Bank Size and Lending Relationships in Japan

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Abstract

Current theoretical and empirical research suggests that small banks have a comparative advantage in processing soft information and delivering relationship lending. The most comprehensive analysis of this view found using U.S. data that smaller SMEs borrow from smaller banks and smaller banks have stronger relationships with their borrowers (Berger, Miller, Petersen, Rajan, and Stein 2005) (BMPRS). We employ essentially the same methodology as BMPRS on a unique Japanese data set but our findings are different in interesting ways. Like BMPRS we find that more opaque firms are more likely to borrow from small banks. Unlike BMPRS, however, our methodology allows us to attribute this to the ability of large banks to deliver financial statement lending. Finally, quite unlike BMPRS we do not, on balance, find that small banks have stronger relationships with their SMEs. We offer some speculation on potential explanations for these differences. One possibility is that the credit culture and deployment of SME lending technologies differ in Japan from the U.S. However, we note that strong conclusions cannot be reached without more research.

1. Introduction

There is a general perception in Japan that competition across different types of banks has intensified in the past two decades. It has been reported in the financial press that large banks have encroached on the markets that were once the domain of small banks such as Shinkin banks and credit cooperatives.[1] Large banks have created and introduced new loan products, such as loans collateralized by inventory, non-tangible assets, and accounts receivables, that have been specifically targeted to small- and medium-sized enterprises (SMEs).[2] At the same time the number of small banks in market has been contracting due to bank failures and consolidation.[3] As in other developed economies, these trends raise significant policy questions: Will small banks survive in the future in Japan? If they do not, will some markets become underserved?

Recent academic research suggests that small banks may have an advantage over large banks in providing credit to SMEs. Specifically, this research suggests that large banks and small banks may have different comparative advantages in utilizing different lending technologies. On the one hand, large banks are viewed as having a comparative advantage in underwriting SME loans using *transaction-based lending technologies* that rely on quantitative and transferable information called *hard* information, since they can enjoy scale economies in evaluating such information. On the other hand, small banks are considered to have a comparative advantage in underwriting SME loans

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[1] A recent article for example reports that the uncollateralized and non-guaranteed "bargain-sale loans" of large bank which aim to capture blue-chip SMEs are threatening regional financial institutions ("Ootegin Kousei de Shuueki Kibisiku (Large banks threaten small banks' profits)," the Nikkei Newspaper, January 20, 2004). Another article reports that in response to this, regional financial institutions are increasing uncollateralized loans to SMEs ("Chigin, Shinkin, Mutanpo Yuushi wo Kakudai (Regional banks and Shinkin banks are expanding uncollateralized loans)," the Nikkei Newspaper, August 2, 2005).

[2] See, for example, "Ginko yu-shi ni kawaridane tanpo: chu-sho torihikisaki kaitaku ni chie (unusual collateral for bank loans: beat brains to develop new SME customers)," (Nikkei Newspaper, January 23, 2006).

[3] Yamori (2005) reports the drastic decrease in the number of two types of cooperative banks in Japan: The number of Shinkin banks decreased from 462 in 1980 to 301 in 2005 and that of credit cooperatives decreased from 483 in 1980s to 179 in 2005.

utilizing the *relationship lending technology*, which relies primarily on qualitative non-transferable information called *soft* information.[4] Stein (2002) shows that small banks with simple organizational structures have comparative advantages in producing soft information and thereby excel at providing relationship lending. A number of papers have found empirical evidence consistent with this theory particularly in the U.S. context (e.g., Cole, Goldberg and White 2004, Scott 2004, Berger, Miller, Petersen, Rajan and Stein 2005).

The primary aim of this paper is to investigate whether small banks have this advantage in Japan and, more broadly, what this implies for the future of small banks in the Japanese context. Our methodological approach borrows extensively from Berger, Miller, Petersen, Rajan, and Stein (2005) (hereafter BMPRS), who found that bank-SME relationships are stronger for smaller banks than for larger banks. Specifically, we apply the BMPRS empirical methodology to investigate whether strength of the bank-SME relationship differs by bank size using a unique data set of Japanese SMEs. We are thus able to examine whether the findings of BMPRS and other U.S.-focused studies translate across country borders.

Our analysis, however, is not just a replication of BMPRS using a data set in Japan.   Our data allow us to pursue the issue of bank size and bank-borrower relationships in more depth on one important dimension: information verifiability.   Specifically, unlike data used in U.S. studies such as BMPRS, our data allow us to identify whether an SME has audited financial statements.   The availability of audited financial statements determines whether an SME can receive loans based on what may be one of the most important transactions-based lending technologies that are alternatives to relationship lending: *financial statement lending*.   Our data on information verifiability allows us to extend the BMPRS analysis by investigating whether the importance of relationship strength

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[4] After the seminal works by Petersen and Rajan (1994) and Berger and Udell (1995), enormous effort has been exerted to investigate whether a strong relationship between a bank and an SME brings about benefits, such as a lower interest rate and greater credit availability. See Boot (2000), Ongena and Smith (2000), and Elyasiani and Goldberg (2004), for survey.

and bank size depends on the availability of audited financial statements. That is, unlike BMPRS we can investigate whether bank size and relationship strength matters to financial statement borrowers.

This extension is important because it allows econometrically for the possibility that large banks may underwrite SME loans using both the relationship lending technology and the financial statement lending technology. If large banks can use both technologies, and if small banks are limited to using relationship lending, then there may be a bias against finding that large banks utilize (and are capable of utilizing) relationship lending *if the data cannot distinguish between relationship lending and financial statement lending* (Berger and Udell 2006). This is effectively a bias against rejecting the Stein (2002) model. Thus, a finding (as in BMPRS) that small banks have stronger relationships with their customers than large banks may not necessarily indicate that large banks are at a comparative disadvantage in doing relationship lending. It could, instead, mean that large banks can do *both* relationship lending and financial statement lending while small banks can only do the former. For relationship borrowers of large banks, relationship strength is important. For their financial statement borrowers, relationship strength may not be important. Thus, on average relationship strength would be less important for large banks -- *but not because they are incapable of utilizing relationship lending.*

This alternative interpretation may have important policy implications. Some research has suggested that consolidation is not likely to eliminate small banks because they have a unique advantage in providing relationship lending to SMEs (e.g., DeYoung, Hunter and Udell 2004, Carter, McNulty and Verbrugge 2004). However, if large banks are as good as small banks in providing relationship lending, then small banks do not have a unique advantage and their future viability may be much more tenuous. We can test for this possibility as well.

By way of preview our findings are quite different from BMPRS in interesting ways. Like

BMPRS we find that more opaque firms are more likely to borrow from small banks. Unlike BMPRS, however, our methodology allows us to attribute this finding to the ability of large banks to deliver financial statement lending. Finally, quite unlike BMPRS we do not, on balance, find that small banks have stronger relationships with their SMEs. This holds for most of our measures of relationship strength but not all.

We view that our paper makes two main contributions. First, by conducting a cross-country comparison of the largest and second largest economies we offer some insight as to whether differences in *credit culture* affect market conduct. Our results suggest that they do. In our conclusion we offer some speculation as to why. Second, we offer a significant methodological improvement over other studies of SME credit including BMPRS in that we specifically consider the importance of the availability of verifiable information in the form of audited financial statements. This innovation allows to draw the conclusion above that large banks may have an advantage delivering financial statement lending. This methodological improvement has also been employed in a companion paper in a different context (Kano, Uchida, Udell, and Watanabe 2006), where it was used to investigate whether the benefits of strong bank-firm relationships are affected by information verifiability, bank complexity, and bank competition.

The remaining part of this paper is composed as follows. In the next section, we briefly explain some institutional background of small banks in Japan. In Section 3, we introduce the data and methodology. Section 4 presents the results and their interpretations. The final section concludes the paper with policy implications.

2. Institutional background

The financial services industry in Japan has been segregated since World War II. Within the commercial banking industry, one form of segregation has affected the delivery of large business

loans and loans to SMEs.   On the one hand, Shinkin banks and credit cooperatives, which are both

cooperative banks, are mandated by law to confine their commercial lending to SMEs.   On the

other hand, regional banks and city banks, which are bigger and operate under a different set of

regulations (the Banking Act), have historically focused on bigger businesses, although they had not

been prohibited from carrying on business with SMEs.[5]

The primary aim of this segregation appears to have been to promote expertise from

specialization and to limit competition in order to guarantee profits and to secure the safety and

soundness of the financial sector as a whole.   Due to this segregation, practitioners sometimes

refer to the existence of a "banking ladder" from a firms' point of view, which begins with small

credit cooperatives, progress to a Shinkin bank, then to second-tier regional banks, to regional

banks, and finally reaches to the largest city banks.   As firms grow, they step up this banking

ladder and gain in reputation.   Practitioners sometimes use the term "*sotsugyo* (graduate)" in

describing when a firm transfers from a lower-ladder bank to an upper-ladder bank.[6]

This once clear segregation appears to be collapsing today, however.   As we mentioned in the

introduction, there is an abundance of anecdotal evidence that indicates that the customer base of

different types of banks began to overlap.   In the 1980s, well-performing large and established

firms stopped relying on commercial banks for fund-raising and turned to the capital markets.[7]

Large banks who lost their large business customers turned their focus in response to "blue-chip"

SMEs and individuals.   As a result, commercial banks (especially large banks) dramatically

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[5] Until 1989, another type of bank, the Sogo banks (mutual banks), also existed and operated SME lending.   In 1989, all but one Sogo banks transformed their types and became banks under the Banking Act.   These banks are called second-tier regional banks.

[6] In principle, Shinkin banks and credit cooperatives are allowed to lend to their members only, which also contributes for SMEs to "*sotsugyo*."   To become a member of a Shinkin bank, a firm has to have employees smaller than 300 persons or has capitalization smaller than 900 million yen.   Credit cooperatives have tighter restrictions so that further small firms can only qualify them.

[7] Financial liberalization and the development of the capital market also contributed to this flight from bank loans.   See Hoshi and Kashyap (2001, chapter 7).

increased their loans to SMEs and individuals during this period (see Hoshi and Kashyap 2001, Chapter 8). There are many recent newspaper articles that report that larger banks have targeted and attracted smaller borrowers that used to be the customers of small credit cooperatives or Shinkin banks.[8] The introduction of new loan products appears to have been part of this large bank strategy of targeting SMEs.

Despite these reports of large bank entry into the SME market, recent data show that the duration of the relationship between SMEs and banks in Japan is still so long that firms rarely experience a change in main banks.[9] One possible reconciliation of these seemingly inconsistent pieces of evidence is that the role of small banks as the main bank is still irreplaceable and large banks have not become primary lenders to SMEs. Instead, large banks have become secondary lenders – or what practitioners call "*jun-mein* (quasi-main)" or "*hi-mein* (non-main)" banks. Thus, although large banks have quantitatively increased their SME lending, this does not necessarily mean that they have qualitatively superseded small banks and deprived of their role as "true" main banks.

In summary, anecdotal evidence gives us a mixed view about the future of small banks in Japan. To shed some light on these issues, we now turn to our formal empirical analysis of the role of small banks.

3. Data and Methodology

3.1 Data

Our data set is the same as that of Kano, Uchida, Udell, and Watanabe 2006. This SME data is from the 2002 Survey of the Financial Environment (SFE survey) which was conducted by the

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[8] Interviews with bankers from small banks support this view.
[9] Kano, Uchida, Udell, and Watanabe (2006) report that the average duration is 32.2 years. See SME Agency (2002, 2003, 2004) as well for a long relationship in Japan.

SME Agency of the Government of Japan in November 2002. It contains detailed information about the SMEs' qualitative characteristics, their financial statements, and their relationships with their main bank. The main bank is identified by a question in the survey which directly asks the firm to identify its main bank.

We link the SFE survey data to data on the SMEs' main banks using two different sources. For SMEs whose banks are city and regional banks, we obtain data on their banks from the Nikkei NEEDS Company (Bank) Data File (Nihon Keizai Shimbun, Inc.). For SMEs whose banks are Shinkin banks we obtain data on their banks from the Financial Statement of Shinkin Banks (Kin-yu Tosho Consultant Corporation). Due to the small number of observations, we excluded sample firms for which the main bank is a credit cooperative or is not otherwise a city bank, regional bank or Shinkin bank.

Firms in our sample are on average 47.33 years old, have assets of 3,424 million yen, and employ 103 people. Average firms are therefore medium-sized firms. The distribution of the sample firms by industry is: 36% for Manufacturing, 22% for Construction, 15% for Wholesale, 8% for Services, 6% for Retail, 3% for Transportation, 3% for Real estate, and 6% for other industries. For 25.4% of the sample firms, its main bank is a city bank; for 63.4% of the sample firms, a regional bank is its main bank; and for the remaining sample firms, a Shinkin bank is its main bank.

Below we explain our methodology and the variables used in the analysis. Summary statistics of the variables are found in Table A1.[10]

3.2 Variables and methodology

3.2.1   Determinants of bank size

Hypothesis and main variables

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[10] For more detailed description of the data, see Kano, Uchida, Udell, and Watanabe 2006.

In our first set of tests we ask: "What size of bank do SMEs choose to borrow from?"   Our

methodology here borrows extensively from BMPRS.   If, as Stein (2002) predicts, small banks

have comparative advantages in producing soft information and large banks have comparative

advantages in lending based on hard information, opaque firms would borrow from small banks and

transparent firms would go to large banks.[11]   Our testable hypothesis follows from this prediction:

Transparent firms borrow from large banks and opaque firms borrow from small banks.

The dependent variable in our regressions is bank size as measured by the natural logarithm of

bank assets, log(BTASSET).   The main independent variable is the dummy variable AUDIT,

which equals one if an SME has audited financial statements.   This variable indicates whether

there is hard information about the firm's performance and condition.   This hard information

contained in audited financial statements would make the firm transparent and enable the bank to

underwrite loans utilizing the financial statement lending (Berger and Udell 2006).   Thus, our first

hypothesis predicts that AUDIT should have a significantly positive effect on log(BTASSET).

That is, SMEs that have audited financial statements should choose larger banks that have a

comparative advantage in providing financial statement loans because these loans are based on hard

information.

It is worthwhile noting that BMPRS do not have information on whether the firm's financial

statements are audited.   One of their proxies for hard information is firm asset size.   Their

justification for this proxy is based on a presumption that large firms are more likely to have

verifiable information than small firms are.   We do not have to rely on this assumption because our

variable AUDIT directly and precisely captures the availability of the hard information associated

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[11] Subsequent research has suggested that the mapping implicit in Stein (2002) and other theoretical work between hard information and large firm lending may be overly simplistic. Some transactions-based (i.e., hard information-based) technologies may be well-suited for opaque borrowers such as factoring, leasing and small business credit scoring (Berger and Udell 2006).   For a discussion of this in the Japanese context see Uchida, Udell and Yamori (2006a).   In our analysis we focus on one type of hard information: audited financial statements.

with financial statement lending. For comparability with BMPRS and to control for hard information which is unrelated to financial statement lending, we include as an independent variable log(ASSET), the natural logarithm of the firm's asset, in addition to AUDIT.

In addition to firm size, BMPRS also uses a dummy variable called Records, representing the existence of any sources of financial information, to proxy hard information. This is, however, not a very good proxy for the quality (informativeness) of financial information: it does not contain information about whether this information is in the form of financial statements, whether the financial statements (if there are financial statements) were constructed based on GAAP or whether they were constructed by an independent CPA without verification (i.e., without audit) – much less whether it was verified by the third party in the form of an audit. Critical for analysis is information about the existence of verifiable information about the firm's condition and performance in the form of an audit. Without this information, BMPRS cannot distinguish between relationship lending and financial statement lending.

Control variables

We also use a variety of different control variables.[12] From the firm's financial statements we use current ratio, CURRENT, capital asset ratio, CAPRATIO, and pretax profit margin, PPMARGIN, are calculated and used. FAGE is the age of the firm, EMPLOYEE is the number of employees, LISTED is a dummy variable which takes a value of one if the firm is listed, and a dummy variable OWNER takes a value of one if the entrepreneur of the firm owns more than half shares of the firm. We also use PROPERTY, BUILDING, MACHINERY, VEHICLE, TOOL, and LAND, which represent the fraction of tangible assets in total assets. These variables represent the potential to pledge fixed assets as collateral. Opaque or not, small firms with a high

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[12] See Kano, Uchida, Udell, and Watanabe (2006) for more detailed explanation for these variables.

fraction of these assets may not have to rely on small banks, since even large banks can easily lend based on values of these assets as collateral.[13]

Entrepreneur characteristics are captured by a dummy variable GENDER, which takes a value of one if the entrepreneur is male, a dummy variable HOUSING, which takes a value of one if the entrepreneur has his/her own house, a dummy variable EDUCATION, which represents the entrepreneur's education level, and AGE, the entrepreneur's age.[14] We also use seven industry dummies, CONSTRUCT, TRANSPORT, WHOLESALE, RETAIL, REALESTATE, SERVICE, and OTHER, and eight regional dummies, HOKKAIDO, KITAKANTO, CHUBU, KANSAI, CHUGOKU, SHIKOKU, and KYUSHU. The default is a manufacturing firm in Tokyo area.

3.2.2 Strength of bank relationships

Hypothesis and dependent variables

We then investigate whether bank size matters in determining the strength of the bank-SME relationship. Following BMPRS, we regress bank size as well as variety of control variables on proxies for strength. The fundamental hypothesis we test is: *smaller banks establish stronger relationships with SMEs than large banks do*.

As proxies for the strength of the bank-SME relationships, we take the following five alternative variables which are available from the SFE survey: (1) LENGTH, the length of the relationship between the firm and its main bank; (2) SCOPE, the variable representing the scope of relationships which is constructed by the principal component analysis using the information about the existence or non-existence of five particular transactions between the firm and the main bank;

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[13] Within the paradigm of lending technologies a la Berger and Udell (2006), banks could use alternative transactions-based lending technologies that are associated with these types of assets, i.e., leasing, equipment lending and real estate-based lending.
[14] The variable EDUCATION takes a value of one if the entrepreneur graduated a college, university, or graduate school.

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(3) DISTANCE, a variable representing the physical distance between the firm and the bank branch; (4) CONTACT, a variable representing the frequency of contact between the firm and a loan officer of the main bank; and (5) NOBK, the number of banks that the firm is borrowing from.[15] Data Appendix contains detailed description of how to construct these variables.

Using these five variables, we test our second hypothesis in five different ways. That is, we test whether small banks are likely to (1) have longer SME relationships (a higher value of LENTGH), (2) have relationships with more scope (a higher value of SCOPE), (3) be located closer to their SMEs (a smaller value of DISTANCE), (4) contact their SMEs more frequently (a larger value of CONTACT), (5) lend more exclusively (a smaller value of NOBK).

In this paper we focus on the factors that determine the strength of bank-firm relationships, through which a bank accumulates soft information. Of course, according to the theory of relationship lending, the strength of the relationship ultimately determines the availability and price of credit, i.e., the benefits of the relationship. Thus, we are focusing here in this paper on only the first of the two-stage process. We focus on the second stage in a companion paper Kano, Uchida, Udell, and Watanabe 2006.[16]

Main independent variables

The main independent variable is bank size. We take a natural logarithm of the variable and use log(BTASSET). A finding of a negative coefficient on log(BTASSET) would be consistent with the theoretical argument that small banks have an advantage in relationship lending. In

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[15] Alternative to NOBK, we also tried a dummy variable, EXCLUSIVE, which takes a value of one if the main bank is the sole lender to the firm. It produced very poor results with few significant independent variables, and is thus not reported.

[16] We do not use Trade Credit Paid Late as a dependent variable in our analysis as BMPRS did for two reasons. First, a comparable variable is not available from the survey data. Second, because our focus in this paper is on the determinants of the strength of banking relationships (the first stage of the stage process), we do not examine the benefits of strong relationships (the second stage of the process) including the timing of trade credit payments.

addition, we use AUDIT and interact it with log(BTASSET).   This is to isolate firms that may not have to rely on strong relationships with banks, i.e., financial statement borrowers.   Banks may use alternatives to the relationship lending technology that do not rely on soft information, one of the most important being *financial statement lending*.   It has been argued in the literature that large banks can use the financial statement lending technology because it requires only hard information in the form of audited financial statements (Berger and Udell 2006).   This suggests that relationship would be stronger for borrowers other than financial statement borrowers.   This would imply a negative coefficient on AUDIT.   The cross term of log(BTASSET) and AUDIT allows for a differential affect on audit based on bank size.

It has been argued that large banks have an advantage in processing hard information and a disadvantage in processing soft information -- and vice-versa for small banks (Stein 2002).   This implies that large banks will deliver financial statement lending but not relationship lending and vice-versa for small banks (Berger and Udell 2006).   Our methodology allows for all possibilities including those inconsistent with these propositions: large banks could deliver either relationship lending or financial statement lending and small banks could deliver either relationship lending or financial statement lending.   This kind of analysis was not possible in BMPRS since they did not have a variable corresponding to AUDIT.

Control variables

As in BMPRS we include as controls a variety of bank characteristics other than bank size.[17] BTLOANR is the loan to total asset ratio, BLIQUIDITY is the liquid asset to total asset ratio, BCAPR is the capital asset ratio, BBIS is the BIS capital asset ratio, and BROA_N is the net business profit to total asset ratio.   We also include three dummy variables: ACQUIRE indicates

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[17] Again, see Kano, Uchida, Udell, and Watanabe (2006) for more details.

that a bank was involved in a merger as an acquirer, ACQUIRED indicates that a bank was acquired in a merger, and HELD indicates that the bank is a subsidiary of a bank holding company. We also use two variables representing non-performing loans. BNPL_RATE is a bad loan ratio, and BLOSS is a ratio of loan loss provision to total asset.

4. Results and implications

4.1   Determinants of Bank Size

The results for the bank size regressions are shown in Table 1. Both of our main independent variables, AUDIT and firms asset size are positive and significant, although AUDIT is only significant at the 10% level. The positive coefficient on AUDIT indicates that firms with audited financial statements who can borrow under the financial statement lending, tend to borrow at larger banks. The positive coefficient on firm size indicates that even after controlling for financial statement transparency, larger firms are more likely to borrow from large banks. A similar *size effect* is also reflected in a positively significant coefficient of EMPLOYEE.

The result on firm size is consistent with that of BMPRS in the US context. However, the interpretation is different, since we also have AUDIT as an independent variable which BMPRS did not have. We can interpret our results as (weakly) suggestive that firms whose loans can be underwritten using the financial statement lending technology (AUDIT) are more likely to borrow from larger banks. Having controlled for transparency, we find a separate firm size effect (log(ASSET)) which is likely to be driven by many factors that are unrelated to firm transparency such as legal lending limit/portfolio diversification considerations and large firm product considerations. Because BMPRS cannot disentangle the firm size effect from the transparency/audit effect, they could not draw this inference.

Turning to the other independent variables, listed firms are more likely to borrow from large

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banks. This could also be interpreted as an indication that more transparency is associated with large banks, although this could also capture some nontransparency-driven factors related to size. More educated entrepreneurs are more likely to borrow from large banks, owner managed firms tend to borrow from a smaller bank, and firms in the transportation industry (TRANSPORT) tend to choose bigger banks. We also note that there are some observed regional differences. Specifically, firms located in metropolitan areas (Tokyo (default) or Kansai) tend to borrow from larger banks.

Finally, firms with higher proportion of fixed assets (BUILDING, MACHINERY, VEHICLE and LAND) tend to choose smaller banks. The results on these fixed asset coefficients are slightly surprising. Some research has argued that fixed asset lending (e.g., real-estate based lending and equipment based lending) should be viewed as separate lending technologies when these loans are primarily underwritten based on the appraised value of the assets (Berger and Udell 2006). Given that these are transactions-based lending technologies, we would have expected them to be more frequently associated with larger banks a la Stein (2002). However, it is difficult to draw strong conclusions here because it is possible that these assets were not used in the underwriting process or they were used only as a secondary source of repayment (back-up collateral) in a loan that was primarily underwritten using the relationship lending technology. Without information about the terms of the loan contract, it is not possible to empirically distinguish among these alternative explanations.

4.2 Strength of bank relationships

The results of the determinants of the strength of the bank-SME relationship are shown in Table 2 through Table 6. These tables reflect regressions with differing dependent variables used as a proxy for the relationship strength.

LENGTH

Table 2 shows the regression with the length of the bank-borrower relationship, LENGTH, as the dependent variable. We can see that LENGTH is not associated with bank asset size (BTASSET), AUDIT, or their cross-product. This result on bank asset size is strikingly different from that in BMPRS and can be interpreted as inconsistent with theoretical predictions and empirical evidence that smaller banks have a comparative advantage in processing soft information and delivering relationship lending (e.g., Stein 2002, Carter, McNulty and Verbrugge 2004, Scott 2004, Liberti and Mian 2006).

It might alternatively, however, reflect some idiosyncratic differences between Japan and the U.S. that may dilute LENGTH as a proxy for relationship strength in the Japanese context. Banking relationships in Japan for example appear to be dramatically longer than in the U.S: the average banking relationship for an SME in our data for Japan is 32.2 years, while the relationship reported in BMPRS is only 8.7 years. This suggests the possibility that frictions or other factors in the Japanese context might discourage switching banks that are unrelated to the production of soft information.[18]

Kano, Uchida, Udell, and Watanabe (2006) suggest another possibility. Using the same data set as that of the present paper, they report that a longer bank-borrower relationship leads to a lower loan interest rate only when a Shinkin (small) bank under intense competition lends to an unaudited SME. Thus, if we interact AUDIT and some proxy for the degree of bank competition with BTASSET, we might find negatively significant effect. In future revisions we plan to pursue this extension.

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[18] These differences or frictions could fall under the broad rubric of differences in the social environment. For a brief summary of the literature in this area see Berger and Udell (2006).

SCOPE

Table 3 shows the regression with the scope of the bank-borrower relationship, SCOPE, as the dependent variable. Similar to the case of the LENGTH regression, this table also shows that bank size and audited financial statements are not associated with the strength of the banking relationship in terms of its scope. We cannot compare this result across countries since BMPRS do not have a corresponding dependent variable. However, the result is in line with the loan interest rate regression of Kano, Uchida, Udell, and Watanabe (2006), which reflects no association between SCOPE and the interest rate.

DISTANCE

When distance is used as our measure of strength we find some evidence that bank size matters. However, it matters in a way that is inconsistent with BMPRS and theoretical and empirical findings that small banks have a comparative advantage in relationship lending. Specifically, Table 4 shows that a bigger bank tends to be located closer to their SME (the coefficient of log(BTASSET). The effect is offset, however, for firms with audited financial statements whose loans may be underwritten using the financial statement lending technology (the coefficient of the cross term AUDIT*log(BTASSET). On balance, DISTANCE is greater when a small bank lends than when a large bank lends, although this relationship is more powerful when the SME does not have audited financial statements.

One plausible alternative interpretation of the bank size result that could reconcile the findings here with BMPRS is that DISTANCE may be affected by the size distribution of banks in SME markets. In Japan, large banks tend to have many branch offices in city centers, whereas small banks are often spread out in the country side. This could contribute to the difference in average physical distance across large and small banks. To isolate this concentration factor, BMPRS use

several control variables to represent the geographical distribution of large banks and small banks. These same kinds of control variables will be introduced when we extend this analysis in future revisions of this paper.

CONTACT

Next, Table 5 shows our regression that uses frequency of contact as our measure of strength. The results show that a smaller bank has more frequent contact with a borrower, which is consistent with the US result. Interestingly, small banks establish stronger relationships irrespective of the existence or non-existence of audited financial statements. They frequently visit borrowers even when the SME has audited statements. These results are, however, inconsistent with our results for DISTANCE. Unlike our previous findings on DISTANCE, the results here on CONTACT imply that small banks try to establish stronger relationships with borrowers by having frequent contact. Arguably frequency of contact is the better proxy for relationship closeness to the extent that the production of soft information comes from personal interaction with the borrower. This argues that smaller banks develop stronger relationships with their SME customers and that they visit their SMEs more frequently than large banks to collect information *in spite of their being located on average at a longer distance*. The seeming inconsistency of these two variables may also stem, as indicated above, from the DISTANCE result being biased by a geographical distribution of banks.

NOBK

Finally, in our last regression we use the number of banks (NOBK) as our measure of strength. In this regression (Table 6), log(BTASSET) is not significant while AUDIT is significant. Turning first to the log(BTASSET) variable, the insignificance of the coefficient is inconsistent with the

findings in BMPRS (although the sign in our regression is consistent) and, again, more generally fails to support theoretical and empirical work that indicates that small banks should have stronger relationships with their borrowers given their ability to process soft information.

With respect to AUDIT, a firm with audited financial statements is likely to borrow from a smaller number of banks. As the coefficient of AUDIT*log(BTASSET) shows, however, the effect is diminished for larger banks. Taken together, a firm with audited financial statements is likely to have stronger banking relationships in terms of the number of lending banks, although the effect is smaller if its main bank is large.

The result on AUDIT is not comparable to findings in BMPRS because they do not have data on whether financial statements are audited. More generally, however, this result is inconsistent with theoretical and empirical findings elsewhere on relationship lending versus transactions lending. On the on hand, because relationship lending requires soft information, existing theory suggests that AUDIT=0 should be associated with stronger relationships. On the other hand, because financial statement lending requires hard information (i.e., because financial statement lending is transactions-based), existing theory suggests that AUDIT=1 be associated with weaker relationships. Our results on NOBK are inconsistent with these hypotheses.

This result along with some of the other results above that are inconsistent with BMPRS cast some doubt on the nature and importance of relationship lending in the Japanese SME loan market. These findings would be consistent with the recent contention that Japanese banks are not particularly good at monitoring and screening borrowers, that they do not emphasize relationship lending, and may in fact be inferior relationship lenders to trade creditors (Miwa and Ramseyer 2006, Uchida, Udell and Watanabe 2006, and Uchida, Udell and Yamori 2006).

5. Conclusion

In this paper we investigate the link between banking relationships and bank size in the Japanese SME commercial loan market. Our methodological approach is very similar to Berger, Miller, Petersen, Rajan, and Stein (2005) (BMPRS). This allows to shed light on potential similarities and differences between commercial lending practices in the largest commercial markets in the world. Our unique Japanese data set also allows to investigate some issues that BMPRS were unable to address because of limitations in their data.

Recent theoretical and empirical work has drawn some clear distinctions between relationship lending and transactions lending. A key distinction in the literature focuses on the comparative advantages and disadvantages of large and small banks. On balance this literature argues that larger banks because of their scale have an advantage in delivering transactions-based lending to SMEs because this type of lending involves processing hard information. This literature also argues that small banks have an advantage in processing soft information because soft information depreciates as it is passed through the hierarchical structure of large banks. In the only comprehensive test of the link between banks size and SME banking relationships, BMPRS found evidence consistent with this view in the U.S. context. Specifically, they found evidence that transparent firms are more likely to borrow from large banks and smaller banks are more likely to have stronger relationships with their borrowers. Moreover, their findings on the latter issue were quite robust to different specifications.

On balance our findings are mostly inconsistent with the findings in BMPRS and more generally inconsistent with the view that small banks are at a comparative advantage in providing relationship lending. In most of our tests of the association between bank size and relationship strength we did not find that smaller banks had stronger relationships although these tests were not entirely robust. Specifically, we found that lending relationships were not longer nor was their scope greater for small banks. Moreover, we found that banking relationships were no more

exclusive for small banks than large banks (unless the firm had audited financial statements), and that distance between SMEs and their banks was actually *longer* for small banks than large banks. Only when we measured relationship strength in terms of contact frequency did we find that smaller banks have stronger relationships with their SMEs

However, consistent with BMPRS we found that larger firms were more likely to borrow from larger banks. BMPRS interpret this result as evidence that more transparent firms migrate to larger banks. While this interpretation of theirs is consistent with a transparency explanation, the positive association between firm size and banks size is also consistent with other explanations including bank diversification and legal limit explanations -- small banks avoid large commercial loans because they lead to undiversified loan portfolios. We can avoid this problem because unlike BMPRS we include a dummy variable for whether the SME has audited financial statements, which both make the SME transparent and enable it to obtain transactions based financing in the form of financial statement lending. Our results show that although large firms tend to borrow from large banks as BMPRS demonstrated, it is not only because large firms are financial statement borrowers. We find that whether they are audited or not large firms borrow from large banks. We also find that *irrespective of their size*, audited firms are more likely to go to larger banks suggesting that larger banks are more likely to deliver financial statement lending.

Thus, on the one hand, our results (from the first stage of the analysis) provide a stronger indication than BMPRS that large banks deliver financial statement lending. However, on the other hand, our results (from the second stage of the analysis) do not reflect compelling evidence that small banks in Japan have stronger relationships. There are several possible interpretations of this. First, our results could simply be viewed as contradicting the theoretical prediction and empirical findings in other countries that large banks are disadvantaged in providing relationship lending. This interpretation has an important policy implication. It would suggest that concerns

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about the disappearance of small banks through consolidation are misplaced. If small banks do not have a unique ability to deliver relationship lending, then their disappearance *ceteris paribus* would not affect SME credit availability.

Second, our variables may not be sufficiently powerful proxies in general for relationship strength. The problem with this interpretation is that our variables are very close to the same variables used elsewhere, particularly BMPRS, and out findings are strikingly different from BMPRS. As we note above there are some differences in our model structure from BMPRS which we intend to explore further. Firmer conclusions await further investigation of these differences.

Third, our results suggest the possibility that Japan may indeed be different than the U.S. in ways that would explain the differences in our results versus BMPRS. This possibility clearly begs for more research on the Japanese SME loan market. One potential explanation is that the Japanese and American credit cultures are quite different. Possibly the relative deployment of lending technologies across these two markets and the distinctions among lending technologies may be quite different. Possibly banks in Japan rely far more on fixed asset collateral, particularly real estate, than in the U.S. To the extent that this displaces relationship lending, this could bias our analysis against finding a link between bank size and relationship strength if relationship strength only matters for the relatively small amount of non-real estate based loans. This also dovetails with recent findings elsewhere that suggest that relationship lending may be limited in Japan. Taken together these recent papers contend that Japanese banks are not particularly good at monitoring and screening borrowers, that they do not emphasize relationship lending, and may in fact be inferior relationship lenders to trade creditors (Miwa and Ramseyer 2006, Uchida, Udell and Watanabe 2006, and Uchida, Udell and Yamori 2006b).

Another possibility is that the social environment is substantially different in Japan and the U.S. If, for example, the level of social capital and trust is higher in Japan than in the U.S., this may

affect the writing and enforcement of financial contracts. This importance of social capital in explaining regional or cross-country differences in financial contracting has been demonstrated in related contexts (Stulz and Williamson 2003, Guiso, Sapienza, and Zingales 2004). It could also make it easier in Japan to conduct relationship lending in the sense of requiring less production of soft information. This in turn would lead to less emphasis on relationship strength. This is clearly speculation on our part, however. More research in this area is certainly needed.

Data Appendix: Construction of proxies for the strength of bank-SME relationships

1. LENGTH

This variable represents how many years the firm and its main bank have transactional relationships. The relevant question in the SFE survey considers the existence of not lending relationship only but broader relationships.

2. SCOPE

This variable is the first principal component of the principal component analysis over five dummy variables representing the existence or non-existence of a particular transaction between the firm and the main bank. The five dummy variables are created based on the following five questions: (i) whether the SME has a checking account at the main bank, (ii) whether the SME settles notes payables at the main bank, (iii) whether the SME has recently purchased stock in its main bank, (iv) whether the SME has obtained some information services from the main bank, and (v) whether the SME has time deposits at the main bank.

3. DISTANCE

Since the original question in the SFE survey only gives us multi-nominal information, we

constructed DISTANCE as follows: It takes a value of 0.25 if the firm answered that the distance is no greater than 500m, 0.75 if the distance is greater than 500m and no greater than 1km, 5.5 if it is greater than 1km and no greater than 10km, 20 if it is greater than 10km and no greater than 30km, 40 if it is greater than 30km and no greater than 50km, and 75 if it is greater than 50km.

4. CONTACT

The original question in the SFE survey only asks firms to choose from nine categorical options. We thus constructed CONTACT as follows: It takes a value of 365 if the frequency of contact between the firm and the loan officer of the main bank is answered once a day, 52 if the frequency is once a week, 26 if it is once in two weeks, 12 if it is once a month, 6 if it is once in two months, 4 if it is once in three months, 2 if it is once in a half year, 1 if it is once a year, and 0 if no contact has been made in the past one year.

5. NOBK

NOBK is the number of lender institutions including non-banks that a respondent firm borrows from.

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Table A1: Descriptive statistics

	N	Mean	Std. Dev.	Min	Max
BTASSET (million yen)	1960	20100000	32300000	42824	102000000
ASSET (thondsand yen)	1960	3423718	6995780	2337	88000000
LENGTH (year)	1960	32.196	15.770	1	99
SCOPE	1960	0.000	1.273	-4.450	1.625
NOBK	1960	3.165	3.818	0	99
DISTANCE	1889	6.144	9.661	0.250	75
CONTACT	1908	46.483	84.649	0	365
AUDIT	1960	0.588	0.492	0	1
CURRENT	1960	1.723	6.767	0.078	290.959
CAPRATIO	1960	0.257	0.290	-4.761	0.969
PPMARGIN	1960	0.010	0.087	-1.513	1.452
BUILDING	1960	0.107	0.119	-0.025	0.892
MACHINERY	1960	0.050	0.097	-0.046	0.775
VEHICLE	1960	0.009	0.034	-0.004	0.545
TOOL	1960	0.009	0.020	0.000	0.504
LAND	1960	0.136	0.127	0.000	0.842
FAGE (year)	1960	47.332	26.000	3	378
EMPLOYEE (person)	1960	103.200	447.529	2	17417
LISTED	1960	0.033	0.179	0	1
OWNER	1960	0.431	0.495	0	1
GENDER	1960	0.983	0.129	0	1
HOUSING	1960	0.891	0.312	0	1
EDUCATION	1960	0.619	0.486	0	1
AGE (year)	1960	59.084	9.415	29	95
CONSTRUCT	1960	0.222	0.416	0	1
TRANSPORT	1960	0.028	0.164	0	1
WHOLESALE	1960	0.154	0.361	0	1
RETAIL	1960	0.064	0.245	0	1
REALESTATE	1960	0.027	0.162	0	1
SERVICE	1960	0.081	0.273	0	1
OTHER	1960	0.063	0.243	0	1
HOKKAIDO	1960	0.082	0.275	0	1
TOHOKU	1960	0.126	0.332	0	1
KITAKANTO	1960	0.034	0.180	0	1
CHUBU	1960	0.232	0.422	0	1
KANSAI	1960	0.145	0.352	0	1
CHUGOKU	1960	0.078	0.268	0	1
SHIKOKU	1960	0.052	0.221	0	1
KYUSHU	1960	0.076	0.265	0	1
BTLOANR	1960	0.635	0.074	0.383	0.836
BLIQUIDITY	1960	0.300	0.068	0.140	0.616
BCAPR	1960	0.039	0.012	0.016	0.105
BBIS	1960	0.100	0.019	0.046	0.206
BROA N	1960	0.006	0.002	-0.005	0.015
ACQUIRE	1960	0.067	0.251	0	1
ACQUIRED	1960	0.134	0.340	0	1
HELD	1960	0.301	0.459	0	1
BNPL RATE	1960	0.055	0.021	0.012	0.151
BLOSS	1960	-0.022	0.037	-0.4434	-0.0009

Table 1. Bank choice
(Dependent variable = ln(BTASSET))

		Coefficient		Robust standard error	P-value
Intercept	Intercept	14.8132	***	0.4373	0.000
Main independent variables	**AUDIT**	**0.5541**	*	**0.3248**	**0.088**
	log(ASSET)	**0.1791**	***	**0.0392**	**0.000**
	AUDIT*log(ASSET)	**-0.0635**		**0.0449**	**0.158**
Firm's financial numbers	CURRENT	-0.0016		0.0019	0.392
	CAPRATIO	0.3234	**	0.1321	0.014
	PPMARGIN	0.0663		0.4015	0.869
Firm's characteristics	BUILDING	-0.5073	*	0.2593	0.051
	MACHINERY	-0.9752	***	0.3228	0.003
	VEHICLE	-2.3070	**	1.0737	0.032
	TOOL	-1.8677		1.2197	0.126
	LAND	-0.8758	***	0.2607	0.001
	FAGE	0.0014		0.0021	0.517
	FAGE2	0.0000		0.0000	0.823
	EMPLOYEE	0.0001	***	0.0000	0.000
	LISTED	0.5053	***	0.1704	0.003
	OWNER	-0.2491	***	0.0671	0.000
Entrepreneur's characteristics	GENDER	0.1304		0.2325	0.575
	HOUSING	-0.1302		0.0969	0.179
	EDUCATION	0.3965	***	0.0694	0.000
	AGE	0.0076	**	0.0033	0.023
Industry dummies	CONSTRUCT	-0.1346		0.0851	0.114
	TRANSPORT	0.4230	**	0.2022	0.037
	WHOLESALE	0.0617		0.0982	0.530
	RETAIL	-0.0125		0.1138	0.913
	REALESTATE	-0.3046		0.2188	0.164
	SERVICE	0.0154		0.1216	0.899
	OTHER	0.1966		0.1257	0.118
Regional dummies	HOKKAIDO	-1.9965	***	0.1423	0.000
	TOHOKU	-2.2393	***	0.1167	0.000
	KITAKANTO	-1.0308	***	0.1634	0.000
	CHUBU	-1.4663	***	0.1069	0.000
	KANSAI	-0.1374		0.1267	0.278
	CHUGOKU	-1.6643	***	0.1278	0.000
	SHIKOKU	-1.4951	***	0.1211	0.000
	KYUSYU	-1.8628	***	0.1211	0.000
Number of observation		1960			
F-value		41.5300			
Prob (F value)		0.0000			
R-squared		0.4091			

Note: ***, **, or * means that the coefficient is statistically significant at 1%, 5%, or 10% level.

Table 2. Determinants of relationship closeness
(Dependent variable = LENGTH)

		Coefficient		Robust standard error	P-value
Intercept	Intercept	-5.6364		14.0489	0.688
Main independent variables	**AUDIT**	**-3.0844**		**5.0015**	**0.538**
	log(BTASSET)	**-0.1181**		**0.4395**	**0.788**
	AUDIT*log(BTASSET)	**0.1982**		**0.3258**	**0.543**
Firm's financial numbers	log(ASSET)	0.9694	***	0.2257	0.000
	CURRENT	-0.0973	***	0.0194	0.000
	CAPRATIO	2.8128	***	0.8008	0.000
	PPMARGIN	-7.3633	***	2.5128	0.003
Firm's characteristics	BUILDING	0.5752		2.4421	0.814
	MACHINERY	-0.9613		2.4078	0.690
	VEHICLE	-0.8020		8.3448	0.923
	TOOL	-5.8956		13.2200	0.656
	LAND	0.9983		2.0907	0.633
	FAGE	0.5734	***	0.0505	0.000
	FAGE2	-0.0016	***	0.0004	0.000
	EMPLOYEE	0.0014	***	0.0005	0.009
	LISTED	1.8454		2.0525	0.369
	OWNER	-0.8179		0.5757	0.156
Entrepreneur's characteristics	GENDER	1.7182		1.7527	0.327
	HOUSING	1.5455	*	0.8833	0.080
	EDUCATION	0.8117		0.5972	0.174
	AGE	0.1168	***	0.0306	0.000
Industry dummies	CONSTRUCT	-1.1052		0.7307	0.131
	TRANSPORT	-1.3011		1.8740	0.488
	WHOLESALE	0.6055		0.8887	0.496
	RETAIL	-0.8914		1.2580	0.479
	REALESTATE	-1.6979		1.4555	0.244
	SERVICE	-2.2355	**	0.9614	0.020
	OTHER	-1.6397		1.0956	0.135
Regional dummies	HOKKAIDO	0.2009		1.3540	0.882
	TOHOKU	3.1591	***	1.1570	0.006
	KITAKANTO	2.8819	**	1.4156	0.042
	CHUBU	2.1021	**	0.9978	0.035
	KANSAI	1.4011		1.0472	0.181
	CHUGOKU	2.9136	**	1.3135	0.027
	SHIKOKU	3.2974	**	1.4542	0.023
	KYUSYU	3.5130	***	1.2799	0.006
Bank characteristics	BTLOANR	-2.6651		10.7340	0.804
	BLIQUIDITY	-4.4663		12.0983	0.712
	BCAPR	105.4783		128.0528	0.410
	BCAPR^2	-998.8306		1396.1310	0.474
	BBIS	-42.1557		44.4736	0.343
	BBIS^2	390.8340	**	170.3497	0.022
	BROA_N	-122.2098		132.5798	0.357
	ACQUIRE	0.7621		1.3458	0.571
	ACQUIRED	0.9789		1.1820	0.408
	HELD	-2.3901	**	1.1798	0.043
	BNPL_RATE	1.9431		17.9070	0.914
	BLOSS	12.2044		7.7744	0.117
Number of observation		1960			
F-value		30.2600			
Prob (F value)		0.0000			
R-squared		0.4638			

Note: ***, **, or * means that the coefficient is statistically significant at 1%, 5%, or 10% level.

Table 3. Determinants of relationship closeness
(Dependent variable = SCOPE)

		Coefficient		Robust standard error	P-value
Intercept	Intercept	-0.0751		1.3959	0.957
Main independent variables	**AUDIT**	**0.4315**		**0.4852**	**0.374**
	log(BTASSET)	**-0.0354**		**0.0439**	**0.421**
	AUDIT*log(BTASSET)	**-0.0242**		**0.0311**	**0.437**
Firm's financial numbers	log(ASSET)	0.1469	***	0.0224	0.000
	CURRENT	-0.0044		0.0056	0.438
	CAPRATIO	-0.0933		0.1708	0.585
	PPMARGIN	0.4498		0.2783	0.106
Firm's characteristics	BUILDING	-0.5763	**	0.2664	0.031
	MACHINERY	0.5496	**	0.3210	0.087
	VEHICLE	0.1119		1.0411	0.914
	TOOL	-1.5640		1.1001	0.155
	LAND	0.5786	**	0.2359	0.014
	FAGE	0.0222	***	0.0027	0.000
	FAGE2	-0.0001	***	0.0000	0.000
	EMPLOYEE	-0.0002	***	0.0001	0.006
	LISTED	-0.3846	**	0.1622	0.018
	OWNER	0.0890		0.0570	0.119
Entrepreneur's characteristics	GENDER	-0.0649		0.2057	0.752
	HOUSING	0.0244		0.0824	0.767
	EDUCATION	-0.0999		0.0622	0.109
	AGE	-0.0020		0.0029	0.499
Industry dummies	CONSTRUCT	-0.0710		0.0746	0.341
	TRANSPORT	-0.5228	**	0.2286	0.022
	WHOLESALE	-0.0619		0.0809	0.444
	RETAIL	-0.3680	***	0.1049	0.000
	REALESTATE	-0.8279	***	0.1886	0.000
	SERVICE	-0.5832	***	0.1272	0.000
	OTHER	-0.5616	***	0.1385	0.000
Regional dummies	HOKKAIDO	0.2160		0.1483	0.146
	TOHOKU	0.1357		0.1200	0.258
	KITAKANTO	-0.1612		0.1763	0.361
	CHUBU	0.2180	**	0.0931	0.019
	KANSAI	0.1510	*	0.0910	0.097
	CHUGOKU	0.1473		0.1250	0.239
	SHIKOKU	0.1995		0.1319	0.131
	KYUSYU	0.1907		0.1284	0.138
Bank characteristics	BTLOANR	-0.1005		1.0565	0.924
	BLIQUIDITY	-0.4424		1.1945	0.711
	BCAPR	-9.3175		12.8111	0.467
	BCAPR^2	124.9498		132.2739	0.345
	BBIS	-12.9192	***	4.6664	0.006
	BBIS^2	36.8953	**	18.3708	0.045
	BROA_N	18.2607		14.6678	0.213
	ACQUIRE	0.3737	***	0.1193	0.002
	ACQUIRED	-0.0022		0.1122	0.984
	HELD	-0.0995		0.1246	0.425
	BNPL_RATE	1.1796		1.8340	0.520
	BLOSS	-0.1376		0.6941	0.843
Number of observation		1960			
F-value		8.7900			
Prob (F value)		0.0000			
R-squared		0.1976			

Note: ***, **, or * means that the coefficient is statistically significant at 1%, 5%, or 10% level.

Table 4. Determinants of relationship closeness
(Dependent variable = DISTANCE)

		Coefficient		Robust standard error	P-value
Intercept	Intercept	33.6637	**	14.4185	0.020
Main independent variables	**AUDIT**	**-7.2610**		**4.4480**	**0.103**
	log(BTASSET)	**-0.7994**	**	**0.3615**	**0.027**
	AUDIT*log(BTASSET)	**0.5056**	*	**0.2960**	**0.088**
Firm's financial numbers	log(ASSET)	0.4013	*	0.2215	0.070
	CURRENT	0.1070	***	0.0157	0.000
	CAPRATIO	-0.9732		0.7523	0.196
	PPMARGIN	-3.9901		3.1593	0.207
Firm's characteristics	BUILDING	6.2531	**	2.7255	0.022
	MACHINERY	0.3900		2.0675	0.850
	VEHICLE	0.5341		4.9740	0.915
	TOOL	55.3563	***	19.9018	0.005
	LAND	1.4931		1.6363	0.362
	FAGE	-0.0226		0.0150	0.133
	FAGE2	0.0000		0.0001	0.761
	EMPLOYEE	0.0002		0.0007	0.772
	LISTED	0.1372		1.9135	0.943
	OWNER	-0.7409	*	0.3963	0.062
Entrepreneur's characteristics	GENDER	-0.3249		1.3147	0.805
	HOUSING	0.4092		0.7066	0.563
	EDUCATION	0.2497		0.4357	0.567
	AGE	-0.0682	***	0.0214	0.001
Industry dummies	CONSTRUCT	-2.4873	***	0.5278	0.000
	TRANSPORT	-1.7277		1.6326	0.290
	WHOLESALE	-3.1979	***	0.5409	0.000
	RETAIL	-4.3820	***	0.6650	0.000
	REALESTATE	-2.3168		1.9176	0.227
	SERVICE	-3.4086	***	0.8836	0.000
	OTHER	-3.0639	***	1.1514	0.008
Regional dummies	HOKKAIDO	0.3083		1.0110	0.760
	TOHOKU	1.0848		0.9820	0.269
	KITAKANTO	4.5136	*	2.3843	0.059
	CHUBU	1.9020	*	1.0124	0.060
	KANSAI	0.4731		0.8442	0.575
	CHUGOKU	3.2911	**	1.2692	0.010
	SHIKOKU	2.3832		1.5806	0.132
	KYUSYU	1.3314		0.9672	0.169
Bank characteristics	BTLOANR	-18.9979	*	11.2163	0.090
	BLIQUIDITY	-20.5395	*	10.7826	0.057
	BCAPR	62.0536		78.0154	0.426
	BCAPR^2	-1241.9730		849.8758	0.144
	BBIS	24.9664		36.4057	0.493
	BBIS^2	53.0214		160.9945	0.742
	BROA N	45.9319		86.8819	0.597
	ACQUIRE	1.3633		1.2474	0.275
	ACQUIRED	0.3504		1.0460	0.738
	HELD	1.8475		1.1377	0.105
	BNPL RATE	-2.9236		15.2394	0.848
	BLOSS	-4.5945		5.8052	0.429
Number of observation		1889			
F-value		3.7500			
Prob (F value)		0.0000			
R-squared		0.1042			

Note: ***, **, or * means that the coefficient is statistically significant at 1%, 5%, or 10% level.

Table 5. Determinants of relationship closeness
(Dependent variable = CONTACT)

		Coefficient		Robust standard error	P-value
Intercept	Intercept	117.7945		102.4388	0.250
Main independent variables	**AUDIT**	**18.6599**		**36.3748**	**0.608**
	log(BTASSET)	**-8.0666**	**	**3.6910**	**0.029**
	AUDIT*log(BTASSET)	**-0.9875**		**2.2654**	**0.663**
Firm's financial numbers	log(ASSET)	5.8481	***	1.4616	0.000
	CURRENT	-0.1091		0.1481	0.461
	CAPRATIO	-12.8462	**	6.3985	0.045
	PPMARGIN	53.3149	**	24.6037	0.030
Firm's characteristics	BUILDING	-19.9071		13.9139	0.153
	MACHINERY	-19.4153		17.5931	0.270
	VEHICLE	53.6815		46.4878	0.248
	TOOL	90.7792		105.0385	0.388
	LAND	-4.5450		14.4937	0.754
	FAGE	0.4754	***	0.1358	0.000
	FAGE2	-0.0016	***	0.0005	0.004
	EMPLOYEE	0.0026		0.0019	0.170
	LISTED	30.4991	**	13.8322	0.028
	OWNER	8.8723	**	4.1907	0.034
Entrepreneur's characteristics	GENDER	16.8157		12.1125	0.165
	HOUSING	7.8199		5.7607	0.175
	EDUCATION	-5.4854		4.2818	0.200
	AGE	-0.2877		0.2073	0.165
Industry dummies	CONSTRUCT	-8.7499		5.5307	0.114
	TRANSPORT	-8.0578		12.6777	0.525
	WHOLESALE	-0.9367		6.6011	0.887
	RETAIL	-15.0079	*	7.8267	0.055
	REALESTATE	-3.1288		13.1387	0.812
	SERVICE	-20.2087	***	5.7602	0.000
	OTHER	-21.4988	***	7.0647	0.002
Regional dummies	HOKKAIDO	-11.1751		9.4353	0.236
	TOHOKU	-4.8651		7.7918	0.532
	KITAKANTO	-13.4503		9.3126	0.149
	CHUBU	-1.4275		6.7012	0.831
	KANSAI	-5.1736		6.0202	0.390
	CHUGOKU	13.4910		10.5046	0.199
	SHIKOKU	15.3806		12.5445	0.220
	KYUSYU	-0.0431		8.7790	0.996
Bank characteristics	BTLOANR	50.3394		74.1708	0.497
	BLIQUIDITY	15.6914		88.8928	0.860
	BCAPR	-504.1973		1279.2390	0.694
	BCAPR^2	9996.0080		14068.7700	0.477
	BBIS	-854.6951	**	344.6993	0.013
	BBIS^2	3598.1080	**	1400.7590	0.010
	BROA N	2307.0770	*	1220.8320	0.059
	ACQUIRE	17.2936	*	9.2086	0.061
	ACQUIRED	9.7373		6.8211	0.154
	HELD	4.7760		9.2615	0.606
	BNPL RATE	-154.1369		139.1466	0.268
	BLOSS	41.2167		45.7561	0.368

Number of observation	1908
F-value	2.7000
Prob (F value)	0.0000
R-squared	0.0759

Note: ***, **, or * means that the coefficient is statistically significant at 1%, 5%, or 10% level.

Table 6. Determinants of relationship closeness
(Dependent variable = NOBK)

		Coefficient		Robust standard error	P-value
Intercept	Intercept	-5.6580		5.1427	0.271
Main independent variables	**AUDIT**	**-2.0501**	**	**1.0305**	**0.047**
	log(BTASSET)	**0.1214**		**0.1050**	**0.248**
	AUDIT*log(BTASSET)	**0.1391**	**	**0.0678**	**0.040**
Firm's financial numbers	log(ASSET)	0.2337	***	0.0849	0.006
	CURRENT	-0.0081	**	0.0041	0.048
	CAPRATIO	-1.3222	***	0.3642	0.000
	PPMARGIN	-0.3538		1.0498	0.736
Firm's characteristics	BUILDING	-0.9269		0.7447	0.213
	MACHINERY	0.5463		0.7107	0.442
	VEHICLE	-3.9949	***	1.3481	0.003
	TOOL	6.2549		7.3395	0.394
	LAND	0.9515		0.8718	0.275
	FAGE	-0.0002		0.0057	0.975
	FAGE2	0.0000		0.0000	0.156
	EMPLOYEE	0.0018	*	0.0009	0.049
	LISTED	1.6931	**	0.6585	0.010
	OWNER	-0.4948	**	0.2209	0.025
Entrepreneur's characteristics	GENDER	-0.1401		0.3778	0.711
	HOUSING	0.3259		0.2480	0.189
	EDUCATION	-0.0068		0.1779	0.969
	AGE	0.0090		0.0092	0.328
Industry dummies	CONSTRUCT	0.2035		0.1920	0.289
	TRANSPORT	0.0768		0.3780	0.839
	WHOLESALE	0.3172		0.2215	0.152
	RETAIL	1.0782		0.7643	0.159
	REALESTATE	1.5650	***	0.4937	0.002
	SERVICE	0.1414		0.2395	0.555
	OTHER	0.8728	**	0.3743	0.020
Regional dummies	HOKKAIDO	-0.3339		0.5910	0.572
	TOHOKU	-0.5403	*	0.3056	0.077
	KITAKANTO	-0.8406	**	0.3918	0.032
	CHUBU	-0.7040	**	0.2741	0.010
	KANSAI	-0.1137		0.2717	0.676
	CHUGOKU	-0.0937		0.3481	0.788
	SHIKOKU	-0.2036		0.4348	0.640
	KYUSYU	-0.0038		0.3539	0.992
Bank characteristics	BTLOANR	6.6699		4.5674	0.144
	BLIQUIDITY	2.9970		5.1313	0.559
	BCAPR	-26.8765		35.6220	0.451
	BCAPR^2	278.5441		380.4537	0.464
	BBIS	7.5794		10.5952	0.474
	BBIS^2	-48.4740		57.2413	0.397
	BROA_N	-2.1353		39.4025	0.957
	ACQUIRE	-0.4204		0.3489	0.228
	ACQUIRED	-0.6172	*	0.3648	0.091
	HELD	0.9674		0.6132	0.115
	BNPL_RATE	-3.6037		5.0876	0.479
	BLOSS	-1.0192		2.9090	0.726
Number of observation		1960			
F-value		10.8100			
Prob (F value)		0.0000			
R-squared		0.1691			

Note: ***, **, or * means that the coefficient is statistically significant at 1%, 5%, or 10% level.