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Authority and Soft Information Production within a Bank Organization

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Abstract

We ask three questions to clarify the production of soft information and decision making within a bank organization: (1) In a hierarchical ladder within a bank organization, who has more soft information on borrowers (repository of soft information) and does the answer differ depending on bank- and/or firm-specific factors?; (2) In the hierarchical ladder, who makes a decision to grant loans (decision maker) and does the answer have bank- and/or firm-specificity?; (3) Does the authority distance between the repository of soft information and the decision maker reduce the benefit from the bank-firm relationship? Our empirical findings are the following: (1) Branch managers rather than loan officers have sufficient soft information on borrowers, and the repository is located at a higher level in the hierarchy for smaller banks; (2) Branch managers and executives in the headquarters have decision-making authority, but more authority is delegated at a lower level in the hierarchy for larger banks; and (3) A greater authority distance is harmful for borrowers because it invites more financial constraints.

Keywords: Authority; Soft information; Organizational structure; Banks
JEL classification: D2, D8, L2, G21

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1 Introduction

How to efficiently collect, process, and use information is an important question for firms. Theoretical studies that focus on the relation between a firm organizational structure and the types of information processed predict that a hierarchical structure is suitable for the collection and use of hard (verifiable) information that is quantitative and easily transferable, but a decentralized structure has an advantage in dealing with soft (non-verifiable) information that is qualitative and difficult to transfer (e.g., Radner 1993, Bolton and Dewatripont 1994, Aghion and Tirole 1997, Dessein 2002, Stein 2002).

Many empirical studies test this prediction by using bank data, because the production of information is of primary importance to the banking industry, and the data are relatively accessible. For example, consistent with the theoretical prediction above, smaller (decentralized) banks have stronger relationships with borrowers that are likely to contribute to more production of soft information (Berger et al. 2005, Uchida et al. 2008). Two recent studies more directly focus on the details of a bank organization by using loan-level data from a single bank. Liberti and Mian (2009) find that soft information is less likely to be used in lending decisions made at the upper level of a bank organization. Agarwal and Hauswald (2010) find that a headquarters delegates more authority to bank branches and these branches produce more soft information as their physical distances from the headquarters increase.[1]

[1] Studies in the field of banking often link the dichotomy of hard information-centralization versus soft information-decentralization with the choice of two lending technologies, *transaction lending* versus *relationship lending* (Berger and Udell 2002, 2006). The definition of lending technologies is based on different aspects such as how banks screen borrowers, the structure of loan contracts, and how banks monitor borrowers after lending. The type of information that is used in the screening and monitoring process is also a key aspect that determines lending technologies. Transaction lending is underwritten based on hard information such as firms' financial statements and the pledgeability of collateral, while relationship lending is based on soft information such as the competence of firms' managers, morale of employees, and the future potential of the business.

However, these studies do not explicitly investigate who collects and accumulates soft information about borrowers. They implicitly assume that loan officers in the bank branches produce the information. Loan officers are those who have personal and frequent contact with the firm, its owner, its employees, and the local community, and thereby accumulate soft information about the firm (Berger and Udell 2002). A separate but related strand of literature that directly examines the role of loan officers supports this implicit assumption. These studies find that greater loan-officer turnover has an association with a more adverse effect on the availability of credit for borrowers (Scott 2006), that frequent officer-firm contact leads to an increase in soft information production (Uchida et al. 2012), and that loan officers use their discretion to smooth the credit ratings of borrowers (Brown et al. 2012).[2]

Although there is wide agreement about the primacy of loan officers as producers of soft information, we argue that the sole focus on loan officers is insufficient. The focus on loan officers only might be appropriate, if they have full autonomy, that is, if they have their own customer list, do not share this information with other staff, and even have the final authority to approve loan applications.[3] However, in practice lending decisions are mostly made by upper management.[4] Decision-making authority might indeed be delegated to a lower level of the hierarchy such as to branches, but even in this case, decisions are often made by someone other than loan officers, for example, branch managers.[5] Because those who make decisions need

[2] However, some studies find that the bank management has to take care of loan officers' agency problems (Udell 1989, Hertzberg et al. 2010, Agarwal and Wang 2009, Agarwal and Ben-David 2011).
[3] Consistent with this view, there is empirical evidence which suggests that a loan officer transfers from a consolidating bank to another local bank together with his/her former customers, and continues the lending relationships (Berger and Udell 2002, p.F46), although this is only a suggestion, and no direct test is conducted.
[4] For example, Liberti and Mian (2009) report that only 26.7% of the loans were approved by loan officers.
[5] As examples of such practice, see Liberti and Mian (2009) in the case of a large multinational bank in Argentina, Agarwal and Hauswald (2010) in the case of a major bank that is the third largest

information for their lending decisions, information collected by loan officers must be shared or transferred within a bank organization.[6] A person in charge might also want to obtain soft information himself or herself. Furthermore, if loan officers do not have the final authority, their performance will be more or less evaluated based on the amount and the quality of information that they can convey to their boss, and thus loan officers might have a strong incentive to pass on as much information as possible to an upper level in the hierarchy.

Additional anecdotal evidence from Japan further supports a more expanded view beyond the focus on loan officers. First, loan officers transfer between branches every 2–5 years in Japan (Uchida et al. 2012), which is driven by regulatory guidance from the Financial Services Agency.[7] If soft information is proprietary to loan officers, it would be lost every time they transfer.[8] Second, in Japan any information collected by branch members (mostly by successive loan officers), including a record of casual conversation with borrowers, is filed in *ringi-sho* (loan proposals), which are circulated within the branch so that every member of the branch has access to it (Nemoto et al. 2011). Further, the data in this paper (see section 2 for more details) show that members of bank branches (other than loan officers) also have direct

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small-business lender in the US, Albareto et al. (2010) in the case of multiple banks in Italy, and Nemoto et al. (2011) in the case of small- and medium-sized banks in Japan. Nemoto et al. (2011) report that there is a threshold loan amount, below which decisions are made by branch managers, and that the threshold is set at around 100 million yen at medium-sized banks, and at around 50 or 30 million yen at small-sized banks.

[6] One may argue that by definition soft information cannot be shared. However, soft vs. hard information is not a distinct dichotomy, and we should rather think of a continuum of soft/hard-ness along which information can be classified (Petersen 2004).

[7] Hertzberg et al. (2010) report that turnover is made within three years in Argentina.

[8] As anecdotal evidence that suggests that information is not lost, when one of the authors interviewed bankers in Japan, they responded without exception that it is not a single officer but a group of people in the branch office (from a loan officer to his/her direct boss, and further to a branch manager) that know both quantitatively and qualitatively about a customer firm. A banker told that even if a lowest-ranked officer transfers to other branch, his/her boss and/or upper managers still know much about the borrower, and another banker from a smaller bank told that as they have a small number of branches, even if a loan officer transfers to a different branch, he/she is easily accessible by the new officer.

contact with borrowers: Loan officers on average visit their customers twice a week, but others including branch managers also visit them on average once a month. All these pieces of evidence suggest the need to investigate more carefully the mechanism of soft information production and usage inside the black box of the bank organization.

Using data from a unique corporate survey conducted in Japan in 2010, we investigate soft information production and decision making within a bank organization. To do so, we establish three main research questions. First, we ask who in a hierarchical ladder of the bank organization has soft information on borrowers. We especially examine whether a loan officer is the sole repository of soft information. We also ask whether the location of the repository differs depending on bank- and/or firm-specific factors.

Second, we investigate who makes the final decision when granting loans. Banks usually have a rule that determines whether to delegate lending decisions to a branch. Although this rule describes *formal* authority, actual decisions might be made by a different member of the bank based on *real* authority (Aghion and Tirole 1997). Our data based on information from a survey of borrowers might allow us to capture real authority. We also ask whether the person in charge differs depending on various factors.

Our third question is, whether the authority distance between the repository of soft information and decision making adversely affects benefits stemming from the bank-firm relationship. Theory predicts that the shorter the distance the better. When the distance is long, soft information is lost in the process of transmission to an upper level and therefore the incentives to produce soft information are also lost (e.g., Radner 1993, Bolton and Dewatripont 1994, Aghion and Tirole 1997, Dessein 2002, Stein 2002). The loss of soft information then reduces the benefits from bank-firm relationships (e.g., Boot 2000).

On balance, the findings from our empirical analyses are the following. For the first question, we find that loan officers have some soft information on borrowers, but branch managers have more. We further find that the repository of soft information is located at a higher level in the bank's hierarchy for smaller banks.

Regarding the second question, we find that the distribution of the decision-making authority within a bank organization is bimodal: Branch managers and executives in the headquarters are the two modes, with the former being far more important than the latter. This finding is highly consistent with the anecdotal evidence about formal authority where the headquarters makes decisions when the loan size is large, but branches decide on small loans. However, we also find that the decision maker changes depending on factors other than the loan size, which might capture the allocation of real authority. Remarkably, decisions are made at a higher level of the bank hierarchy as the number of banks that the firm transacts with increases, which implies that under severe competition decisions are made in a top-down manner.

For the third question, we find that as the authority distance increases, the likelihood that the firm faces financial constraints increases. This finding suggests that a greater authority distance reduces the benefits stemming from bank-firm relationships. This is consistent with the theoretical prediction that soft information is lost or incentives to collect soft information are lost when the producer of soft information is distant from a decision maker in the bank organization.

The main contribution of this paper is our direct and unique focus on the soft information production within a bank organization. In studies about bank lending, the details of organizational structure have long been a black box (e.g., Petersen and Rajan 1994, Berger and Udell 1995, Degryse and Van Cayseele 2000).

Two recent studies mentioned earlier focus on the details of a bank organization and are thus the most closely related to our study. Liberti and Mian (2009) find that the loan amount is less sensitive to soft information proxies when the lending decision is made at an upper level in the bank's hierarchy, and Agarwal and Hauswald (2010) find that bank branches enjoy more autonomy and produce more soft information as the branch-headquarters distance increases. In particular, one of the analyses in Agarwal and Hauswald (2010) is very similar to our second analysis.

The difference between these two studies and our study is twofold. First, these studies do not ask who in the organization has soft information and to what extent, which is one of our focuses here. Second, each of these studies uses loan-level data from a single bank that does not allow them to control for bank heterogeneity. Also, the two banks they focus on are large banks. In this paper, we explicitly account for differences in multiple banks, including many small- or medium-sized banks. One possible disadvantage to our approach is that we rely on responses from a borrowers' survey to capture the production and usage of soft information within a bank organization. This approach might not correctly capture what banks actually do. Therefore, in the analysis we control for many aspects of bank and firm heterogeneity.

Other closely related studies explicitly take into account the role of loan officers by using data from the US (Scott 2006), from Japan (Uchida et al. 2012), and from Switzerland (Brown et al. 2012). Mocetti et al. (2010) and Benvenuti et al. (2010) examine the role of branch managers by using data from Italy.[9] However, these studies do not consider the different roles of and interactions between loan officers, branch members, and executives in the headquarters.

[9] Ferri (1997), using Italian data, examines the determinants of branch manager turnover and the impact of higher turnover on loan quality.

The remaining part of this paper is composed as follows. Section 2 describes our data. Section 3 explains the method and the variables used. We report the results in section 4. Section 5 provides some additional analyses for robustness checks. Section 6 concludes the paper.

2 Data

The main source of data used in this paper is a corporate survey called the "Survey on Corporate Finance in Japan" that a group of scholars from different universities in Japan conducted in 2010. This survey aims at clarifying firms' financial conditions, relationships with their financial institutions and auditors, and the effect of policy measures such as credit guarantee. The questionnaire designed by the research group asks about firm characteristics such as firm attributes, relationships with financial institutions, and financial conditions. The distribution, collection (both via hard mail), and data aggregation were outsourced to Tokyo Shoko Research (TSR), a business credit bureau similar to Dun & Bradstreet in the US.

The questionnaires were sent out in October 2010 to 13,579 firms chosen from the TSR's database. These firms have 10 (in median) and 20.7 (in mean) employees on average, with the minimum being 1 and the maximum being 2,750. Most of the firms are small- and medium-sized enterprises (SMEs) as 92.6% of them have 50 or less employees. The selection criterion for these 13,579 firms is twofold: (i) firms with financial statements that were available from TSR for fiscal 2007 and fiscal 2009, and (ii) firms that had transactions with one of the prespecified 286 regional financial institutions.[10] Both of these criteria were used for the

[10] These banks consist of 31 regional banks, 183 Shinkin banks, and 72 credit cooperatives. For each financial institution, firms were randomly selected but with a maximum of 100 firms for each institution.

purpose of collecting data for studies that are different from ours.[11] The selection criteria that we cannot control create a sample selection bias. As shown later, more than half of the sample firms belong to the construction industry, probably because they have financial statements for the bidding on public work. The main results do not change if we confine our sample to construction firms, but we do find some differences when we focus on other (non-construction) firms. We will report when notable differences are found.

By the end of November 2010, responses were received from 2,703 firms (the response rate is 19.91%). From these firms, we eliminate those that meet at least one of the following two criteria: (i) none of our dependent variables explained below is available; and (ii) there is no information to create important independent variables such as the main bank's identity, the number of employees, the length (year) of bank/firm relationships, and the credit score assigned by TSR. There are 1,584 firms that survive this selection process, and these make up our baseline sample. However, the number of observations in the analyses below is smaller if missing responses to survey questions reduce the sample size for specific variables used in each analysis.

Finally, we link these data (from the survey) with the financial statement data of banks that transact with responding firms. Our main variables are constructed from the survey questions about the firm's relationships with its largest lender (i.e., the bank that has the largest amount of loans outstanding). Because the bank is identified in the survey, we can link the bank financial statement data. For the firms in the baseline sample, the largest lender is either a large city or

[11] Criterion (i) was to compare the firms' financial data before and after the bankruptcy of Lehman Brothers in September 2008, which in hindsight marked the beginning of the effect of the global financial crisis on Japan. Criterion (ii) was to link the data with those from a survey on financial institutions that had already been completed, and the 286 institutions were the respondents to the survey.

trust bank for 46 firms, a middle-sized regional bank for 525 firms, a smaller Shinkin bank (credit union) for 892 firms, or an even smaller credit cooperative for 121 firms, and all of these banks are multi-branch banks.[12] The bank data are as of fiscal 2009 (ending March 2010) and are available from Nikkei Financial Quest for city, trust, regional, and Shinkin banks, and from Financial Statements of Credit Cooperatives (Kinyu-Tosho Consultant Inc.) for credit cooperatives.

We acknowledge the disadvantage of using information from a corporate survey to analyze soft information production by banks. Because the information we use is based on firms' perception and not banks', it might create subjectivity bias. For example, firms might overemphasize the role of bank personnel that they most frequently meet. However, it turns out that we do not observe this bias in our data. There might be other types of bias that stem from firm heterogeneity, for example, differences in firm performance. To control for this bias, we use different independent variables in the regression analysis. The tradeoff from this disadvantage is the availability of unique information, such as information about who has soft information and who has decision-making authority in the bank organization. This type of information is not available in studies that use data from banks' screening standards (e.g., Fischer 2000) or those that use data on the terms of loan contracts and bank-borrower relationships (e.g., García-Appendini 2007, Berger and Black 2011).

3 Methodology

Our analysis is threefold. We first examine who in the bank organization has soft information on borrowers, which identifies the repository of soft information. Second, we ask

[12] For the types of banks in Japan, see Uchida and Udell (2010).

who in the bank organization has the authority to make lending decisions, which pinpoints the location of the authority. Third, we examine whether the distance between the repository and the authority reduces the benefits stemming from the bank-firm relationship. In each of the next subsections, we explain the variables and the empirical models that we use. The definition and the descriptive statistics for all the variables are summarized in Table 1.

3.1 Who has soft information

First, we examine who collects soft information in the bank organization. We also ask what determines the heterogeneity in the location of the person who collects it (the repository of soft information) in the bank's hierarchy.

For this analysis, we exploit information from a question in the survey that asks the firms "who among the staff members of the bank [= the largest lender] best understands your strength that does not numerically appear." In other words, this question asks the firm who in the bank has soft information about it. Because the question asks about the firm's strength, what is measured is the repository of good (positive) soft information. The firm chooses an answer from eight options that are prescribed in the questionnaire. The options represent possible members of the bank that might have soft information and are listed in an almost ascending order from a lower to an upper level of the bank's hierarchy:

(i) current sales representative or external affairs person ("eigyo/shogai tantousha" in Japanese);

(ii) previous sales representative or external affairs person;

(iii) loan representative ("yuushi tantousha" in Japanese);

(iv) sales or external affairs manager (a boss of (i)) ("eigyo/shogai kacho" in Japanese);

(v) loan manager (a boss of (ii)) (“yuushi kacho” in Japanese);

(vi) branch manager (“shitencho” in Japanese);

(vii) other member of the branch; and

(viii) executive in the headquarters (“honten no yakushokuin” in Japanese).

Multiple answers are allowed.

Some notes are in order. First, not all of the banks in Japan have an exact job classification as described above. The options are chosen rather to exhaust most members in Japanese banks that the responding firms have a high likelihood of encountering. Second, among the eight options, options (i) or (ii) correspond to the person that initiates contact with borrowers and visits them the most frequently. Thus, we refer to this person as a current or past “loan officer” throughout this paper (see, e.g., Berger and Udell 2002). Third, options (i) and (iii) (= loan representative) might be confusing, but if a bank has position (iii), he or she deals with loan transactions only and usually has contact with firms after the bank finds the firm’s financial needs through, for example, a loan officer.

Using this information, we first examine the frequency distribution of the answers. If it is solely loan officers that produce and accumulate soft information, we will see little frequency in options other than (i) (and (ii)). However, to effectively use soft information in decision making, the information might be transferred to those who have the decision-making authority, or the decision maker might directly collect soft information. To the extent that these are the cases, the distribution might be more even.

We also run regressions to investigate the determinants of the location of the repository of soft information in the bank organization. Using the information described above, we define a

multinomial variable, *Who_knows*, that is used as a dependent variable.[13]

Who_knows ≡ 1 if (i) the current sales representative or external affairs person is chosen,

≡ 2 if (iii) the loan representative is chosen,

≡ 3 if (iv) the sales or external affairs manager is chosen,

≡ 4 if (v) the loan manager is chosen,

≡ 5 if (vi) the branch manager is chosen, and

≡ 6 if (viii) the executive in the headquarters is chosen.

To create this variable, we intentionally neglect (ii) the previous sales representative or external affairs person and (vii) other member of the branch from the eight options above. We do not use option (ii) because some other important variables (frequency of contact and the length of relationships) are not available for the previous sales representative or external affairs person. Option (vii) is eliminated because only a minority of responding firms (less than 2 percent) chooses this option. Some responding firms provide multiple answers. In that case, we pick the highest ranked member when defining *Who_knows*.

As a mechanism to determine *Who_knows*, we assume the following model that is estimated by ordered probit:

$$\begin{aligned} \textit{Who\_knows} &= 1 \text{ if } \; y^* \le 0, \\ &= 2 \text{ if } \; 0 < y^* \le \mu_1, \\ &= 3 \text{ if } \; \mu_1 < y^* \le \mu_2, \\ &= 4 \text{ if } \; \mu_2 < y^* \le \mu_3, \\ &= 5 \text{ if } \; \mu_3 < y^* \le \mu_4, \text{ and} \end{aligned}$$

[13] In subsections 5.2 and 5.3we check whether the results are robust to alternative definitions.

$$= 6 \text{ if } \mu_4 < y^*,$$

where the μ is the cutoff, and y^* is the latent variable that takes the form:

$$y^* = a_0 + a_1 \cdot Bank\_characteristics + a_2 \cdot Firm\_characteristics + a_3 \cdot Controls + \varepsilon_y .$$

The *Bank_characteristics* represents the variables for the characteristics of the lending bank (the largest lender to the firm). We use banks' asset size (*Bank_asset*), ROA (*Bank_ROA*), and capital asset ratio (*Bank_CA_ratio* = 1 – leverage). The *Firm_characteristics* stands for firm characteristics. We use the number of employees (*Employee*), the length (= year) of the bank-firm lending relationship (*Length*), the number of banks that the firm transacts with (*Number_of_banks*), the age of the firm (*Firmage*), and TSR's credit score (*Score*).[14] Control variables (*Controls*) are industry dummies, regional dummies (46 dummies for the 47 prefectures in Japan), dummies that represent the performance (net current profit) of the firm in the past 2 years (*D_redtoblack* for "deficit followed by surplus," *D_blacktored* for "surplus followed by deficit," and *D_redtored* for "deficit followed by deficit," with "surplus followed by surplus" as the default), and dummies representing that the firm is affiliated and associated with another firm (*D_consolidated* and *D_associated* respectively). The final term ε_y is an ordinary error term.

[14] The credit score is TSR's general evaluation of the firm, which takes a value between 0 and 100 (with 50 being an *average* firm). Although the evaluation is subject to the discretion of TSR's researchers, the score is considered as reliable third-party information that the firm's (prospective) business counterparts can purchase. The evaluation is based on four criteria: CEO's managerial ability (including pledgeability of personal assets and business experience) that accounts for 20% of the score, firms' growth potential (e.g., sales and profit growth) that accounts for 25%, firms' stability (e.g., capital asset ratio, pledgeability of corporate assets, and customer/supplier relationships) that accounts for 45%, and disclosure and overall reputation that accounts for 10%. Thus, the score might be partly evaluated based on soft information (collected by the researchers), however TSR does not disclose how and what they actually evaluate (except for the weights they put on each criterion). Thus, the score itself is numerical hard information.

In the analysis, we put a special emphasis on the effect of *Bank_asset*. An increase in the dependent variable means that soft information is passed on to and/or produced at an upper level of the bank's hierarchy where lending decisions are probably made. If we find a negative impact for *Bank_asset*, it thus implies that the information transfer is effective and/or information is produced at an upper level in smaller banks, but a positive impact implies that the repository of the soft information is located at an upper level in larger banks.

Alternative to *Bank_asset*, we also use variables to represent the type of banks. As explained above, we have information about the type of the responding firm's largest lender: a city or trust bank, a regional bank, a Shinkin bank, or a credit cooperative. City banks or trust banks are the largest in size and have complex organizational structures, such as an affiliation with a financial holding company. Regional banks operate in one or a few prefectures and are middle-sized. Shinkin banks (credit unions) are small cooperative banks, and credit cooperatives are even smaller. We set city or trust banks as the default, and use three dummy variables *D_regional*, *D_shinkin*, and *D_cooperative* as alternatives for *Bank_asset*. However, the results are qualitatively the same as those using just *Bank_asset*. That is, *D_cooperative*, *D_shinkin*, and *D_regional* play the role of small bank dummies (with a decreasing impact). Thus, we mainly focus on the results from using *Bank_asset*.

3.2 Who makes decision

Our second question investigates who in the bank organization makes the lending decisions, or the location of the decision-making authority in the bank's hierarchy. To do so, we use information from a survey question asking "who among the staff members of the bank [= the largest lender] makes a final decision if you apply for a loan." The firms are again given eight

options to choose from that are exactly the same in subsection 3.1. Multiple answers are allowed.

Similar to the analysis on who has soft information, we first check the frequency distribution of the answers. Anecdotal evidence implies that the authority is delegated to bank branch managers when the amount of the loans is small, but executives in the headquarters make a decision when the loan size is large (Nemoto et al. 2011). Thus, we should see a bimodal distribution of the answers with high frequency for options (vi) (branch managers) and (viii) (executives in the headquarters). However, this anecdotal evidence pertains to the location of formal authority. Because it is firms that answer the relevant question, we might be able to observe real authority (Aghion and Tirole 1997), to the extent that the firms can discern whether the branch manager is a "yes man" or incompetent, for example.

We also run regressions to investigate the determinants of who has the authority. As the dependent variable for this analysis, we create a variable *Who_decides* from the question above.

Who_decides ≡ 1 if (i) the current sales representative or external affairs person is chosen,
≡ 2 if (iii) the loan representative is chosen,
≡ 3 if (iv) the sales or external affairs manager is chosen,
≡ 4 if (v) the loan manager is chosen,
≡ 5 if (vi) the branch manager is chosen, and
≡ 6 if (viii) the executive in the headquarters is chosen.

Similar to the case of *Who_knows*, we pick the choice of the highest ranked member when a responding firm provides multiple answers.

The empirical model takes the following form:

$$Who\_decides = 1 \text{ if } z^* \leq 0,$$

$= 2$ if $0 < z^* \leq \mu_1'$,

$= 3$ if $\mu_1' < z^* \leq \mu_2'$,

$= 4$ if $\mu_2' < z^* \leq \mu_3'$,

$= 5$ if $\mu_3' < z^* \leq \mu_4'$, and

$= 6$ if $\mu_4' < z^*$,

where the μ' is the cutoff, and z^* is the latent variable that takes the form:

$$z^* = b_0 + b_1 \cdot Bank\_characteristics + b_2 \cdot Firm\_characteristics + b_3 \cdot Controls + \varepsilon_z .$$

The independent variables are the same as those in the y^* equation in subsection 3.1, and ε_z is an ordinary error term. This regression is similar to the one that Agarwal and Hauswald (2010) run in their subsection 4.4, but as mentioned earlier, our advantage is that we take into account bank heterogeneity.

As indicated above, anecdotal evidence implies that the decision-making authority is delegated to branches when the loan size is small. This evidence implies that *Employee* has a positive impact on *Who_decides* because larger firms should borrow more. Anecdotal evidence also implies that the threshold loan size differs across banks, with larger banks delegating loans of larger size to their branches (Nemoto et al. 2011). We thus expect that *Bank_asset* has a negative impact on *Who_decides*. In addition to these predictions, other variables might also affect *Who_decides* to the extent that the responding firm's answer reflects real authority.

In this *Who_decides* regression, it is also interesting to look at the effect of the variable *Number_of_banks*, because it is a proxy for bank competition. Bloom et al. (2010) propose four hypotheses that link competition and authority delegation: (i) competition reduces the agency problem and thereby fosters decentralization; (ii) tougher competition reduces firms'

expected gain at an establishment level, reduces the loss from within-firm cannibalization, and thereby reduces the cost of decentralization; (iii) greater competition reduces managerial effort because it becomes less rewarding in a competitive environment; and (iv) competition increases the number of firms and thereby increases the amount of public information, and so the principal's need to rely on an agent's proficiency reduces. Effects (i) and (ii) imply that more competition leads to more decentralization, while effects (iii) and (iv) imply the opposite, and so the overall effect is an empirical issue. In their empirical analysis using data from manufacturing firms, Bloom et al. (2010) find that competition fosters decentralization. With *Number_of_banks*, we can test these effects in the banking context.

3.3 Effects of authority distance

Our third analysis examines the effect of the distance between the repository of soft information (*Who_knows*) and the decision maker (*Who_decides*) that we call the authority distance. Soft information is the most valuable when its collector also uses it, because by definition soft information cannot be easily transferred to a different person. As Stein (2002) theoretically demonstrates, a longer authority distance might also impair the loan officers' incentives to collect information. A loss of soft information due to these reasons can lead to a loss of benefits stemming from strong bank-firm relationships.

To test this hypothesis, we first create a variable *Authority_distance* that is defined as *Who_decides* minus *Who_knows*. This variable represents how far a lending decision is made within a bank organization from those who have soft information about the strength of the borrower (that does not numerically appear).[15] We use this variable as the main regressor and

[15] Agarwal and Hauswald (2010) use a similar variable labeled *Organizational Distance*, but it is a

examine its effect on different proxies for the benefits stemming from bank-firm relationships.[16] Because both *Who_decides* and *Who_knows* take a value from 1 to 6, *Authority_distance* can theoretically take a value from -5 to 5. However, a negative value is theoretically hard to interpret. We do have such firms in the baseline sample, but because they are only a minority (N=87), we eliminate them.

As proxies for benefits stemming from the bank-firm relationships (dependent variables), we use three dummy variables to represent firms' (lack of) financial constraints. First, the dummy variable *D_attitude* represents the bank's attitude in response to the firm's latest loan application. It takes a value of one if the firm answers "no" to *all* of the following questions: (i) Was the application turned down? (ii) Was the amount of the loan reduced from the one you requested? (iii) Did the bank increase the loan interest rate from the one you requested? (iv) Did the bank increase the amount of assets that is pledged as collateral? (v) Did the bank shorten the maturity of the loan from the one you requested? The second proxy is similarly defined, but it represents "no" to question (i) only. This variable, *D_nodenial*, thus indicates that there was no loan denial by the bank. The third variable is created based on the firm's answer to the question about its general financial condition. The dummy variable *D_notightness* takes a value of one if the firm answers "no" to the question "did you find it difficult to make a repayment for any borrowings in the past year?"

Using these three benefit variables, we run a probit regression that takes the form:

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physical distance between the headquarters and branches.

[16] It might seem interesting to use *Authority_distance* as a dependent, rather than independent, variable, because it could clarify the determinants of the authority distance. If we run such a regression, however, the results are similar to of those of the *Who_knows* regression (with a reverse sign for each variable), probably because *Authority_distance* is defined as *Who_decides* minus *Who_knows*, and the variation of *Who_knows* is greater than that of *Who_decides*.

$$\Pr(Benefit = 1 \mid X) = \Phi(d_0 + d_1 \cdot Authority\_distance + d_2 \cdot Firm\_characteristics + d_3 \cdot Bank\_characteristics + d_4 \cdot Controls).$$

The *Benefit* is one of the three dummy variables defined above, and *X* is a vector of all the independent variables on the right-hand side. The main independent variable in this analysis is *Authority_distance*. Because all three dependent variables represent benefits from bank-firm relationships (a lack of financial constraints), we expect a negative coefficient for *Authority_distance*. As for the other independent variables, we use almost the same variables as those used in the *Who_knows* or the *Who_decides* regressions.

4 Results

4.1 Who has soft information

Univariate analysis

We first report the results for the univariate analysis on who in the bank organization has soft information. Table 2 shows the frequency distribution of the responding firms' answer to the question "who among the staff members of the bank [= the largest lender] best understands your strength that does not numerically appear." Because multiple answers are allowed, we not only report the whole sample but also single and multiple answers.[17]

As we can see from the first line, for 42.1% of the firms the answer is (vi) branch manager, and therefore branch managers understand the firms' non-numerical strength, or have soft information, the most. The next most frequent answer is loan officers at 30.8% ((i) the current sales representative or external affairs person). These findings mean that branch managers are

[17] Apart from the firms in our benchmark sample, there are some firms in the original sample (= those that did not satisfy our sample selection criteria) that answer the relevant question. However, even if we add those firms, the qualitative results in Table 2 hardly change.

the most important as a repository of soft information, although loan officers are also important, especially if we take into account (ii) the past loan officers as well. Note that only a negligible number of firms answer (vii) other member of the branch, which is why we do not use this answer when we create the variable *Who_knows*.

These results do not qualitatively differ when we divide single versus multiple answers (the second and the third lines). A notable difference is that in the case of multiple answers the answers other than (vi) branch manager are more evenly distributed, but the percentage of (vi) becomes even higher.[18]

It is interesting to compare these results with firms' responses to a different question in the survey. Together with this question about the repository of soft information, the survey also asks "who do you first approach when applying for a loan." Looking at the frequency distribution of the answers to this question (not reported), the most frequent answer is (i) current sales representative or external affairs person (49.1%), which is followed by (iii) current loan representative (26.7%) and (vi) branch manager (20.1%).[19]

As already indicated in the introduction, we separately find from the survey that the responding firms have contact with loan officers twice a week (in median), but with branch managers and other branch members (option (iii), (iv) and (v)) once a month. Taken all together, we can on balance conclude that a loan officer is the person that a borrower has initial contact with, has the most frequent contact with among bank staff, and probably collects soft information. However, it is the branch manager who has soft information the most. Loan officers might only collect information, and might be unable to appreciate the firm's strength

[18] If we split the sample into construction firms and non-construction firms, the results are almost similar, but (viii) the executive in the headquarters exhibits a smaller percentage for construction (17.4%) and a larger one for non-construction (35.8%).

[19] Only 6.6% of the firms answer (ii) the past sales representative or external affairs person.

based on the information. Alternatively, branch managers might have expertise in evaluating the information and appreciating the firm's non-numerical strength. Branch managers might also be able to collect soft information themselves, or the borrowing firms might have strong incentives to disclose important soft information to branch managers. Another possibility is that branch managers are ex loan officers.

Multivariate analysis

We next turn to the multivariate analysis. Table 3 reports the regression results. The dependent variable is *Who_knows*, which represents the answers shown in Table 2 except for (ii) and (vi), and takes a value of one ((i) loan officer) to six ((viii) executive in the headquarters). Because a lower value of *Who_knows* corresponds to a lower level in the bank's hierarchy, a positive coefficient for an independent variable means that the variable contributes to soft information accumulation at a higher level in the hierarchy. Panel A reports the regression results, with Column (a) for a parsimonious specification using selected independent variables, and Column (b) for the full specification. Panel B reports the marginal effect of two important variables, *Bank_asset* and *Employee*, on the probability of each member being chosen.

From Panel A, we first find that the larger the bank size (asset size), the lower the level of the bank's hierarchy at which soft information is accumulated.[20] In other words, soft information is accumulated at a higher level in the hierarchy of smaller banks. This finding implies that branch managers or executives in the headquarters accumulate more soft information at smaller banks, and/or that the loss of soft information when transferring it from a loan officer to an upper level is smaller at smaller banks. The effect of *Bank_asset* is

[20] The impact becomes weaker if we focus on non-construction firms only.

economically significant. Panel B (full specification) shows that if for an average bank the bank asset increases by 1 million yen, the probability that (1) Loan officer is chosen increases by $1.65 * 10^{-9}$ point and the probability that (5) Branch manager is chosen decreases by $1.52 * 10^{-9}$ point. These impacts are equivalent to a 1.65 percentage-point increase and a 1.53 percentage-point decrease in the respective probabilities, for additional 10 trillion (= 10^7 million) yen of assets, although non-linearity in these impacts need to be taken into account. At larger banks, even branch managers do not know much about the non-numerical strength of borrowers.

When we replace *Bank_asset* with the three bank-type dummies, the results are similar (not reported). We find that the coefficients for *D_cooperative* and *D_shinkin* take the value of 0.80 and 0.63, respectively, and are both significant at the 1% level; but no difference exists between city or trust banks and regional banks. However, if we use these dummies in addition to *Bank_asset*, then neither variable is significant. We can thus conclude that banks' asset size and the bank-type dummies should be used alternatively. Note that if we fix the type of banks, i.e. if we confine our sample to the borrowers of regional banks, or those of Shinkin banks, we still find a strongly significant, negative effect for *Bank_asset* (results not reported).[21] This means that bank size matters even among the same type of banks.

As for other variables, a positive and significant impact of *Length* implies that the longer the firm transacts with the bank, the more the information is accumulated at a higher level in the bank's hierarchy. We also find that soft information of seemingly creditworthy firms is accumulated at a higher level in the bank's hierarchy, because *Employee*, *Firmage*, and *Score* have a positive and significant coefficient.

[21] We cannot conduct a similar analysis for the borrowers of city or trust banks, or for those of credit cooperatives, because of the small sample.

4.2 Who makes decision

Univariate analysis

Turning to the second analysis, we first report the results for the univariate analysis on the location of the decision-making authority in the bank's hierarchy. The survey asks "who among the staff members of the bank [= the largest lender] makes a final decision if you apply for a loan." Table 4 shows the frequency distribution of the answers to this question. Again, we show the distributions for the whole sample and for single and multiple answers.[22]

From the first line, we find that the majority of firms answer that (vii) the branch manager has the decision-making authority (74.5%). The next dominant answer is (viii) the executive in the headquarters but only for 27.0% of the sample firms. The other members of the banks are considered to have little authority, but it is interesting to find that more than 10 percent of the firms answer that (iii) the loan representative and (v) the loan manager respectively have the authority. The second line shows that the findings are qualitatively similar when we focus on single answers only, although the percentage levels become smaller for all the categories.

The finding of this bimodal distribution for the decision-making authority is consistent with the anecdotal evidence discussed earlier that lending decisions are formally made at a branch level or at a headquarters level depending on a rule (e.g., on the loan size). The dominance of branch managers over executives is consistent with the fact that the majority of our sample firms are SMEs and so their loan sizes tend to be small. However, the finding of other members having some authority implies that at least to some extent the results in Table 4 reflect the actual

[22] The results hardly change if we add those firms that answer the relevant question but do not satisfy our sample selection criteria.

distribution of real authority in the bank organization.

When we focus on multiple answers only (the third line), the results are somewhat different. When firms answer multiple persons, (i) loan officers, (iii) current loan representative, and (v) loan manager also exhibit relatively high frequency, although the frequency for (vi) branch manager is even higher. This again might indicate that other branch members might have informal (real) authority where the branch managers have a formal one.

Multivariate analysis

Table 5 reports the results for the multivariate analysis on who makes decisions in the bank hierarchy. The dependent variable *Who_decides* is a multinomial variable that takes one of six values (1: loan officer to 6: executive in the headquarters).[23] Thus, if we find a positive coefficient for an independent variable, then it means that decisions are made at an upper level when the variable is larger. Panel A reports the regression results in which Column (a) shows the parsimonious specification and Column (b) shows the full specification. Panel B shows the marginal effects.

Similar to the results for the *Who_knows* regression, we find from Panel A a negative coefficient for *Bank_asset*. This finding means that the decision-making authority is located at a lower level in larger banks. Therefore, together with the findings in subsection 4.1, our findings might imply that decisions are made where soft information is accumulated (at a lower level of the hierarchy in larger banks and at a higher level in smaller banks). From Panel B, we find that the economic impact of bank size is significant. In the case of full specification, an

[23] Again, remember that (ii) the previous sales representative or external affairs person and (vii) the other member of the branch are excluded in defining *Who_decides*. See subsection 3.2.

increase in bank assets of 1 million yen for an average bank decreases the probability that (6) Executive in the headquarters is chosen by 2.15 * 10^{-9} point (equivalent to a 2.15 percentage-point decrease for additional 10 trillion yen of assets), while the probability that (5) Branch manager is chosen increases by 6.83 * 10^{-10} point (equivalent to a 0.683 percentage-point increase for additional 10 trillion of assets).

The results are qualitatively the same if we replace *Bank_asset* with the three bank-type dummies (not reported). The coefficients for *D_regional*, *D_shinkin*, and *D_cooperative* are 0.40, 0.76, and 1.05 respectively, and are significant at the 10%, 1%, and 1% levels respectively. If we use these dummies together with *Bank_asset*, only *D_cooperative* is positive and significant at the 10% level, which again implies that banks' asset size and bank type have multicollinearity. However, the effect of *Bank_asset* is strong because its positive impact remains even if we use subsamples of the borrowers of regional banks only or those of Shinkin banks only.

As for other independent variables, we find that decisions are made at a higher level in the bank's hierarchy for a larger (*Employee*) and an older (*Firmage*) firm and a firm with a longer lending relationship with the bank (*Length*). These findings might imply that loans for large or established customers are processed at an upper level.[24]

Another interesting finding is that *Number_of_banks* has a positive and significant impact on *Who_decides*.[25] This means that a bank in a more competitive environment is less likely to delegate decision-making authority to a lower level of the hierarchy. Panel B shows that as the

[24] If we use the subsample of the construction firms and of the non-construction firms, then the effect of *Employee* is found in the former subsample only, while that of *Firmage* is found in the latter subsample only.
[25] If we split the sample, this effect occurs for the non-construction firms but not for the construction firms.

number of (rival) banks increases, more decisions are made by executives in the headquarters. This finding is inconsistent with the finding in Bloom et al. (2010) where each of their three measures of product market competition (including the number of competitors that firms face) has a positive impact on a proxy for the extent of authority delegation from the CEO to the plant manager in manufacturing firms. However, our finding is consistent with some of their prior predictions: that greater competition reduces managerial effort, or that competition increases the amount of public information, both of which reduce the benefit from authority delegation (see subsection 3.2). Making reconciliation of the inconsistency in their and our findings is beyond the scope of this paper, but the difference in the industries analyzed might be a factor. For example, decisions that banks make might be far less complicated than those that manufacturing firms make, such as decisions on whether to lend or not. Thus it might be easier for banks to make top-down decisions when faced with a prospective customer under severe competition.

4.3 Effects of authority distance

Our final analysis pertains to the effect of authority distance, that is, the distance in the bank's hierarchy between soft information accumulation and decision making, on benefits from bank-firm relationships. Table 6 reports the regression results for our three benefit regressions, each of which has one of our three benefit variables that represent a lack of financial constraints as a dependent variable. Although we find no significant impact from *Authority_distance* on the *D_attitude* regression, we find that a longer authority distance leads to smaller benefits in the form of financial constraints in the *D_nodenial* and the *D_notightness* regressions. Thus, we have some evidence for the effect of a greater authority distance on smaller benefits.

If we calculate the marginal effect of *Authority_distance* (not reported), its coefficient on the probabilities of *D_nodenial* and *D_notightness* taking a value of one are respectively -0.00898 and -0.0143. This means that a one-level increase in *Authority_distance* for an average firm increases the probability that a loan application is turned down and that the firm confronts financial difficulty by 0.898 and 1.43 percentage points, respectively.

By definition, *D_nodenial* measures the benefit in terms of the bank's lack of denial of the firm's loan application, while *D_attitude* also takes into account the benefit in terms of no reduction in the loan amount, no increase in the interest rate, and so on. The lack of significance for *Authority_distance* in the *D_attitude* regression might thus imply that the benefit only appears in the loan granting decision and not in contract terms. The inconsistency of these results might alternatively imply some weakness in our variables or tests.[26] We will revisit these interpretations when we check the robustness of the results in subsections 5.2 and 5.3.

5 Robustness checks

5.1 Authority distance and soft information accumulation

This section provides additional analyses to check the robustness of the results obtained thus far. First, we examine the effect of the authority distance from a different angle. In subsection 4.3, we found, consistent with theory, that a longer distance between the repository of soft information and a decision maker is harmful for firms because it reduces firms' benefits from strong relationships with banks (or increases financial constraints). An underlying

[26] Consistent with this interpretation, *Authority_distance* has no impact on the three benefit variables when we use the subsample that consists of the non-construction firms only.

mechanism we anticipate behind this association is a loss of important soft information about borrowers due to a longer authority distance.

To check this view, we now run a regression that is similar to the benefit regressions estimated in subsection 4.3, but this time we take a more direct look at the accumulation of soft information. More specifically, we use a measure for the amount of soft information as a dependent variable and regress it on *Authority_distance* and the other independent variables that we used in the benefit regression. Although it is difficult to measure soft information, here we rely on responding firms' answers to the survey question: "to what extent does your largest lender understand your strengths and weaknesses that cannot appear as numbers." The firms choose an answer from four options: (i) knows very much, (ii) knows to some extent, (iii) does not know very much, and (iv) does not know at all. We create a multivariate variable *Soft_information* in the following manner.

Soft_information ≡ 4 if (i) knows very much is chosen,

≡ 3 if (ii) knows to some extent is chosen,

≡ 2 if (iii) does not know very much is chosen, and

≡ 1 if (iv) does not know at all is chosen.

We use this variable to indicate the amount of soft information that banks accumulate.[27]

The empirical model that we now estimate by ordered probit takes the following form:

Soft_information = 1 if $x^* \leq 0$,

= 2 if $0 < x^* \leq \mu_1"$,

= 3 if $\mu_1" < x^* \leq \mu_2"$, and

[27] The variable *Soft_information* is intrinsically different from the variable *Who_knows*. The former measures the amount of knowledge that banks have about borrowers (in terms of soft information), while the latter indicates the location of the repository of soft information.

$$= 4 \text{ if } \mu_2'' < x^*,$$

where the μ'' is the cutoff and x^* is the latent variable that takes the form:

$$x^* = c_0 + c_1 \cdot Authority\_distance + c_2 \cdot Bank\_characteristics + c_3 \cdot Firm\_characteristics + c_4 \cdot Controls + \varepsilon_x.$$

Similar to the case of the benefit regressions (subsection 3.3), we expect c_1 to be negative. However, the interpretation of this regression is not straightforward. A complication stems from the definition of *Soft_information*. As explained above, the variable measures the banks' knowledge about both strengths and weaknesses of the firms (that do not appear as numbers), which is due to the design of the questionnaire that we cannot control for. Because *Authority_distance* (or *Who_knows*) indicates who has good (positive) soft information, to the extent that *Soft_information* reflects firms' answer about bad soft information (weaknesses), then no association can be expected between *Soft_information* and *Authority_distance*. However, to the extent that firms answer about good information (strengths) and that *Soft_information* reflects the amount of good (positive) soft information, we might find c_1 to be negative. In this case, the result lends more support to our interpretations.

In this test, we also use two additional independent variables to represent the strength of bank-firm relationships. Studies on relationship lending suggest that soft information is accumulated through strong bank-firm relationships, and existing studies use different variables such as relationship length, frequency of bank-firm contact, or modes of bank-firm contact as proxies for the strength (e.g. Berger et al. 2005, Uchida et al. 2008). Similar variables are available from the survey we use in this paper. First, *Who_knows_length* indicates the length in years of the relationship between the firm and the person specified by *Who_knows*. Note

that this variable pertains to a specific member of the bank and is different from the overall length of the firms' lending relationship with the bank (which is represented by *Length*). Second, *Who_knows_freq* is an average interval (days) between contacts of the firm and the person specified by *Who_knows*, which indicates the frequency of bank-firm contact. For example, it takes a value of 30 if the contact is made once a month.

Table 7 reports the regression results when we use *Soft_information* as a dependent variable, and *Authority_distance* as the main independent variable. We find a strong negative impact for *Authority_distance* on the accumulation of soft information. That is, less soft information is accumulated as the distance between the repository of soft information and the decision maker increases. This finding is consistent with our prior prediction that soft information is lost during its transfer and/or an incentive to produce soft information is lost when it is used by a more distant decision maker.

Although these are not our primary interest in this paper, results for two other independent variables are of some interest. First, the amount of soft information is smaller as the contact between those who have soft information and the firm becomes infrequent (a negative impact of *Who_knows_freq*). Second, the amount of soft information is larger as the lending relationship between the bank and the firm lengthens (a positive impact of *Length*). These findings are consistent with existing evidence for relationship lending that (indirectly) reports that more soft information is accumulated through stronger bank-firm relationships (Berger et al. 2005, Uchida et al. 2008, Uchida et al 2012).[28]

[28] However, the significant impacts of these two variables are not found when we use a subsample of the non-construction firms only.

5.2 Previous loan officers

As an additional robustness check, we take into account the role of previous loan officers. In section 4.1 (Table 2), we find that previous loan officers are important as a repository of soft information. This might be the case especially when there was a recent switch in loan officers.[29] Nevertheless, in the regression analysis thereafter, we excluded from the sample the firms that answer that a previous loan officer is a repository of soft information (or "best understands your strength that does not numerically appear").

To explicitly consider the role of previous loan officers, here we redefine the variable *Who_knows*. It now takes a value of one not only when (i) the current sales representative or external affairs person is chosen but also when (ii) the previous sales representative or external affairs person is chosen as the one who "best understands your strength that does not numerically appear." To keep consistency, we also redefine *Who_decides* (and therefore *Authority_distance*) in a similar manner.

For the *Who_knows* regression and the *Who_decides* regression, even if the previous loan officers are also included as "loan officers," the results are almost unchanged (and are therefore not reported). As for the benefit regressions, the results are shown in Table 8. In this table, *Authority_distance_cp* is the redefined variable explained above that replaces *Authority_distance* (*cp* stands for "current" and "previous"). Compared with the case where previous loan officers are not included (Table 6), the effect of authority distance turns to be significant in the *D_attitude* and its significance level increases (p-value decreases) in the

[29] Our data support this view. We find in an unreported analysis that for the firms that answer that the *current* loan officer "best understands your strength that does not numerically appear" (290 firms), the length (in years) of the relationship between the firm and the current loan officer is on average 1.868 years, while it is 1.132 years for those answer that the *previous* loan officer is the one who best understands it (155 firms). The null hypothesis of the two means being the same is rejected at the 1 percent level of significance.

D_nodenial regressions, although it turns to be insignificant in the *D_notightness* regression. On balance, there is still an association between a longer authority distance and tighter financial constraints even if we additionally take into account the role of previous loan officers as a repository of soft information (and as decision makers).

5.3 The number of levels in the hierarchy

In the final robustness check, we focus on the number of levels (positions or ranks) in the banks' hierarchy. In the analysis thus far, we consider six levels in the hierarchy when we define *Who_knows* and *Who_decides*: a loan officer, a loan representative, a sales/external affairs manager, a loan manager, a branch manager, and an executive in the headquarters. This approach might not be appropriate if, for example, some banks do not have the exact six positions, or if responding firms are not able to correctly distinguish different positions (e.g., between loan officers and loan representatives).

To resolve this concern, we rerun the regressions by replacing *Who_knows*, *Who_decides*, and *Authority_distance* respectively with new variables *Who_knows_4*, *Who_decides_4*, and *Authority_distance_4* that differentiate only four levels in the banks' hierarchy. More specifically, to define these variables, we regroup loan officers and loan representatives as "officers," sales/external affairs managers and loan managers as "managers," and consider four ranks: officers, managers, branch managers, and executives in the headquarters.

Table 9 shows the results with these new variables that consider only four levels in the bank's hierarchy. In this table, the results in Panels (A), (B), and (C) replicate those in Tables 3, 5, and 6 respectively using our new variables differentiating the four levels. We find that the results for the *Who_knows_4* regression (Panel A) and the *Who_decides_4* regression (Panel B)

are qualitatively the same as those for the *Who_knows* regression (Table 3) and the *Who_decides* regression (Table 5).

As for the benefit regressions (Panel C), *Authority_distance_4* has a negative and significant impact on all of the three benefit measures, even on *D_attitude* on which *Authority_distance* had no significant impact (Table 6).[30] Thus, we find strong evidence for the effect of a greater organizational distance on firms' financial constraints. This suggests, consistent with theoretical priors, that a longer distance between the repository of soft information and decision making in the bank's hierarchy reduces the benefits from bank-firm relationships due to the loss of soft information.

6 Conclusion

Using unique data about banks' soft information production and decision making, we investigate: (1) who has soft information on borrowers, (2) who has the decision-making authority, and (3) whether the authority distance between the repository of soft information and decision making reduces benefits from the bank-firm relationships. Our findings on balance suggest the primacy of a branch manager both as a repository of soft information and as a decision maker, and that the authority distance is harmful in terms of soft information accumulation and of the benefits from bank-firm relationships.

[30] When we use a subsample consisting of non-construction firms only, *Authority_distance_4* has a negative and significant impact on *D_nodenial*.

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Table 1 Variable Definitions and Descriptive Statistics

This table summarizes the definition and key statistics of the variables used in this paper.

Variables		Definition	N	Mean	Median	Std. Dev.	Min	Max
Dependent variables	*Who_knows*	A multinomial variable indicating the repository of soft information in the bank hierarchy, which is created based on firms' answer to the question "who among the staff members of the bank [= the largest lender] best understands your strength that does not numerically appear" (i.e, = 1 for Loan officer, = 2 for Loan representative, = 3 for Sales or external affairs manager, = 4 for Loan manager, =5 for Branch manager, and = 6 for Executive in the headquarters)	1,140	3.7053	5	1.8388	1	6
	Who_decides	A multinomial variable indicating the decision maker in the bank hierarchy, which is created based on firms' answer to the question "who among the staff members of the bank [= the largest lender] makes a final decision if you apply for a loan" (i.e., = 1 for Loan officer, = 2 for Loan representative, = 3 for Sales or external affairs manager, = 4 for Loan manager, =5 for Branch manager, and = 6 for Executive in the headquarters)	1,421	4.8550	5	1.2086	1	6
	Soft_information	(Multinomial variable) Proxy for soft information accumulation, which is created based on firms' answer to the question "to what extent your largest lender understand your strength and weakness that cannot appear as numbers" (i.e.,= 4 for "understand very much," = 3 for "understand to some extent," = 2 for "do not understand very much," and = 1 for "do not understand at all")	1,351	2.9289	3	0.8551	1	4
	D_attitude	(Dummy) = 1 if the firm did not experience a turn-down, an amount reduction, an interest rate increase, an increase in collateral, or the shortening of maturity as a response to a loan application to the largest lender	1,584	0.7437	1	N.A.	0	1
	D_nodenial	(Dummy) = 1 if the firm did not experience a turn-down as a response to a loan application to the largest lender	1,528	0.9064	1	N.A.	0	1
	D_notightness	(Dummy) = 1 if the firm did not find it difficult to borrow in the past one year	1,563	0.7748	1	N.A.	0	1
Authority distance	*Authority_distance*	= *Who_decide*s - *Who_knows*	1,022	1.4022	1	1.6399	0	5
Bank characteristics	*Bank_asset*	Asset size of the largest lender (million yen)	1,584	4,614,066	752,137	18,800,000	23517	154,000,000
	Bank_ROA	ROA of the largest lender (= Current net profit / Assets) (%)	1,584	0.2374	0.1806	0.2957	0.0226	2.8475
	Bank_CA_ratio	Capital asset ratio of the largest lender (= 1 - leverage) (%)	1,584	4.9768	4.6767	1.6759	1.1565	12.6465
Firm characteristics	*Employee*	Number of the employees (person)	1,584	20.0290	11	29.7488	1	367
	Who_knows_length	Length of the relationship between the firm and the person specified by Who_knows (year)	876	2.1030	2	2.1970	0	30
	Who knows freq	Frequency of contact between the firm and the person specified by Who knows (interval (days) of	828	34.3345	30	44.3211	1	365
	Number_of_banks	Number of banks that the firm transacts with	1,575	2.6273	2	1.6890	0	14
	Length	Length of the lending relationship between the firm and the bank (year)	1,584	12.9140	7	13.0595	0	80
	Firmage	Age of the firm (year)	1,442	40.4466	39	21.1947	3	133
	Score	TSR's credit score (50 on average)	1,584	49.7273	50	5.4516	31	71
Controls	*D_construction*	(Industry dummy) =1 if the firm's industry is Construction	1,584	0.5442	1	N.A.	0	1
	D_transport	(Industry dummy) =1 if the firm's industry is Transportation	1,584	0.0069	0	N.A.	0	1
	D_manufacture	(Industry dummy) =1 if the firm's industry is Manufacturing	1,584	0.1383	0	N.A.	0	1
	D_wholesale	(Industry dummy) =1 if the firm's industry is Wholesale	1,584	0.1042	0	N.A.	0	1
	D_sales	(Industry dummy) =1 if the firm's industry is Retail	1,584	0.0619	0	N.A.	0	1
	D_service	(Industry dummy) =1 if the firm's industry is Services	1,584	0.0088	0	N.A.	0	1
	D_redtoblack	(Dummy) = 1 if the firm's net current profit in the past 2 years was "deficit followed by surplus"	1,584	0.1730	0	N.A.	0	1
	D_blacktored	(Dummy) = 1 if the firm's net current profit in the past 2 years was "surplus followed by a deficit"	1,584	0.1534	0	N.A.	0	1
	D_redtored	(Dummy) = 1 if the firm's net current profit in the past 2 years was "deficit followed by deficit"	1,584	0.1761	0	N.A.	0	1
	D_affiliated	(Dummy) = 1 if the firm is affiliated with another firm	1,584	0.0120	0	N.A.	0	1
	D_associated	(Dummy) = 1 if the firm is associated with another firm	1,584	0.0562	0	N.A.	0	1

Table 2 Frequency Distribution for Who Has Soft Information

This table reports the frequency distribution of the answers to the survey question, "who among the staff members of the bank [= the largest lender] best understands your strength that does not numerically appear." The first line reports the distribution for the whole sample. The second and the third lines respectively report the distribution for single answers only and for multiple answers only. In each line, the numbers of responding firms are shown above, and their shares are below (in parentheses).

	Number of firms	(i)Current sales representative or external affairs person [Loan officer]	(ii)Previous sales representative or external affairs person	(iii)Current loan representatve	(iv)Sales or external affairs manager	(v)Loan manager	(vi)Branch manager	(vii)Other member of the branch	(viii)Executive in the headquarters
Whole sample	1,265	389	208	273	87	169	532	15	149
	(100.0%)	(30.8%)	(16.4%)	(21.6%)	(6.9%)	(13.4%)	(42.1%)	(1.2%)	(11.8%)
Single answer only	925	233	117	135	27	62	285	6	60
	(100.0%)	(25.2%)	(12.7%)	(14.6%)	(2.9%)	(6.7%)	(30.8%)	(0.7%)	(6.5%)
Multiple answer only	340	156	91	138	60	107	247	9	89
	(100.0%)	(45.9%)	(26.8%)	(40.6%)	(17.7%)	(31.5%)	(72.7%)	(2.7%)	(26.2%)

Table 3 Regression Result for Who Has Soft Information

Panel A of this table shows the results of the ordered probit regression where the dependent variable is *Who_knows* that indicates the location of the repository of soft information in the banking hierarchy. A smaller (larger) value of the variable indicates that the repository is located at a lower (higher) level of the hierarchy. The independent variables are those representing the characteristics of the lending bank (the largest lender) and the firm. Industry and prefecture dummies are also included. For more detailed definitions of these variables see Table 1. Panel B of this table shows the marginal effects of two important independent variables (bank asset size and firm employee size) on the probability of each member in the bank being chosen as the repository of soft information, which are obtained from the estimations shown in Panel A. ***, **, and * respectively indicate that the estimated coefficient is significant at the 1%, 5%, and 10% level.

Panel A Regression Results

Dependent variable	*Who_knows*							
	(a) Parsimonious specification				(b) Full specification			
	Coef.	Robust std. err.	z	P>|z|	Coef.	Robust std. err.	z	P>|z|
Bank_asset	-6.37E-09 ***	1.86E-09	-3.42	0.001	-5.63E-09 ***	1.84E-09	-3.06	0.002
Bank_ROA	0.0143	0.1606	0.09	0.929	0.0306	0.1716	0.18	0.858
Bank_CA_ratio	0.0531 **	0.0231	2.3	0.022	0.0482 **	0.0242	1.99	0.046
Employee	0.0036 **	0.0017	2.11	0.035	0.0031 *	0.0018	1.79	0.073
Length	0.0090 ***	0.0028	3.22	0.001	0.0087 ***	0.0030	2.87	0.004
Score	0.0252 ***	0.0070	3.6	0.000	0.0220 ***	0.0083	2.66	0.008
Number_of_Banks					0.0109	0.0220	0.5	0.619
Firmage					0.0065 ***	0.0018	3.61	0.000
D_affiliated					-0.6732 **	0.3150	-2.14	0.033
D_associated					0.0236	0.1499	0.16	0.875
D_redtoblack					0.0918	0.1090	0.84	0.400
D_blacktored					0.0848	0.1101	0.77	0.441
D_redtored					-0.0887	0.1193	-0.74	0.457
Industry dummies	YES				YES			
Prefecture dummies	YES				YES			
Number of obs.	1053				956			
Log pseudolikelihood	-1538.753				-1390.639			
Pseudo R2	0.0466				0.0549			

Panel B Marginal Effects

		(1) Current sales representative or external affairs person [Loan officer]		(2) Current loan representatve		(3) Sales or external affairs manager		(4) Loan manager		(5) Branch manager		(6) Executive in the headquarters	
		Coef.	Significance	Coef.	Significance	Coef.	Significance	Coef.	Significance	Coef.	Significance	Coef.	Significance
(a) Parsimonious specification	*Bank_asset*	1.88E-09	***	5.25E-10	***	7.30E-11	***	6.02E-11	*	-1.68E-09	***	-8.61E-10	***
	Employee	-1.06E-03	**	-2.97E-04	**	-4.13E-05	*	-3.40E-05		9.49E-04	**	4.86E-04	**
(b) Full specification	*Bank_asset*	1.65E-09	***	4.71E-10	***	7.08E-11	**	5.65E-11		-1.52E-09	***	-7.25E-10	***
	Employee	-9.20E-04	*	-2.63E-04	*	-3.95E-05		-3.15E-05		8.49E-04	*	4.05E-04	*

Table 4 Frequency Distribution for Who Makes Decision

This table reports the frequency distribution of the answers to the survey question, "who among the staff members of the bank [= the largest lender] makes a final decision if you apply for a loan." The first line reports the distribution for the whole sample. The second and the third lines respectively report the distribution for a single answers only and for multiple answers only. In each line, the numbers of responding firms are shown above, and their shares are below (in parentheses).

	Number of answers	(i)Current sales representative or external affairs person [Loan officer]	(ii)Previous sales representative or external affairs person	(iii)Current loan representatve	(iv)Sales or external affairs manager	(v)Loan manager	(vi)Branch manager	(vii)Other member of the branch	(viii)Executive in the headquarters
Whole sample	1,431	86	12	161	45	153	938	7	387
	(100.0%)	(6.8%)	(1.0%)	(12.8%)	(3.6%)	(12.2%)	(74.5%)	(0.6%)	(27.0%)
Single answer only	1,141	40	7	94	23	72	682	3	220
	(100.0%)	(3.5%)	(0.6%)	(8.2%)	(2.0%)	(6.3%)	(59.8%)	(0.3%)	(19.3%)
Multiple answer only	290	46	5	67	22	81	256	4	167
	(100.0%)	(15.9%)	(1.7%)	(23.1%)	(7.6%)	(27.9%)	(88.3%)	(1.4%)	(57.6%)

Table 5 Regression Result for Who Makes Decision

Panel A of this table shows the results of the ordered probit regression where the dependent variable is *Who_decides* that indicates who in the banking hierarchy makes lending decisions. A smaller (larger) value of the variable indicates that the decision is made at a lower (higher) level of the hierarchy. The independent variables are those representing the characteristics of the lending bank (the largest lender) and the firm. Industry and prefecture dummies are also included. For more detailed definitions of these variables see Table 1. Panel B of this table shows the marginal effects of the two important independent variables (bank asset size and firm employee size) on the probability of each member in the bank being chosen as the decision maker, which are obtained from the estimations shown in Panel A. ***, **, and * respectively indicate that the estimated coefficient is significant at the 1%, 5%, and 10% level.

Panel A Regression Results

Dependent variable	*Who_decides*							
	(a) Parsimonious specification				(b) Full specification			
	Coef.	Robust std. err.	z	P>|z|	Coef.	Robust std. err.	z	P>|z|
Bank_asset	-6.59E-09 ***	1.94E-09	-3.4	0.001	-6.53E-09 ***	2.19E-09	-2.98	0.003
Bank_ROA	0.1654	0.1077	1.54	0.125	0.2015 *	0.1195	1.69	0.092
Bank_CA_ratio	0.0435 **	0.0208	2.09	0.037	0.0362 *	0.0219	1.65	0.099
Employee	0.0044 ***	0.0013	3.39	0.001	0.0042 ***	0.0014	2.99	0.003
Length	0.0123 ***	0.0026	4.81	0.000	0.0107 ***	0.0028	3.82	0.000
Score	0.0122 *	0.0065	1.87	0.062	0.0113	0.0076	1.49	0.135
Number_of_Banks					0.0479 **	0.0218	2.2	0.028
Firmage					0.0031 *	0.0017	1.83	0.067
D_affiliated					-0.2154	0.2556	-0.84	0.399
D_associated					-0.0454	0.1401	-0.32	0.746
D_redtoblack					-0.0505	0.0948	-0.53	0.594
D_blacktored					-0.0529	0.0982	-0.54	0.590
D_redtored					-0.0640	0.1025	-0.62	0.532
Industry dummies	YES				YES			
Prefecture dummies	YES				YES			
Number of obs.	1334				1206			
Log pseudolikelihood	-1500.83				-1352.36			
Pseudo R2	0.0476				0.0535			

Panel B Marginal Effects

		(1) Current sales representative or external affairs person [Loan officer]		(2) Current loan representatve		(3) Sales or external affairs manager		(4) Loan manager		(5) Branch manager		(6) Executive in the headquarters	
		Coef.	Significance	Coef.	Significance	Coef.	Significance	Coef.	Significance	Coef.	Significance	Coef.	Significance
(a) Parsimonious specification	*Bank_asset*	3.04E-10	***	5.90E-10	***	1.45E-10	***	4.44E-10	***	7.28E-10	***	-2.21E-09	***
	Employee	-2.01E-04	***	-3.91E-04	***	-9.61E-05	***	-2.94E-04	***	-4.82E-04	***	1.46E-03	***
(b) Full specification	*Bank_asset*	3.08E-10	***	5.87E-10	***	1.43E-10	**	4.33E-10	***	6.83E-10	***	-2.15E-09	***
	Employee	-1.97E-04	***	-3.75E-04	***	-9.12E-05	**	-2.77E-04	***	-4.36E-04	***	1.37E-03	***
	Number_of_banks	-2.26E-03	**	-4.31E-03	**	-1.05E-03	**	-3.18E-03	**	-5.02E-03	**	1.58E-02	**

Table 6 Authority Distance and Benefits from Bank/Firm Relationships

This table shows the results of the probit regressions where the dependent variable is one of the three variables representing the benefits from the bank/firm relationships (the lack of financial constraints): *D_attitude*, *D_nodenial*, and *D_notightness*. The main independent variable is *Authority_distance* that is defined as the difference between *Who_decides* (the dependent variable in Table 5) and *Who_knows* (the dependent variable in Table 3) and indicates the distance between the decision maker and the repository of soft information in the banking hierarchy. The other independent variables are those representing the characteristics of the lending bank (the largest lender) and the firm. Industry and prefecture dummies are also included. For more detailed definitions of these variables see Table 1. ***, **, and * respectively indicate that the estimated coefficient is significant at the 1%, 5%, and 10% level.

Dependent variable	*D_attitude*				*D_nodenial*				*D_notightness*			
	Coef.	Robust std. err.	z	P>|z|	Coef.	Robust std. err.	z	P>|z|	Coef.	Robust std. err.	z	P>|z|
Authority_distance	-0.0406	0.0301	-1.35	0.177	-0.0939 **	0.0437	-2.15	0.032	-0.0565 *	0.0321	-1.76	0.079
Bank_asset	1.96E-09	2.96E-09	0.66	0.507	1.21E-09	3.84E-09	0.31	0.754	-2.88E-10	3.54E-09	-0.08	0.935
Bank_ROA	-0.5077 ***	0.1761	-2.88	0.004	-0.4028 *	0.2215	-1.82	0.069	-0.0150	0.1833	-0.08	0.935
Bank_CA_ratio	0.0341	0.0334	1.02	0.308	0.0686	0.0530	1.29	0.196	-0.0100	0.0341	-0.29	0.768
Employee	0.0042 **	0.0021	2.01	0.044	0.0037	0.0036	1.02	0.306	0.0040	0.0025	1.6	0.109
Length	-0.0092 **	0.0038	-2.42	0.016	-0.0154 ***	0.0053	-2.93	0.003	-0.0060	0.0041	-1.48	0.138
Score	0.0588 ***	0.0117	5.04	0.000	0.0788 ***	0.0161	4.88	0.000	0.0866 ***	0.0127	6.82	0.000
Number_of_Banks	-0.1179 ***	0.0312	-3.78	0.000	-0.1816 ***	0.0458	-3.97	0.000	-0.1392 ***	0.0321	-4.33	0
Firmage	-0.0002	0.0026	-0.07	0.943	0.0078 *	0.0046	1.7	0.090	0.0004	0.0028	0.15	0.883
D_affiliated	0.8803 *	0.5229	1.68	0.092	-0.1535	0.5703	-0.27	0.788	0.4844	0.4844	1	0.317
D_associated	0.4255 *	0.2365	1.8	0.072	0.7035 *	0.3695	1.9	0.057	-0.1286	0.2266	-0.57	0.57
D_redtoblack	-0.1031	0.1424	-0.72	0.469	-0.1807	0.2062	-0.88	0.381	-0.5779 ***	0.1484	-3.89	0
D_blacktored	0.0321	0.1501	0.21	0.831	-0.0143	0.2408	-0.06	0.953	-0.4030 **	0.1569	-2.57	0.01
D_redtored	-0.4180 ***	0.1475	-2.83	0.005	-0.4652 **	0.2124	-2.19	0.029	-0.7821 ***	0.1519	-5.15	0
Intercept	-1.7562 ***	0.6182	-2.84	0.004	-1.8025 ***	0.6237	-2.89	0.004	-1.8686 **	0.8182	-2.28	0.022
Industry dummies	YES				YES				YES			
Prefecture dummies	YES				YES				YES			
Number of obs.	912				723				897			
Log pseudolikelihood	-424.68				-171.492				-372.252			
Pseudo R2	0.1552				0.2393				0.2299			

Table 7 Authority Distance and Soft Information Production

This table shows the results of the ordered probit regression where the dependent variable is *Soft_information* that is a proxy for the amount of soft information that the lending bank (the largest lender) accumulates. A larger (smaller) value of the variable indicates that the bank has more (less) soft information. The main independent variable is *Authority_distance* that is defined as the difference between *Who_decides* (the dependent variable in Table 5) and *Who_knows* (the dependent variable in Table 3) and indicates the distance between the decision maker and the repository of soft information in the banking hierarchy. The other independent variables are those representing the characteristics of the lending bank (the largest lender) and the firm. Industry and prefecture dummies are also included. For more detailed definitions of these variables see Table 1. ***, **, and * respectively indicate that the estimated coefficient is significant at the 1%, 5%, and 10% level.

Dependent variable	*Soft_information*							
	(i)				(ii)			
	Coef.	Robust std. err.	z	P>|z|	Coef.	Robust std. err.	z	P>|z|
Authority_distance	-0.0958 ***	0.0229	-4.18	0.000	-0.1219 ***	0.0279	-4.37	0.000
Bank_asset	-1.56E-09	2.13E-09	-0.73	0.464	-1.73E-09	2.41E-09	-0.72	0.473
Bank_ROA	0.2244	0.1674	1.34	0.180	0.4554 **	0.2114	2.15	0.031
Bank_CA_ratio	0.0057	0.0244	0.23	0.815	0.0012	0.0316	0.04	0.970
Employee	0.0037 ***	0.0014	2.76	0.006	0.0035 *	0.0021	1.66	0.096
Length	0.0052 *	0.0027	1.9	0.058	0.0069 *	0.0036	1.92	0.055
Score	-0.0003	0.0076	-0.04	0.966	-0.0024	0.0108	-0.22	0.824
Who_knows_length					0.0612	0.0399	1.53	0.125
Who_knows_freq					-0.0022 **	0.0010	-2.23	0.026
Number_of_Banks					0.0543 *	0.0281	1.93	0.053
Firmage					-0.0067 ***	0.0024	-2.72	0.007
D_affiliated					-0.1774	0.3448	-0.51	0.607
D_associated					-0.0668	0.2070	-0.32	0.747
D_redtoblack					0.1876	0.1381	1.36	0.174
D_blacktored					-0.0088	0.1368	-0.06	0.949
D_redtored					0.0141	0.1476	0.1	0.924
Industry dummies	YES				YES			
Prefecture dummies	YES				YES			
Number of obs.	908				628			
Log pseudolikelihood	-983.035				-653.349			
Pseudo R2	0.0519				0.0726			

Table 8 Authority Distance and Benefits from Bank/Firm Relationships

This table shows the results when we replicate the benefit regressions (shown in Table 6) by replacing the variables *Authority_distance* with *Authority_distance_cp* that additionally takes into account the role of previous loan officers. See Table 6 (and Table 1) for more information. ***, **, and * respectively indicate that the estimated coefficient is significant at the 1%, 5%, and 10% level.

Dependent variable	*D_attitude*				*D_nodenial*				*D_notightness*			
	Coef.	Robust std. err.	z	P>|z|	Coef.	Robust std. err.	z	P>|z|	Coef.	Robust std. err.	z	P>|z|
Authority_distance_cp	-0.0646 **	0.0268	-2.41	0.016	-0.1320 ***	0.0385	-3.43	0.001	-0.0399	0.0283	-1.41	0.158
Bank_asset	3.09E-09	2.80E-09	1.1	0.271	2.49E-09	3.50E-09	0.71	0.477	5.32E-10	3.24E-09	0.16	0.869
Bank_ROA	-0.4352 **	0.1717	-2.53	0.011	-0.3050	0.2261	-1.35	0.177	0.0960	0.1687	0.57	0.569
Bank_CA_ratio	0.0314	0.0325	0.97	0.334	0.0661	0.0499	1.33	0.185	0.0059	0.0331	0.18	0.858
Employee	0.0046 **	0.0020	2.27	0.023	0.0034	0.0037	0.93	0.353	0.0033	0.0023	1.47	0.142
Length	-0.0095 **	0.0037	-2.57	0.010	-0.0148 ***	0.0050	-2.93	0.003	-0.0056	0.0039	-1.44	0.149
Score	0.0582 ***	0.0113	5.14	0.000	0.0881 ***	0.0159	5.54	0.000	0.0883 ***	0.0121	7.31	0.000
Number_of_Banks	-0.1397 ***	0.0305	-4.59	0.000	-0.1911 ***	0.0455	-4.2	0.000	-0.1590 ***	0.0308	-5.15	0.000
Firmage	0.0002	0.0025	0.09	0.929	0.0056	0.0039	1.42	0.155	-0.0008	0.0026	-0.33	0.742
D_affiliated	0.9786 *	0.5120	1.91	0.056	-0.1318	0.5339	-0.25	0.805	0.5163	0.4769	1.08	0.279
D_associated	0.4711 **	0.2291	2.06	0.040	0.7675 **	0.3710	2.07	0.039	-0.1682	0.2153	-0.78	0.435
D_redtoblack	-0.1264	0.1353	-0.93	0.350	-0.1519	0.1904	-0.8	0.425	-0.5131 ***	0.1392	-3.69	0.000
D_blacktored	-0.0127	0.1409	-0.09	0.928	-0.0860	0.2156	-0.4	0.690	-0.3543 **	0.1475	-2.4	0.016
D_redtored	-0.5361 ***	0.1355	-3.96	0.000	-0.5011 ***	0.1894	-2.65	0.008	-0.7521 ***	0.1407	-5.35	0.000
Intercept	-1.6402 ***	0.5949	-2.76	0.006	-2.2525 ***	0.7901	-2.85	0.004	-2.3054 ***	0.6207	-3.71	0.000
Industry dummies	YES				YES				YES			
Prefecture dummies	YES				YES				YES			
Number of obs.	1018				823				1003			
Log pseudolikelihood	-477.979				-206.422				-426.3			
Pseudo R2	0.169				0.251				0.2159			

Table 9 The Number of Levels in the Hierarchy

This table shows the results when we replicate the main regressions (shown in Tables 3, 5, and 6) by replacing the variables *Who_knows*, *Who_decides* or *Authority_distance* that consider six ranks within the banking hierarchy (loan officer, loan representative, sales/external affairs manager, loan manager, branch manager, and executives in the headquarters) with *Who_knows_4*, *Who_decides_4* and *Authority_distance_4* that consider four ranks (officer, manager, branch manager, and executives in the headquarters). Panels (A), (B), and (C) respectively correspond to Tables 3 (*Who_knows* regression), 5 (*Who_decides* regression), and 6 (benefit regressions). See each corresponding table (and Table 1) for more information. ***, **, and * respectively indicate that the estimated coefficient is significant at the 1%, 5%, and 10% level.

Dependent variable	(A) *Who_knows_4* (ordered probit)				(B) *Who_decides_4* (ordered probit)			
	Coef.	Robust std. err.	z	P>|z|	Coef.	Robust std. err.	z	P>|z|
Bank_asset	-5.48E-09 ***	1.87E-09	-2.93	0.003	-6.42E-09 ***	2.13E-09	-3.01	0.003
Bank_ROA	0.0676	0.1780	0.38	0.704	0.1990 *	0.1199	1.66	0.097
Bank_CA_ratio	0.0481 *	0.0256	1.88	0.060	0.0373 *	0.0223	1.67	0.094
Employee	0.0035 **	0.0016	2.16	0.031	0.0043 ***	0.0014	3.11	0.002
Length	0.0080 ***	0.0031	2.61	0.009	0.0108 ***	0.0028	3.82	0.000
Score	0.0273 ***	0.0085	3.19	0.001	0.0113	0.0076	1.48	0.139
Number_of_Banks	0.0027	0.0227	0.12	0.904	0.0412 *	0.0222	1.86	0.063
Firmage	0.0061 ***	0.0019	3.3	0.001	0.0029 *	0.0017	1.72	0.085
D_affiliated	-0.5980 *	0.3096	-1.93	0.053	-0.2230	0.2543	-0.88	0.381
D_associated	-0.0792	0.1665	-0.48	0.634	-0.0486	0.1389	-0.35	0.726
D_redtoblack	0.0524	0.1156	0.45	0.651	-0.0689	0.0959	-0.72	0.472
D_blacktored	0.0679	0.1128	0.6	0.547	-0.0688	0.0987	-0.7	0.486
D_redtored	-0.1046	0.1243	-0.84	0.4	-0.0911	0.1035	-0.88	0.379
Industry dummies	YES				YES			
Prefecture dummies	YES				YES			
Number of obs.	957				1207			
Log pseudo likelihood	-1078.238				-1243.056			
Pseudo R2	0.0678				0.0563			

Table 9 The Number of Levels in the Hierarchy (continued)

Dependent variable	(C)											
	D_attitude (probit)				*D_nodenial* (probit)				*D_notightness* (probit)			
	Coef.	Robust std. err.	z	P>|z|	Coef.	Robust std. err.	z	P>|z|	Coef.	Robust std. err.	z	P>|z|
Authority_distance_4	-0.1268 **	0.0509	-2.49	0.013	-0.2036 ***	0.0739	-2.76	0.006	-0.1102 **	0.0538	-2.05	0.041
Bank_asset	1.89E-09	2.92E-09	0.65	0.517	8.08E-10	3.76E-09	0.22	0.830	-4.24E-10	3.50E-09	-0.12	0.904
Bank_ROA	-0.5077 ***	0.1771	-2.87	0.004	-0.4043 *	0.2205	-1.83	0.067	-0.0147	0.1827	-0.08	0.936
Bank_CA_ratio	0.0352	0.0336	1.05	0.295	0.0714	0.0535	1.33	0.183	-0.0090	0.0340	-0.26	0.791
Employee	0.0041 **	0.0020	2.01	0.044	0.0037	0.0036	1.01	0.312	0.0040	0.0025	1.6	0.109
Length	-0.0091 **	0.0038	-2.4	0.017	-0.0149 ***	0.0053	-2.81	0.005	-0.0059	0.0041	-1.44	0.150
Score	0.0578 ***	0.0117	4.92	0.000	0.0779 ***	0.0163	4.79	0.000	0.0864 ***	0.0127	6.82	0.000
Number_of_Banks	-0.1144 ***	0.0314	-3.64	0.000	-0.1779 ***	0.0468	-3.8	0.000	-0.1353 ***	0.0322	-4.2	0.000
Firmage	-0.0003	0.0026	-0.12	0.908	0.0078 *	0.0046	1.7	0.089	0.0004	0.0028	0.14	0.890
D_affiliated	0.9256 *	0.5238	1.77	0.077	-0.1514	0.5666	-0.27	0.789	0.4836	0.4835	1	0.317
D_associated	0.4486 *	0.2356	1.9	0.057	0.7386 **	0.3726	1.98	0.047	-0.1205	0.2270	-0.53	0.595
D_redtoblack	-0.1094	0.1429	-0.77	0.444	-0.1857	0.2075	-0.89	0.371	-0.5808 ***	0.1487	-3.9	0.000
D_blacktored	0.0243	0.1501	0.16	0.871	-0.0347	0.2421	-0.14	0.886	-0.4060 **	0.1572	-2.58	0.010
D_redtored	-0.4166 ***	0.1469	-2.84	0.005	-0.4713 **	0.2128	-2.22	0.027	-0.7730 ***	0.1517	-5.1	0.000
Intercept	-1.6784 ***	0.6222	-2.7	0.007	-1.7269 ***	0.6275	-2.75	0.006	-1.8151 **	0.8249	-2.2	0.028
Industry dummies	YES				YES				YES			
Prefecture dummies	YES				YES				YES			
Number of obs.	913				724				898			
Log pseudo likelihood	-422.977				-170.227				-372.464			
Pseudo R2	0.1591				0.2453				0.2298			