
Length Importance	Importance the loan officer gives to relationship length in the spread decision (from 1 = "no importance" – 5 = "high importance")
Length Importance (0/1)	Dummy variable equal to 1 if the loan officer answers either "high importance" or "some importance" to the question about relationship length
Main Importance	Importance the loan officer gives to bank status in the spread decision (1 = "no importance" – 5 = "high importance")
Main Importance (0/1)	Dummy variable equal to 1 if the loan officer answers either "high importance" or "some importance" to the question about bank status
Spread decision criteria	
Grade	Grade of the firm at the time of loan application (0 – 18; the higher the grade, the better the firm quality)
Log(Length)	Natural logarithm of the bank–firm relationship (in years) at the time of loan application
Main Bank	Dummy variable equal to 1 if the bank is the firm's main bank, i.e., has the majority of bank flows and loans, 0 otherwise
Loan characteristics	
Log(Maturity)	Natural logarithm of the loan maturity (in years)
Fixed Rate	Dummy variable equal to 1cif the loan is a fixed-rate loan, 0 if it is variable
Collateral	Dummy variable equal to 1 if the loan is collateralized, 0 otherwise
Firm characteristics	
Leverage	Debt-to-equity ratio of the firm at the time of loan application
Log(Asset)	Natural logarithm of the firm total assets (in €k) at the time of loan application
Past Delinquency	Dummy variable equal to1 if the firm already had a default on one of its previous loans
Loan Officer characteristics	
L.O. Female	Dummy variable equal to 1 if the loan officer is female, 0 if male
L.O. Experience	Number of years of experience of the loan officer at the time of loan application
L.O. Master's Degree	Dummy variable equal to 1 if the loan officer holds a master's degree, 0 if bachelor's degree