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# Loan Officers and Relationship Lending

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# Loan Officers and Relationship Lending[†]

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**Abstract**

Theoretical and empirical work suggests that commercial loan officers play a critical role in relationship lending by producing soft information about their SME borrowers. We test whether loan officers in the Japanese SME loan market perform this role in a manner that is consistent with the theoretical predictions in the relationship lending literature. While we find limited evidence that soft information may benefit SME borrowers, we do not find evidence that is on balance consistent with theoretical predictions that loan officers produce soft information that is not easily transmitted to others within the bank. These results are consistent with alternative explanations including the possibility that the social environment in Japan leads to a credit culture where it is easier to transmit soft information from one loan officer to another. It could also be consistent with the possibility that the relationship lending may not be particularly important in the Japanese SME loan market.

**Keywords**: Relationship lending, Small- and medium-sized enterprises, soft information, hierarchical organizations

**JEL classification code**: G21, L14, D82

## 1. Introduction

The recent literature on SME financing has emphasized the dichotomy between soft information and hard information. Specifically, this literature has identified soft information with "relationship lending" and hard information with "transactions lending". In contrast to hard information which is easily quantified, soft information is not easily quantified and consists of information gathered over time through contact with the firm, the firm's management/entrepreneur, the firm's suppliers and customers, and other local sources. Examples of soft information include assessments of managerial skill and valuation of intangible assets.

Another key hypothesized distinction between soft and hard information – and between relationship lending and transactions lending – is the primacy of the loan officer in the collection of soft information and the delivery of relationship lending. Within the theoretical framework of relationship lending the loan officer is responsible for collecting soft information about his/her customers and using that information to make decisions about new credit extensions, renewals, renegotiations and terminations. The primacy of the loan officer is quite explicit in many recent models of relationship lending (e.g., Stein 2002, Berger and Udell 2002, Liberati and Mian 2006). A key reason for this is the assumption that soft information deteriorates as it is transmitted to others within the institution and this deterioration may be exacerbated by the hierarchical nature of the institution (e.g., Becker and Murphy 1992, Radner 1993, Bolton and Dewatripont 1994, and Garicano 2000). Thus, the retention of soft information is maximized when it is deployed by the same individual that generated the information, i.e., the loan officer him/herself.

Despite its importance there is relatively little research on the role played by the loan officer in relationship lending. Nevertheless, the theoretical work on relationship suggests some clear and interesting empirical implications. In particular if the loan officer plays an important role in relationship lending, then we would expect to see a link between loan officer attributes and loan officer underwriting activities, and the production of soft information. For example, we would expect to see an association between the skill level of loan officers and the production of soft information. Moreover, we also expect to see that this accumulation of soft information by the loan officer matters with respect to the terms and availability of credit. Empirical support for these predictions would constitute evidence supporting the theoretical work that argues that relationship lending is a distinct lending technology that it is principally extruded through the accumulation of soft information by the loan officer.

In order to analyze the role of loan officers in relationship lending, we utilize a new and unique data set based on survey data of Japanese SMEs, the *Management Survey of Corporate Finance Issues in the Kansai Area*. This survey was conducted in Japan in June 2005 and contains data about firms and their loan officers based on a questionnaire sent to SMEs in the Kansai area of Japan. From these data we construct an index that measures the accumulation of soft information in a manner similar to recent research on relationship lending (Scott 2004).

Using this index, we conduct two sets of analysis. First, as our main analysis, we examine whether loan officer attributes that proxy for skill (e.g., loan officer turnover, loan officer age) and loan officer lending activities (e.g., frequency of meeting and method of contact) affect the production (i.e., accumulation) of soft information. This analysis asks

HOW soft information is produced.

Second, we test whether this accumulation of soft information matters – does the accumulation of soft information matter in terms of different measures of relationship benefits? Even if we find in the first stage that loan officer attributes and/or loan officer lending activities matter in accumulating soft information, the finding is irrelevant unless the accumulation leads to a material benefit. We address this in our second stage.

Our two stage analysis is also distinct as a "benefit analysis" of the bank-borrower relationship. Although there are abundant studies on the benefits that stem from banking relationships, they tend to focus on potentially imprecise proxies for relationship closeness such as the length and scope of the relationship that do not measure the extent to which soft information is accumulated (e.g., Petersen and Rajan (1994) and Berger and Udell 1995). Typically these studies rely on a presumption that closer relationships represented by these proxies lead to more accumulation of soft information which, in turn, benefits the borrower. We depart from this approach by decomposing the link between relationship closeness and borrower benefits into two stages, and directly test (1) whether close relationships lead to more accumulation of soft information, and (2) whether the accumulated soft information is beneficial.

By way of preview, we find limited evidence that soft information may benefit SME borrowers, but we do not find evidence that is on balance consistent with theoretical predictions that loan officers produce soft information that is not easily transmitted to others within the bank. These results are consistent with alternative explanations including the possibility that the social environment in Japan leads to a credit culture where it is easier to transmit soft information from one loan officer to another. It could also be consistent with

the possibility the relationship lending may not be particularly important in the Japanese SME loan market.

The remaining part of this paper is composed as follows. In the next section, we briefly discuss the related theoretical and empirical literature. In section 3 we introduce our data. Section 4 presents our methodology and section 5 presents our results. The final section concludes the paper.

## 2. Related Literature

### 2.1 Relationship lending

Our paper is most closely related to the growing literature on relationship lending. Beginning in 1990s academic research on SME financing began to examine the underwriting process associated with commercial lending. This research explored more precisely how financial institutions extend credit to their customers and, more specifically, how they mitigate the informational wedge between themselves and their borrowers. Much of this literature has focused on one particular type of lending, relationship lending. Later research has broadened the scope of the analysis by viewing relationship lending as one of potentially many lending technologies. A lending technology can be defined as a combination of screening mechanisms, contract elements, and monitoring strategies (Berger and Udell 2006).

This newer strand of the literature argues that there are a variety of different lending technologies that exist in at least some countries in the world. In addition to relationship lending, the literature has identified financial statement lending, fixed asset lending, factoring, leasing, small business credit scoring, and trade credit as alternative lending technologies (Berger and Udell 2002, 2006). With the possible exception of trade credit, all of these

alternative lending technologies are transactions-based technologies where underwriting is primarily based on hard information.[1] While many of these transactions-based technologies can be used to provide credit under special circumstances to opaque SMEs, relationship lending (the only lending technology based on soft information) is still, nevertheless, one of the most important lending technologies, particularly for SMEs that do not have audited financial statements or sufficient pledgeable collateral. It may also be relatively more important for SMEs in countries like Japan where some of the alternative lending technologies are not available, particularly asset-based lending.[2]

Theoretical work on relationship lending has emphasized that the underwriting process associated with this technology involves the production of private, soft information about borrowers (e.g., Rajan 1992, Petersen and Rajan 1995). This soft information is acquired through contact over time with the SME and often with its owner and members of the local community" (Berger and Udell 2006). It can include assessments of a borrower's future prospects culled from contact with borrower's suppliers, customers, competitors, or neighboring businesses (Petersen and Rajan, 1994; Berger and Udell, 1995; Mester *et al.*, 1998; Degryse and van Cayseele, 2000). The empirical evidence on relationship lending suggests that the strength of the bank-borrower relationship is positively related to credit availability and credit terms (e.g., Petersen and Rajan, 1994, 1995; Berger and Udell, 1995; Cole, 1998; Elsas and Krahnen, 1998; Harhoff and Körting 1998).

### 2.2 The role of loan officers

[1] See Uchida, Udell and Watanable (2006) for a more detailed discussion of the trade credit literature.
[2] Asset-based lending comprises about 25% of all commercial lending in the U.S. (Berger and Udell 2006).

As we have noted above, however, theoretical work has argued that the production of soft information flows through the bank loan officer. In this sense the bank-borrower relationship in SME lending can better be described as the loan officer-entrepreneur relationship (see Berger and Udell 2002). In this context our paper touches on another strand of literature, the transmission of information within organizations. This literature emphasizes that the transmission of soft information within organizations will be lost the further it needs to be transmitted within the organizations, i.e., the more hierarchical layers of the organization through which the information is transmitted (e.g., Becker and Murphy 1992, Radner 1993, Bolton and Dewatripont 1994, and Garicano 2000).

This paradigm has some specific implications for the relationship lending. It suggests that the loan officer, as the initial producer of soft information about SME borrowers, is critical to the process. To the extent that lending decisions are delegated to the loan officer then the loss of valuable soft information will be minimized. When agents who are vested with the responsibility of collecting soft information do not make the credit decisions their incentive to expend effort to collect this information may be compromised (Aghion and Tirole 1997, Stein 2002). In addition, this problem becomes exacerbated for larger and more complex financial institutions (Stein 2002, Liberti and Mian 2006). Empirical evidence indeed suggests that as lending decisions pass through more layers of organization (away from the loan officer), the importance of soft information is diminished (Liberti and Mian 2006). Thus, this paradigm which emphasizes the primacy of the loan officer in relationship lending, has a clear implication: the loan officer's capacity to collect soft information will materially affect the amount of soft information that is collected. Stated another way, if loan officers are the primary conduit for the production of soft information as

suggested by this paradigm, then factors that inhibit loan officers from collecting soft information should lead to less accumulation of soft information. The accumulation of less information should also be associated with less credit availability. Testing these propositions is the focus of this paper.

**2.3 Empirical evidence on the role of loan officers**

Despite the theoretical primacy of the loan officer in relationship lending, there has been very little empirical research on the importance of loan officers in lending relationships. In general, the empirical research on relationship lending does not make a distinction between the bank and the loan officer. One interesting – though limited – exception is a paper that examined the effect of banking industry consolidation in the U.S. on SME access to credit (Scott and Dunkelberg 1999). These authors included in their analysis a measure of loan officer turnover as measured by the number of bank account managers that an SME had over the past 3 years. Interestingly their analysis indicated that loan officer turnover was negatively related to credit availability and positively related to the SME searching for a new bank. These results can be viewed as support for the relationship lending paradigm that emphasizes the primacy of the loan officer.

The only other studies with which we are familiar that analyze lending at the loan officer level provide only limited evidence on the role of loan officers in relationship lending. One study explored the agency problem associated with the bank-loan officer contract (Udell 1989). This study found evidence that banks that delegate more responsibility to their loan officers invest more in monitoring their loan officers. Given evidence elsewhere that decision-making at the loan officer level is likely to be more soft information intensive (Liberti and Mian 2006), this is suggestive that banks that delegate more authority to their

loan officers may engage in more relationship lending. Finally, there is some work that has shown that even though merging banks in the U.S. may contract their supply of lending in their local markets, other banks, particularly *de novo* banks, compensate by increasing their SME lending. This research is consistent with anecdotal evidence in the financial press that loan officers who are terminated when consolidated banks merge, start new banks and take their relationship borrowers with them (Berger et al. 1998, Goldberg and White 1998, DeYoung 1998).

Our paper is closest to the work of Scott and Dunkelberg (2004) who use data on SME lending from a survey of small businesses conducted by the National Federation of Independent Business (NFIB) in the U.S. Like their work, we examine loan officer turnover as a key independent variable. However, our analysis is quite different on several other dimensions. First, we examine a number of different characteristics related to the role of the loan officer that Scott and Dunkelberg were not able to investigate with the NFIB database. These include the age of the loan officer, frequency of meetings with the loan officer, meeting venue and the distance between the bank and the borrower. Second, we depart from their approach by decomposing the link between loan officer turnover and borrower benefits into two stages, and directly test (1) whether loan officer attributes/activities lead to accumulation of soft information, and (2) whether the accumulated soft information is beneficial. Third, we analyze loan officers and relationship lending in the Japanese context. Research on SME lending in Japan has been considerably less than in the U.S. Finally, we are to a certain extent able to control for situations where loan underwriting was conducted using a lending technology other than relationship lending. For example, we are able to control for whether audited financial statements were used in the underwriting process indicating the

deployment of the financial statement lending technology – one of the transactions-based lending technologies that are an alternative to relationship lending.

## 3. Data

Our analysis utilizes the *Management Survey of Corporate Finance Issues in the Kansai Area*, which was conducted in June 2005 by the Regional Finance Workshop in the Research Institute of Economy, Trade, and Industry (RIETI). The survey, hereafter the RIETI survey, asks SMEs about firm characteristics, management strategy, bank relationships, the loan screening process, and access to credit. The distribution, collection, and data aggregation of the survey were outsourced to Tokyo Shoko Research (TSR), a credit reporting and information provision company in Japan. Questionnaires were sent out by hard mail to 9,000 firms in three prefectures, Osaka, Hyogo, and Kyoto, in Kansai area in Japan.[3] These firms were chosen from those in TSR's database. In proportion to the relative size of prefectural product and the number of enterprises in the prefectures, 5,000 firms were chosen from Osaka prefecture, 2,500 firms were from Hyogo prefecture, and 1,500 firms were from Kyoto prefecture. In each prefecture, firms were evenly selected from four employee-size categories, 1) 1 to 20 persons, 2) 21 to 50 persons, 3) 51 to 100 persons, and 4) more than

[3] Kansai area is located in the middle of the main island of Japan, and the three prefectures form the focal point for the economy of western Japan. *Osaka* is the second largest prefecture in Japan with population of 8,814 (as of October 1, 2004). Its capital, Osaka, is the second biggest business center in Japan. The Osaka prefecture is known to have numerous SMEs. *Hyogo* prefecture has population of 5,587 (October 1, 2004). The capital city Kobe is well-known as an international port with numerous port-related industries such as steel production and shipbuilding, although the economy around the city is still rebuilding after the devastating Hanshin-Awaji earthquake in 1995. The population of the *Kyoto* prefecture is 2,638 (October 1, 2004). Its capital is the historic city of Kyoto. There are a large number of traditional industries in the Kyoto prefecture such as traditional handcrafts and textiles. There are also considerable amounts of high-tech industry located in the Kyoto prefecture.

100 persons. For example, in Osaka prefecture, 1250 = 5000 / 4 firms were randomly chosen from firms with 1 to 20 employees.

2041 responses (by hard mail) were received yielding a response rate of 22.7%. The number of effective responses was 2020. We further eliminate firms for which main bank is not one of seven types producing a sample of 1700 firms.[4] The sample firms' industries include Construction (12.5% of the sample firms), Manufacturing (34.5%), Wholesale (19.7%), Retail (5.9%), Services (12.0%), and others (14.3%).[5] The average sample firm was established in 1967, employs 150 persons, has a capitalization of 764 million yen, and has 1.19 billion yen of sales.

## 4. Methodology

Our analysis focuses on two main questions. First, is the loan officer critical to the process of generating soft information? Second, is the generation and accumulation of soft information a significant factor in determining an SME's access to credit? In some sense the answer to these questions also sheds light on a more fundamental question: Is relationship lending an important lending technology in the Japanese bank loan market? If the answer to the first two questions is positive, this suggests that the answer to the latter question is also affirmative.

### 4.1 Production of soft information

The first question is investigated by estimating an equation which takes the form:

[4] The included firms had a main bank that was either a city bank, a long-term credit bank, a trust bank, a regional bank, a second regional bank, a Shinkin bank, or a credit cooperative. See below for more details.

[5] Firms in Agriculture, Fisheries, Electricity, Gas, Finance, Insurance, Medicare, and Education industries were excluded in advance before the questionnaires were sent out.

The accumulation of soft information = *f* (loan officer attributes/capacity, firm and entrepreneur control variables, access to hard information, regional and bank controls) (1)

**Dependent variable**

With regard to the dependent variable in equation (1), we note that soft information is information that is difficult to document and transfer. It is the information that relationship lending is primarily based on. By definition, we cannot quantify soft information. To overcome this problem we develop an index to capture the extent to which the bank knows the firm in terms of soft information. This is similar to the index used in recent work on relationship lending. Specifically we use 6 of the 11 characteristics of lenders' knowledge from the RIETI survey that mirror the composition of Scott's (2004) index (see Data Appendix A-1). The 11 characteristics reflect how respondent firms rated their lender's knowledge about the borrower. Six of the 11 characteristics are related to soft information: characteristics no. 1 through 6.[6] Using these six characteristics and following a similar procedure to Scott (2004), we created our measure of soft information production SOFT.[7]

[6] Instead of six characteristics, the CBSB survey contains *four* soft-information-related characteristics that reflect the SME's view of its bank: "knows you and your business," "knows your industry," "knows the local market and/or community," and "social contact with loan officer." The characteristics we have used (Data Appendix A-2) are elaborations on them.

[7] The survey asks (1) how important the firm rates each of the 11 characteristics in doing business with a financial institution (in general) based on a 5-point scale from "1" (very important) to "5" (not important). This captures the firm's perception of what it defines as a good lender. For each of the 11 characteristics, the firms are also asked to evaluate (2) to what extent the current main bank performs satisfactorily on a 5-point scale from 1 (very good) to 5 (very bad). This captures the firm's evaluation of the current main bank. For each of the six characteristics related to soft information, we constructed a dummy variable, which takes a value of one if the firm chose 1 for both questions (1) and (2). SOFT is the first principal component of the principal component analysis over the resulting six dummies.

**Key independent variables**

Our key independent variables for equation (1) are measures that reflect the capacity of loan officers to generate soft information – our loan officer attributes/capacity variables. These include three measures directly related to the loan officer him/herself: NOTURNOVER, which indicates whether there was no turnover of loan officers in the past three years; NOOFFICER, which indicates whether there is no specific officer at all in the past three years; and, OFFICER20_30 indicating if the loan officer is in his/her 20s or 30s. These are our three most important loan officer variables. They can be viewed as measuring the ability of the officer to establish a close relationship and accumulate soft information. Frequent loan officer turnover and/or the absence of a specific loan officer should inhibit the production of soft information and younger loan officers (who would likely be more junior) should be less able to produce soft information. The coefficients on these variables reflect a direct test of whether loan officers are critical to the production of soft information. Note that the expected sign of the coefficient of NOTURNOVER is positive, whereas those of NOOFFICER and OFFICER20_30 are negative.

Additional variables that have been hypothesized in the literature to have an impact on the ability of loan officers to produce soft information are: the length of the main bank relationship (LENGTH); the distance in terms of more than 30 minutes travel to the borrower from the bank (DISTANT); the frequency of contact with the bank, i.e., the average interval of firm-bank contact (FREQUENCY); whether the loan officer typically meets the entrepreneur at his/her place of business (rather than at the bank branch) (MEETPLACE); and, finally, whether contact with the borrower is typically direct rather than by telephone,

email or other indirect methods (CONTACTMODE).[8] We expect positive signs for the coefficients of LENGTH, MEETPLACE, and CONTACTMODE, while a negative sign for that of DISTANT and FREQUENCY.

Table 1 shows summary statistics of these variables and Table 2 presents the frequency distribution for these variables. Officer turnover is relatively common in Japan. About 89% of the firms experienced at least one turnover in the past three years. Also, more than 96% of the firms have a specific loan officer. About 70% of loan officers were in the 20s or in the 30s.

The average length of the bank-borrower relationship is quite long at nearly 27 years. This is much longer than that in the US. It is interesting to observe that the banking relationship is very long, while officer turnover is relatively frequent and thus the loan officer-entrepreneur relationship is quite short. To the extent that the loan officer is paramount in importance with respect to the production of the soft information, this suggests that high loan officer turnover may be an inhibiting factor in the Japanese market.

The mean of 0.1467 for DISTANT implies that 85% of the firms locate within 30 minutes of distance from a main bank branch. The 30.0 mean for FREQUENCY indicates that the entrepreneur and the loan officer usually meet once a month. The .786 mean for MEETPLACE indicates that for almost 80% of the firm the primary meeting place is the business which would be more conducive to the production of soft information than meeting at the bank. Finally, about half of the contact between entrepreneurs and loan officers is direct (i.e., CONTACTMODE = .54).

[8] For a more detailed discussion of the research that has utilized these variables see Berger et al. (2005) and Berger and Udell (2006).

**Other control variables**

We also control for whether the bank has hard information about the firm in terms of audited financial statements (AUDIT). This variable will control for borrowers whose loans may be underwritten using the financial statement lending technology (i.e., for financial statement borrowers).

We also control for characteristics of the firm including financial performance, the firm's industry, the firm's entrepreneur, bank characteristics, and the firm's region. The labels and definitions for these variables are in Data Appendix A-2.

**4.2 Soft information and relationship benefit**

In our second stage analysis of whether the accumulation of soft information is beneficial we estimate the following equation:

$$\text{Benefit from relationship} = f\,(\text{accumulation of soft information, firm and entrepreneur control variables, access to hard information, regional and bank controls}) \qquad (2)$$

**Dependent variable**

In our second stage we use a dependent variable that captures the benefit of soft information produced in relationship lending. We use six alternative proxies to represent the benefit. The first two capture firm's access to credit. The variable, TIGHT, is a dummy variable which equals 1 if the firm answered "hard" to the following question on the RIETI survey: "How did you feel about [how hard it was to obtain] financing in the past one year?" We also use a variable, EASY, which is a mirror image of TIGHT, which takes a value of 1 if

the firm answered “easy” to the question above.

We also use four other variables. A variable STABLE is a multi-nominal variable constructed from the firm’s answer to the following question: “With respect to the stable provision of funds, to what extent does the current main bank perform satisfactorily?” The respondent firm chooses an answer on a 5-point scale from 1 (very good) to 5 (very bad). STABLE thus takes a value from one to five. The other three multi-nominal variables are similarly defined. QUICK is constructed from the question "With respect to quick decision making,”; BROAD is from the question "With respect to the provision of a broad range of services,”; and INEXPENSIVE is from the question "With respect to the provision of inexpensive funds.” Note that by construction, a greater benefit is represented with a smaller value of these variables.

**Independent variables**

In this second stage of the analysis, the key independent variable is our index of the accumulation of soft information, SOFT, which was used as the dependent variable in equation (1). We would expect that the accumulation of more soft information would lead to improvements in the “benefit” proxies explained above, i.e., the coefficient on SOFT is hypothesized to be negative for TIGHT, STABLE, QUICK, BROAD, and INEXPENSIVE, while positive for EASY.

To isolate the effect from SOFT, we use different control variables. They are the same as those used in the first stage.

## 5. Results

### 5.1 Soft information production

The results for the first stage of our analysis, equation (1), are shown in column (1) of Table 3.[9] Turning first to the key independent variables that measure loan officer capacity/attributes (our measures of the closeness of the loan officer-entrepreneur relationship and the ability of the loan officer to accumulate soft information) we find a significant and negative coefficient on NOOFFICER. This result indicates that less soft information may be collected when there is no specific officer. This is consistent with the primacy of the loan officer and with the hypothesis that loan officers collect soft information. In contrast, NOTURNOVER is not significant. The result on NOTURNOVER is particularly important because it, more than any of our other explanatory variables, gets to the heart of the primacy of the loan officer in delivering relationship lending. The difficulty of transmission is the essence of soft information. That is, by definition, from theory, and from empirical evidence soft information is difficult to transmit (Stein 2002, Liberti and Mian 2006).[10] Thus a finding of no significance on NOTURNOVER is fundamentally inconsistent with the production of soft information. OFFICER20_30 is not significant either, so that the officer's expertise in terms of his/her age is not important in producing soft information. This could be construed also as being inconsistent with relationship lending to the extent that skill level is important in acquiring soft information.

The results for some of the other variables tend to be consistent with the hypothesis that loan officers acquire soft information. The result of a negatively significant coefficient of

[9] The results using White heteroskedasticity-consistent standard errors are shown, because the White test rejected the null hypothesis of no heteroskedasticity at a 1 percent level of significance.

[10] The definition used for soft information used in Berger and Udell (2002) is typical: "soft information may not be easily observed by others, verified by others, or transmitted to others." Thus, the difficulty in transmitting soft information is its very essence.

FREQUENCY means that the longer the time interval between meetings becomes (i.e. the less frequent they meet), the less soft information is produced. CONTACTMODE is positively significant, which indicates that in-person contact is important in producing soft-information. However, neither distance nor the length of the relationship is statistically significant, which is inconsistent with numerous studies that have found that a longer length and broader relationship provides more benefit.

Turning to other variables, the positive and significant coefficient on UNION suggests that smaller banks may produce more soft information than large banks (= default), which is consistent with prior literature that smaller banks may emphasize relationship lending (e.g., Cole, Goldberg and White 2004, Berger et al. 2005). The coefficients on regional banks (REGIONAL) are also significant and positive, which is also consistent with prior literature. However, the coefficient of REGIONAL is greater than that of UNION, which contradicts the theoretical prediction.

Also of interest is the statistical insignificance on the variable AUDIT which indicates whether the borrower has audited financial statements. This suggests that the accumulation of soft information is no less (or no more) when there is hard verifiable information about the firm. The only variable that is unambiguously consistent with the importance and production of soft information is the negative and significant coefficient on the number of employees which suggests that less soft information is accumulated by the bank on its larger borrowers.

On balance our results can best be viewed as inconsistent with loan officers in Japan collecting soft information that cannot be transmitted to other loan officers. Our results would seem to be more consistent with loan officers accumulating information that can be

transferred (i.e., hard or quasi-hard information) that is dependent on having a specific loan officer, and a loan officer that frequently contacts the borrower in a direct manner.

To explore these issues further we examine some potentially interesting interactions that better capture the theoretical predictions about the primacy of the loan officer. In particular, we examine interactions of our loan officer capacity/attributes variables (i.e., loan office-entrepreneur closeness variables) with bank type dummies, REGIONAL and UNION (see column (2) in Table 4).[11] We would expect that a strong loan officer-entrepreneur relationship would be most important for smallest banks that have the least complex organizational structure (UNION = 1) and least important for the largest banks with the most complex organizational structure (LARGE = 1, default). This allows in particular for the possibility that the primacy of the loan officer only matters in small banks where the problems associated with deterioration in the transmission of soft information internally are minimized (Becker and Murphy 1992, Radner 1993, Bolton and Dewatripont 1994, and Garicano 2000, Stein 2002, Liberati and Mian 2006).

Looking at the coefficients on the UNION interactions we see little evidence to support the primacy of the loan officer in the accumulation of soft information. Specifically, none of the interactions are significant. In contrast, in the case of regional banks, FREQUENCY further contributes to the accumulation of soft information. Thus the evidence is also not generally consistent with the theoretical predictions from the theory of relationship lending and soft information production. However, since UNION and REGIONAL were significant on a stand-alone basis, it is quite possible that there is some mechanism, other than that captured by our proxies, with which banks with simple organizational structures are good at

[11] Again, the standard errors are White heteroskedasticity-consistent standard errors. The White test rejected the null hypothesis at a 5 percent level of significance.

accumulating information.

### 5.2 Benefit from soft information accumulation

Now turning to the second stage of our analysis we investigate whether the accumulation of soft information as measured by our index is actually beneficial. On balance we found evidence inconsistent with loan officers accumulating soft information. However, the evidence was still somewhat ambiguous. One particular result argues that some soft information is accumulated in that the existence of loan officers may play a critical role in the production and accumulation of soft information in the Japanese SME loan market. It may also be possible that some soft information could be passed on from one loan officer to another without too much deterioration of information if it were not passed through hierarchical channels but rather directly from one officer to another within a branch for instance. This might occur as part of a systematic loan officer rotation system. Allowing for the possibility that some soft information is accumulated by loan officers, we now investigate whether the accumulation leads to any benefit for the SME.

Our key test here is equation (2) with regression results shown in Table 4 through Table 9. These tables correspond to our alternative measures of relationship benefit: TIGHT (Table 4), EASY (Table 5), STABLE (Table 6), QUICK (Table 7), BROAD (Table 8), and INEXPENSIVE (Table 9). Our key explanatory variables in the regression are SOFT and the interaction of SOFT with dummies for regional banks and Shinkin banks (and other co-operative banks). Again SOFT is our measure of the accumulation of soft information. We argue that this is a direct measure of the accumulation of soft information than relationship length. The interactions are included to allow for the possibility that the benefit

from soft information accumulation may differ by bank complexity.

First turning to the three variables that measure the relationship benefit in terms of credit availability – TIGHT, EASY and STABLE – only STABLE is statistically significant. On balance this casts some doubt on the accumulation of soft information being beneficial. Turning next to our measure of loan price, INEXPENSIVE we see that it is significant in the predicted direction. This is consistent with findings elsewhere that loan rates decline with relationship strength (e.g., Berger and Udell 1995). However, unlike other analysis we use a direct measure of the accumulation of soft information.

With respect to our two other measures of relationship benefits, QUICK and BROAD, both are statistically significant and consistent with soft information providing a benefit (i.e., a negative sign). These two variables, however, are likely to be less important to entrepreneurs than the credit availability and price variables.

With respect to the interaction variables, neither are significant in any regression. This means that there is no difference among bank types in the extent to which the accumulation of soft information brings benefits

Taken together it is difficult to draw strong conclusions about the benefits from the accumulation of soft information in Japan. While our pricing regression shows a benefit, two out of three of our credit availability regressions do not.

## 6. Conclusion

Taken together the results from the first and second stages of our analysis present a bit of a puzzle. On balance our first stage results are mostly inconsistent with loan officers in Japan collecting soft information that cannot be transmitted to other loan officers. A critical

finding here is that soft information production does not deteriorate with higher loan officer turnover. However, we cannot entirely rule out the possibility that loan officers collect some soft information and pass this on to other loan officers in a systematic loan officer rotation cycle. The extent to which soft information is lost during this exchange is beyond the scope of our analysis but theoretical and empirical work elsewhere would predict this loss to be significant. To the extent that this turnover occurs at the branch level and/or involves direct contact between the "new" and "old" during the transfer information deterioration may be attenuated.

In our second stage result we found some evidence that soft information is valuable in the sense that it provides some benefit to SMEs. However, this result appears to be mostly limited to lower interest rates and not to credit availability. Moreover, the benefit from soft information production does not appear to be greater for smaller banks as predicted by theoretical and empirical work on relationship lending elsewhere in the literature.

Thus, on balance our results are not consistent with the general view literature that loan officers produce soft information that cannot be easily transmitted and that this leads to greater credit availability for borrowers. We do not believe that our findings are driven by an insufficiently powerful methodology or data limitations. We note that methodologically our analysis compares favorably with other empirical work. Many of the variables used in our study are identical (or nearly identical) to those used elsewhere in the literature. Moreover, our measure for the production of soft information is direct while in most empirical work soft information production is only indirectly proxied. Thus, we feel relatively confident that our results are not driven by an inferior methodological approach.

Our mixed results suggest several interpretations. First, the view found in the current

research literature that emphasizes that the primary conduit for the collection of soft information is the loan officer may not be valid. This interpretation, however, runs counter to a considerable amount of empirical and theoretical evidence.

Second, the Japanese loan market may be different from loan markets elsewhere. It may be possible in the Japanese context that loan officers who are younger, who operate at longer distance from their borrowers, and who are newer to the account are just as able to produce soft information as other loan officers are. This may be related to the social environment which has been linked in the literature to potential differences across countries in SME access to credit (Berger and Udell 2006). Specifically it has been shown that the level of social capital and trust may be important in facilitating the writing and enforcement of financial contracts and related to differences across countries in terms of entrepreneurial activity (e.g., Guiso, Sapienza, and Zingales 2004). By extension the social environment could be an important factor in driving differences between credit cultures in banks across countries. If these differences affect the rate at which soft information deteriorates as it is transmitted through hierarchies within banking organizations – or transmitted from one loan officer to another – then this could explain the differences in our results for the Japanese SME loan market and results found elsewhere.

Another interpretation of our results is that relationship lending and the accumulation of soft information may not be particularly important in the Japanese loan market. This interpretation is consistent with a recent article on Japanese credit markets that argues that banks may not be particularly good relationship lenders in the sense of being good Diamond-like delegated monitors (Miwa and Ramseyer 2005). This article further argues that trade creditors have an advantage over banks in screening and monitoring borrowers.

Other recent research on Japanese credit markets provides some corroborating evidence that trade credits in Japan may be relationship lenders (Uchida, Udell and Watanabe 2006). Our results in this paper could be viewed as consistent with the view that banks are not the superior relationship lenders although we do not directly compare the two creditors.

Although our analysis improves on existing methodology on several dimensions, our findings still leave room for multiple interpretations and raise a number of interesting questions about loan officers and relationship lending in the Japanese SME commercial loan market. It is clear that more research is needed on this issue.

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## Data Appendix

## A-1 Characteristics of lender's knowledge about the borrower

1. Knows your business (the firm itself and its business)
2. Knows your managers and owners (the firm's managers and owners)
3. Knows your industry (the firm's industry)
4. Knows the local community (the local community the firm is in)
5. Know the market (the firm's market)
6. Social contact with loan officer (loan officer has frequent contact with the firm)
7. Stable provision of funds
8. Quick decision making
9. Provision of broad services
10. Provision of inexpensive money
11. Good location

## A-2 Definitions of Control Variables

[Bank size/complexity]

LARGE (dummy: default)

The lending bank is either a city bank, a long-term credit bank, or a trust bank

REGIONAL (dummy)

The lending bank is a regional bank or a second-tier regional bank

UNION (dummy)

The lending bank is a Shinkin bank or a credit cooperative

[Firm's financial number]

ASSET

Firm's asset

[Firm's qualitative performance information]

PERFORMANCE_SS (dummy: default)

Performance of the firm in the past two years (Surplus->Surplus)

PERFORMANCE_DS (dummy)

Performance of the firm in the past two years (Deficit->Surplus)

PERFORMANCE_SD (dummy)

Performance of the firm in the past two years (Surplus->Deficit)

PERFORMANCE_DD (dummy)

Performance of the firm in the past two years (Deficit->Deficit)

NODIVIDEND (dummy)

The firm did not pay dividend last year

[Firm's characteristics]

FIRMAGE
Firm's age
EMPLOYEE
The number of employee
LISTED (dummy)
The firm is listed

[Entrepreneur's characteristics]
HOMEOWNER (dummy)
The CEO has a house
CEOAGE
The age of the CEO

[Industry dummies]
CONST
Construction
MANUFAC
Manufacturing
WHOLE
Wholesale
RETAIL
Retail
REALEST
Real estate
RESTAU_HOTEL
Restaurant and Hotel
SERVICES
Services

[Regional dummies]
OSAKA
Urban Osaka area (the area code of the telephone number is 06)
KOBE
Urban Kobe area (the area code of the telephone number is 078)
KYOTO
Urban Kyoto area (the area code of the telephone number is 075)

[Bank competition dummies]
VISITINC_OTHER
Contact increased with other banks
VISITINC_PA
Contact increased with a loan officer

**Table 1. Summary Statistics on Loan Officer Capacity/Attributes**

| | N | Mean | Median | Min. | Max. | Std. Dev. | Sum |
|---|---|---|---|---|---|---|---|
| NOTURNOVER | 1642 | 0.0743 | 0 | 0 | 1 | 0.2623 | 122 |
| NOOFFICER | 1642 | 0.0378 | 0 | 0 | 1 | 0.1907 | 62 |
| OFFICER20_30 | 1592 | 0.6313 | 1 | 0 | 1 | 0.4826 | 1005 |
| LENGTH | 1558 | 26.8787 | 27 | 0 | 109 | 16.2745 | 41877 |
| DISTANT | 1670 | 0.1467 | 0 | 0 | 1 | 0.3539 | 245 |
| FREQUENCY | 1576 | 30.0006 | 15 | 0 | 365 | 48.2688 | 47281 |
| MEETPLACE | 1612 | 0.7860 | 1 | 0 | 1 | 0.4103 | 1267 |
| CONTACTMODE | 1628 | 0.5412 | 1 | 0 | 1 | 0.4985 | 881 |

**Table 2. Frequency distribution of Relationship Closeness**

| Characteristics | Options | Frequency | Frequency distribution |
|---|---|---|---|
| Officer turnover | No turnover | 122 | 7.430 |
| | Once | 528 | 32.156 |
| | Twice | 513 | 31.242 |
| | More than three times | 417 | 25.396 |
| | No officer | 62 | 3.776 |
| | Total | 1642 | 100 |
| Officer age | 20s | 119 | 7.475 |
| | 30s | 1005 | 63.128 |
| | 40s | 417 | 26.193 |
| | 50s | 50 | 3.141 |
| | 60s | 1 | 0.063 |
| | Total | 1592 | 100 |
| Time distance (minutes) | 10 or less | 669 | 40.060 |
| | 30 or less | 756 | 45.269 |
| | 60 or less | 209 | 12.515 |
| | 120 or less | 29 | 1.737 |
| | over 120 | 7 | 0.419 |
| | Total | 1670 | 100 |
| Meet place | At the company | 1267 | 78.598 |
| | At bank branch | 316 | 19.603 |
| | Other | 29 | 1.799 |
| | Total | 1612 | 100 |
| Mode of contact | In person | 881 | 54.115 |
| | Tel or fax | 699 | 42.936 |
| | E-mail | 21 | 1.290 |
| | IT tool (other than e-r | 16 | 0.983 |
| | Other | 11 | 0.676 |
| | Total | 1628 | 100 |

**Table 3. Soft Information Production**
**(Dependent variable = SOFT, Least Squares Estimation)**

| Variable | | (1) Coefficient | | Std. Error | Prob. | (2) Coefficient | | Std. Error | Prob. |
|---|---|---|---|---|---|---|---|---|---|
| Intercept | | -2.4364 | *** | 0.4793 | 0.0000 | -2.2174 | *** | 0.4973 | 0.0000 |
| OFFICER_TURN | | 0.0390 | | 0.1327 | 0.7691 | 0.0180 | | 0.1330 | 0.8926 |
| NOOFFICER | | -0.3081 | ** | 0.1403 | 0.0284 | -0.2394 | ** | 0.1029 | 0.0202 |
| OFFICER20_30 | | -0.0073 | | 0.0852 | 0.9320 | -0.1045 | | 0.0954 | 0.2734 |
| LENGTH | | 0.0023 | | 0.0020 | 0.2628 | 0.0008 | | 0.0022 | 0.6995 |
| DISTANT | | 0.0880 | | 0.0888 | 0.3220 | 0.0846 | | 0.0905 | 0.3503 |
| FREQUENCY | | -0.0019 | *** | 0.0005 | 0.0004 | -0.0015 | *** | 0.0005 | 0.0013 |
| MEETPLACE | | 0.1264 | * | 0.0767 | 0.0996 | 0.1235 | | 0.0858 | 0.1503 |
| CONTACTMODE | | 0.1450 | ** | 0.0643 | 0.0244 | 0.1438 | ** | 0.0696 | 0.0391 |
| OFFICER_TURN | *REGIONAL | | | | | -0.2712 | | 0.3353 | 0.4189 |
| OFFICER_AGE | *REGIONAL | | | | | 0.2430 | | 0.1992 | 0.2227 |
| LENGTH | *REGIONAL | | | | | 0.0017 | | 0.0059 | 0.7774 |
| TIME_DISTANCE | *REGIONAL | | | | | 0.1426 | | 0.3759 | 0.7046 |
| FREQUENCY | *REGIONAL | | | | | -0.0117 | *** | 0.0041 | 0.0041 |
| MEETPLACE | *REGIONAL | | | | | -0.0874 | | 0.2476 | 0.7241 |
| CONTACTMODE | *REGIONAL | | | | | -0.0180 | | 0.2078 | 0.9308 |
| OFFICER_TURN | *UNION | | | | | | | | |
| OFFICER_AGE | *UNION | | | | | 0.1808 | | 0.2111 | 0.3920 |
| LENGTH | *UNION | | | | | 0.0084 | | 0.0058 | 0.1478 |
| TIME_DISTANCE | *UNION | | | | | -0.3235 | | 0.3063 | 0.2912 |
| FREQUENCY | *UNION | | | | | -0.0012 | | 0.0029 | 0.6767 |
| MEETPLACE | *UNION | | | | | 0.1780 | | 0.1811 | 0.3259 |
| CONTACTMODE | *UNION | | | | | 0.0324 | | 0.2152 | 0.8804 |
| REGIONAL | | 0.3953 | *** | 0.1208 | 0.0011 | 0.4590 | | 0.3230 | 0.1556 |
| UNION | | 0.2447 | ** | 0.1141 | 0.0322 | -0.1945 | | 0.2809 | 0.4889 |
| AUDIT | | 0.0507 | | 0.1068 | 0.6350 | 0.0496 | | 0.1071 | 0.6438 |
| LOG(ASSET) | | 0.1811 | *** | 0.0418 | 0.0000 | 0.1751 | *** | 0.0427 | 0.0000 |
| PERFORMANCE_DS | | 0.0494 | | 0.0992 | 0.6190 | 0.0570 | | 0.1018 | 0.5756 |
| PERFORMANCE_SD | | -0.0646 | | 0.1370 | 0.6374 | -0.0706 | | 0.1401 | 0.6146 |
| PERFORMANCE_DD | | 0.5061 | ** | 0.2226 | 0.0232 | 0.5138 | ** | 0.2270 | 0.0239 |
| NODIVIDEND | | 0.1209 | * | 0.0727 | 0.0966 | 0.1113 | | 0.0745 | 0.1357 |
| FIRMAGE | | 0.0040 | | 0.0060 | 0.5045 | 0.0028 | | 0.0061 | 0.6475 |
| FIRMAGE^2 | | -0.0001 | | 0.0001 | 0.4385 | 0.0000 | | 0.0001 | 0.6280 |
| LOG(EMPLOYEE) | | -0.0877 | * | 0.0495 | 0.0765 | -0.0905 | * | 0.0500 | 0.0705 |
| LISTED | | -0.2622 | | 0.2430 | 0.2808 | -0.2401 | | 0.2345 | 0.3060 |
| HOMEOWNER | | 0.0735 | | 0.1429 | 0.6069 | 0.0650 | | 0.1389 | 0.6399 |
| CEOAGE | | 0.0038 | | 0.0037 | 0.3054 | 0.0041 | | 0.0037 | 0.2755 |
| OSAKA | | 0.0587 | | 0.0767 | 0.4443 | 0.0607 | | 0.0800 | 0.4480 |
| KOBE | | -0.1458 | | 0.1197 | 0.2236 | -0.1402 | | 0.1203 | 0.2445 |
| KYOTO | | -0.0263 | | 0.1074 | 0.8067 | -0.0371 | | 0.1130 | 0.7429 |
| CONST | | 0.0853 | | 0.1711 | 0.6182 | 0.0700 | | 0.1729 | 0.6857 |
| MANUFAC | | -0.2309 | * | 0.1324 | 0.0814 | -0.2400 | * | 0.1329 | 0.0713 |
| WHOLE | | -0.1788 | | 0.1381 | 0.1955 | -0.1767 | | 0.1402 | 0.2079 |
| RETAIL | | 0.1128 | | 0.2051 | 0.5826 | 0.1098 | | 0.2084 | 0.5983 |
| REALEST | | 0.3637 | | 0.3357 | 0.2790 | 0.3994 | | 0.3467 | 0.2497 |
| RESTAU_HOTEL | | -0.2957 | | 0.1965 | 0.1328 | -0.2849 | | 0.1970 | 0.1485 |
| SERVICES | | -0.0926 | | 0.1467 | 0.5283 | -0.0853 | | 0.1487 | 0.5663 |
| VISITINC_OTHER | | -0.0001 | | 0.0694 | 0.9983 | -0.0219 | | 0.0696 | 0.7530 |
| VISITINC_PA | | 0.0373 | | 0.0908 | 0.6811 | 0.0531 | | 0.0917 | 0.5630 |
| Adjusted R-squared | | 0.0690 | | | | 0.0703 | | | |
| Number of observations | | 970 | | | | 970 | | | |

Note: ***, **, or * means that the coefficient is statistically significant at 1%, 5%, or 10% level. Standard errors are White Heteroskedasticity-Consistent Standard Errors.

**Table 4. Benefit from Soft Information Production**
**(Dependent variable = TIGHT, Probit estimation)**

| | (1) | | | | (2) | | | |
|---|---|---|---|---|---|---|---|---|
| Variable | Coefficient | | Std. Error | Prob. | Coefficient | | Std. Error | Prob. |
| Intercept | -1.2328 | * | 0.6763 | 0.0683 | -1.2283 | * | 0.6787 | 0.0703 |
| **REGIONAL** | 0.0974 | | 0.1375 | 0.4785 | 0.0721 | | 0.1401 | 0.6066 |
| **UNION** | 0.5011 | *** | 0.1404 | 0.0004 | 0.5080 | *** | 0.1407 | 0.0003 |
| **SOFT** | 0.0519 | | 0.0470 | 0.2693 | 0.0049 | | 0.0704 | 0.9449 |
| **SOFT*REGIONAL** | | | | | 0.1191 | | 0.1034 | 0.2494 |
| **SOFT*UNION** | | | | | 0.0249 | | 0.1255 | 0.8426 |
| AUDIT | 0.1677 | | 0.1531 | 0.2734 | 0.1719 | | 0.1532 | 0.2617 |
| LOG(ASSET) | -0.0389 | | 0.0591 | 0.5105 | -0.0378 | | 0.0595 | 0.5256 |
| PERFORMANCE_DS | 0.4571 | *** | 0.1494 | 0.0022 | 0.4524 | *** | 0.1499 | 0.0025 |
| PERFORMANCE_SD | 0.3143 | * | 0.1716 | 0.0670 | 0.3128 | * | 0.1715 | 0.0681 |
| PERFORMANCE_DD | 0.9704 | *** | 0.1860 | 0.0000 | 0.9813 | *** | 0.1864 | 0.0000 |
| NODIVIDEND | 0.8136 | *** | 0.1215 | 0.0000 | 0.8142 | *** | 0.1216 | 0.0000 |
| FIRMAGE | 0.0053 | | 0.0120 | 0.6598 | 0.0044 | | 0.0121 | 0.7163 |
| FIRMAGE^2 | 0.0000 | | 0.0001 | 0.7954 | 0.0000 | | 0.0002 | 0.8366 |
| LOG(EMPLOYEE) | -0.0110 | | 0.0744 | 0.8820 | -0.0092 | | 0.0745 | 0.9019 |
| LISTED | -0.4901 | | 0.4416 | 0.2671 | -0.5062 | | 0.4427 | 0.2528 |
| HOMEOWNER | -0.1448 | | 0.2230 | 0.5162 | -0.1453 | | 0.2226 | 0.5139 |
| CEOAGE | 0.0030 | | 0.0052 | 0.5651 | 0.0030 | | 0.0052 | 0.5665 |
| OSAKA | -0.0680 | | 0.1183 | 0.5655 | -0.0703 | | 0.1183 | 0.5526 |
| KOBE | -0.1863 | | 0.1897 | 0.3261 | -0.1830 | | 0.1897 | 0.3348 |
| KYOTO | -0.1784 | | 0.1623 | 0.2716 | -0.1718 | | 0.1629 | 0.2915 |
| CONST | 0.1225 | | 0.2201 | 0.5779 | 0.1160 | | 0.2206 | 0.5989 |
| MANUFAC | -0.0463 | | 0.1888 | 0.8063 | -0.0530 | | 0.1893 | 0.7795 |
| WHOLE | -0.2175 | | 0.2092 | 0.2984 | -0.2162 | | 0.2095 | 0.3020 |
| RETAIL | 0.1920 | | 0.2476 | 0.4382 | 0.1855 | | 0.2484 | 0.4553 |
| REALEST | -0.4780 | | 0.4751 | 0.3143 | -0.5104 | | 0.4813 | 0.2889 |
| RESTAU_HOTEL | 0.1085 | | 0.3923 | 0.7821 | 0.0992 | | 0.3921 | 0.8003 |
| SERVICES | 0.0715 | | 0.2198 | 0.7449 | 0.0620 | | 0.2201 | 0.7782 |
| VISITINC_OTHER | 0.0285 | | 0.1045 | 0.7847 | 0.0233 | | 0.1047 | 0.8240 |
| VISITINC_PA | -0.1540 | | 0.1458 | 0.2911 | -0.1502 | | 0.1460 | 0.3036 |
| Number of observations | 1050 | | | | 1050 | | | |

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

**Table 5. Benefit from Soft Information Production**
**(Dependent variable = EASY)**

| | (1) | | | | (2) | | | |
|---|---|---|---|---|---|---|---|---|
| Variable | Coefficient | | Std. Error | Prob. | Coefficient | | Std. Error | Prob. |
| Intercept | -1.2872 | ** | 0.5759 | 0.0254 | -1.3072 | ** | 0.5771 | 0.0235 |
| **REGIONAL** | -0.1304 | | 0.1169 | 0.2644 | -0.1186 | | 0.1180 | 0.3149 |
| **UNION** | -0.3048 | ** | 0.1377 | 0.0268 | -0.3116 | ** | 0.1382 | 0.0242 |
| **SOFT** | 0.0465 | | 0.0417 | 0.2655 | 0.0539 | | 0.0566 | 0.3417 |
| **SOFT*REGIONAL** | | | | | -0.0450 | | 0.0918 | 0.6239 |
| **SOFT*UNION** | | | | | 0.0453 | | 0.1203 | 0.7063 |
| AUDIT | 0.0994 | | 0.1284 | 0.4387 | 0.0972 | | 0.1286 | 0.4496 |
| LOG(ASSET) | 0.1281 | ** | 0.0511 | 0.0121 | 0.1298 | ** | 0.0512 | 0.0113 |
| PERFORMANCE_DS | -0.3029 | ** | 0.1461 | 0.0382 | -0.2985 | ** | 0.1464 | 0.0414 |
| PERFORMANCE_SD | -0.4216 | ** | 0.1750 | 0.0160 | -0.4170 | ** | 0.1752 | 0.0173 |
| PERFORMANCE_DD | -0.6061 | *** | 0.2044 | 0.0030 | -0.6128 | *** | 0.2047 | 0.0028 |
| NODIVIDEND | -0.4809 | *** | 0.0933 | 0.0000 | -0.4822 | *** | 0.0933 | 0.0000 |
| FIRMAGE | 0.0021 | | 0.0088 | 0.8127 | 0.0021 | | 0.0089 | 0.8104 |
| FIRMAGE^2 | 0.0000 | | 0.0001 | 0.7549 | 0.0000 | | 0.0001 | 0.7513 |
| LOG(EMPLOYEE) | -0.1014 | | 0.0631 | 0.1085 | -0.1033 | | 0.0632 | 0.1023 |
| LISTED | 0.0915 | | 0.2317 | 0.6930 | 0.0938 | | 0.2321 | 0.6860 |
| HOMEOWNER | 0.0725 | | 0.1850 | 0.6949 | 0.0711 | | 0.1848 | 0.7004 |
| CEOAGE | 0.0037 | | 0.0043 | 0.3939 | 0.0038 | | 0.0043 | 0.3728 |
| OSAKA | -0.0291 | | 0.1017 | 0.7750 | -0.0292 | | 0.1017 | 0.7739 |
| KOBE | 0.0366 | | 0.1577 | 0.8167 | 0.0385 | | 0.1577 | 0.8069 |
| KYOTO | -0.0292 | | 0.1338 | 0.8270 | -0.0355 | | 0.1341 | 0.7910 |
| CONST | -0.3583 | * | 0.1975 | 0.0696 | -0.3603 | | 0.1977 | 0.0683 |
| MANUFAC | 0.0758 | | 0.1632 | 0.6424 | 0.0742 | | 0.1635 | 0.6502 |
| WHOLE | 0.0939 | | 0.1747 | 0.5909 | 0.0897 | | 0.1750 | 0.6082 |
| RETAIL | -0.1724 | | 0.2281 | 0.4497 | -0.1782 | | 0.2290 | 0.4365 |
| REALEST | 0.1345 | | 0.3577 | 0.7070 | 0.1443 | | 0.3577 | 0.6866 |
| RESTAU_HOTEL | -0.0706 | | 0.3463 | 0.8385 | -0.0658 | | 0.3464 | 0.8492 |
| SERVICES | -0.0754 | | 0.1941 | 0.6976 | -0.0731 | | 0.1943 | 0.7067 |
| VISITINC_OTHER | 0.0523 | | 0.0870 | 0.5477 | 0.0550 | | 0.0871 | 0.5277 |
| VISITINC_PA | 0.2086 | * | 0.1170 | 0.0746 | 0.2058 | | 0.1171 | 0.0788 |
| Number of observations | 1070 | | | | 1070 | | | |

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

**Table 6. Benefit from Soft Information Production**
**(Dependent variable = STABLE, Ordinary Least Squares)**

| | (1) | | | | (2) | | | |
|---|---|---|---|---|---|---|---|---|
| Variable | Coefficient | | Std. Error | Prob. | Coefficient | | Std. Error | Prob. |
| Intercept | 3.5720 | *** | 0.3498 | 0.0000 | 3.5525 | *** | 0.3504 | 0.0000 |
| **REGIONAL** | -0.3050 | *** | 0.0716 | 0.0000 | -0.3029 | *** | 0.0723 | 0.0000 |
| **UNION** | -0.3142 | *** | 0.0814 | 0.0001 | -0.3174 | *** | 0.0816 | 0.0001 |
| **SOFT** | -0.2573 | *** | 0.0259 | 0.0000 | -0.2797 | *** | 0.0356 | 0.0000 |
| **SOFT*REGIONAL** | | | | | 0.0275 | | 0.0568 | 0.6280 |
| **SOFT*UNION** | | | | | 0.0839 | | 0.0729 | 0.2495 |
| AUDIT | -0.0063 | | 0.0778 | 0.9356 | -0.0038 | | 0.0779 | 0.9614 |
| LOG(ASSET) | -0.0968 | *** | 0.0309 | 0.0018 | -0.0940 | *** | 0.0310 | 0.0025 |
| PERFORMANCE_DS | 0.1862 | ** | 0.0877 | 0.0340 | 0.1897 | ** | 0.0879 | 0.0311 |
| PERFORMANCE_SD | 0.1263 | | 0.1000 | 0.2069 | 0.1297 | | 0.1001 | 0.1955 |
| PERFORMANCE_DD | 0.1750 | | 0.1112 | 0.1158 | 0.1696 | | 0.1114 | 0.1283 |
| NODIVIDEND | 0.0925 | | 0.0586 | 0.1150 | 0.0914 | | 0.0587 | 0.1194 |
| FIRMAGE | -0.0079 | | 0.0054 | 0.1389 | -0.0086 | | 0.0054 | 0.1131 |
| FIRMAGE^2 | 0.0001 | | 0.0001 | 0.3420 | 0.0001 | | 0.0001 | 0.3038 |
| LOG(EMPLOYEE) | -0.0336 | | 0.0381 | 0.3782 | -0.0349 | | 0.0381 | 0.3611 |
| LISTED | 0.0813 | | 0.1434 | 0.5709 | 0.0785 | | 0.1435 | 0.5842 |
| HOMEOWNER | 0.1424 | | 0.1146 | 0.2145 | 0.1449 | | 0.1147 | 0.2066 |
| CEOAGE | 0.0036 | | 0.0027 | 0.1716 | 0.0038 | | 0.0027 | 0.1579 |
| OSAKA | -0.1681 | *** | 0.0622 | 0.0070 | -0.1677 | *** | 0.0622 | 0.0071 |
| KOBE | -0.1262 | | 0.0961 | 0.1897 | -0.1229 | | 0.0962 | 0.2018 |
| KYOTO | -0.0387 | | 0.0811 | 0.6337 | -0.0415 | | 0.0813 | 0.6097 |
| CONST | 0.0399 | | 0.1187 | 0.7368 | 0.0327 | | 0.1189 | 0.7835 |
| MANUFAC | -0.2571 | ** | 0.1003 | 0.0105 | -0.2652 | *** | 0.1005 | 0.0085 |
| WHOLE | -0.2125 | ** | 0.1075 | 0.0484 | -0.2178 | ** | 0.1077 | 0.0434 |
| RETAIL | -0.0127 | | 0.1364 | 0.9258 | -0.0252 | | 0.1369 | 0.8540 |
| REALEST | -0.0575 | | 0.2235 | 0.7971 | -0.0567 | | 0.2237 | 0.8000 |
| RESTAU_HOTEL | -0.3660 | * | 0.2118 | 0.0843 | -0.3673 | * | 0.2119 | 0.0833 |
| SERVICES | -0.1699 | | 0.1182 | 0.1507 | -0.1729 | | 0.1183 | 0.1440 |
| VISITINC_OTHER | -0.0012 | | 0.0532 | 0.9821 | -0.0010 | | 0.0533 | 0.9856 |
| VISITINC_PA | -0.2743 | *** | 0.0731 | 0.0002 | -0.2755 | *** | 0.0732 | 0.0002 |
| Adjusted R-squared | 0.2017 | | | | 0.2012 | | | |
| Number of | 1057 | | | | 1057 | | | |

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

**Table 7. Benefit from Soft Information Production**
**(Dependent variable = QUICK, Ordinary Least Squares)**

| | (1) | | | | (2) | | | |
|---|---|---|---|---|---|---|---|---|
| Variable | Coefficient | | Std. Error | Prob. | Coefficient | | Std. Error | Prob. |
| Intercept | 3.1786 | *** | 0.3697 | 0.0000 | 3.1378 | *** | 0.3700 | 0.0000 |
| **REGIONAL** | -0.2007 | *** | 0.0760 | 0.0084 | -0.1896 | ** | 0.0766 | 0.0134 |
| **UNION** | -0.3769 | *** | 0.0865 | 0.0000 | -0.3860 | *** | 0.0866 | 0.0000 |
| **SOFT** | -0.2881 | *** | 0.0274 | 0.0000 | -0.3125 | *** | 0.0376 | 0.0000 |
| **SOFT*REGIONAL** | | | | | 0.0023 | | 0.0601 | 0.9689 |
| **SOFT*UNION** | | | | | 0.1467 | * | 0.0771 | 0.0574 |
| AUDIT | 0.0062 | | 0.0824 | 0.9397 | 0.0084 | | 0.0824 | 0.9184 |
| LOG(ASSET) | -0.0654 | ** | 0.0327 | 0.0455 | -0.0603 | * | 0.0327 | 0.0657 |
| PERFORMANCE_DS | 0.1631 | * | 0.0929 | 0.0795 | 0.1718 | * | 0.0929 | 0.0648 |
| PERFORMANCE_SD | -0.0199 | | 0.1059 | 0.8508 | -0.0115 | | 0.1059 | 0.9132 |
| PERFORMANCE_DD | 0.1425 | | 0.1177 | 0.2263 | 0.1295 | | 0.1178 | 0.2719 |
| NODIVIDEND | 0.1067 | * | 0.0621 | 0.0864 | 0.1046 | * | 0.0621 | 0.0925 |
| FIRMAGE | -0.0161 | *** | 0.0056 | 0.0046 | -0.0169 | *** | 0.0057 | 0.0030 |
| FIRMAGE^2 | 0.0002 | *** | 0.0001 | 0.0020 | 0.0002 | *** | 0.0001 | 0.0014 |
| LOG(EMPLOYEE) | 0.0016 | | 0.0404 | 0.9685 | -0.0016 | | 0.0404 | 0.9675 |
| LISTED | 0.0415 | | 0.1516 | 0.7842 | 0.0393 | | 0.1515 | 0.7955 |
| HOMEOWNER | 0.1107 | | 0.1214 | 0.3621 | 0.1134 | | 0.1213 | 0.3502 |
| CEOAGE | 0.0025 | | 0.0028 | 0.3673 | 0.0028 | | 0.0028 | 0.3133 |
| OSAKA | -0.1834 | *** | 0.0659 | 0.0055 | -0.1830 | *** | 0.0659 | 0.0056 |
| KOBE | -0.1131 | | 0.1018 | 0.2668 | -0.1083 | | 0.1018 | 0.2874 |
| KYOTO | -0.0436 | | 0.0860 | 0.6122 | -0.0519 | | 0.0861 | 0.5467 |
| CONST | 0.1703 | | 0.1261 | 0.1771 | 0.1580 | | 0.1262 | 0.2109 |
| MANUFAC | -0.1213 | | 0.1062 | 0.2535 | -0.1341 | | 0.1064 | 0.2078 |
| WHOLE | 0.0733 | | 0.1137 | 0.5193 | 0.0631 | | 0.1137 | 0.5788 |
| RETAIL | 0.1730 | | 0.1445 | 0.2315 | 0.1529 | | 0.1448 | 0.2913 |
| REALEST | 0.1489 | | 0.2367 | 0.5295 | 0.1563 | | 0.2366 | 0.5090 |
| RESTAU_HOTEL | -0.1064 | | 0.2243 | 0.6352 | -0.1055 | | 0.2241 | 0.6379 |
| SERVICES | 0.0242 | | 0.1251 | 0.8468 | 0.0222 | | 0.1251 | 0.8589 |
| VISITINC_OTHER | -0.0103 | | 0.0564 | 0.8555 | -0.0075 | | 0.0564 | 0.8941 |
| VISITINC_PA | -0.3421 | *** | 0.0775 | 0.0000 | -0.3459 | *** | 0.0774 | 0.0000 |
| Adjusted R-squared | 0.1588 | | | | 0.1604 | | | |
| Number of | 1057 | | | | 1057 | | | |

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

**Table 8. Benefit from Soft Information Production**
**(Dependent variable = BROAD, Ordinary Least Squares)**

| | (1) | | | | (2) | | | |
|---|---|---|---|---|---|---|---|---|
| Variable | Coefficient | | Std. Error | Prob. | Coefficient | | Std. Error | Prob. |
| Intercept | 2.7880 | *** | 0.3490 | 0.0000 | 2.7635 | *** | 0.3444 | 0.0000 |
| **REGIONAL** | 0.1434 | ** | 0.0718 | 0.0461 | 0.1520 | ** | 0.0764 | 0.0468 |
| **UNION** | 0.0726 | | 0.0816 | 0.3735 | 0.0667 | | 0.0856 | 0.4358 |
| **SOFT** | -0.2648 | *** | 0.0258 | 0.0000 | -0.2746 | *** | 0.0356 | 0.0000 |
| **SOFT*REGIONAL** | | | | | -0.0111 | | 0.0559 | 0.8423 |
| **SOFT*UNION** | | | | | 0.0828 | | 0.0940 | 0.3785 |
| AUDIT | 0.0867 | | 0.0778 | 0.2653 | 0.0873 | | 0.0762 | 0.2521 |
| LOG(ASSET) | -0.0046 | | 0.0308 | 0.8826 | -0.0016 | | 0.0304 | 0.9580 |
| PERFORMANCE_DS | 0.0892 | | 0.0874 | 0.3074 | 0.0947 | | 0.0968 | 0.3281 |
| PERFORMANCE_SD | 0.0613 | | 0.1003 | 0.5416 | 0.0666 | | 0.1051 | 0.5264 |
| PERFORMANCE_DD | 0.0000 | | 0.1111 | 0.9999 | -0.0084 | | 0.1180 | 0.9435 |
| NODIVIDEND | 0.1602 | *** | 0.0586 | 0.0064 | 0.1588 | *** | 0.0578 | 0.0061 |
| FIRMAGE | -0.0090 | * | 0.0053 | 0.0905 | -0.0094 | * | 0.0055 | 0.0886 |
| FIRMAGE^2 | 0.0001 | | 0.0001 | 0.1114 | 0.0001 | | 0.0001 | 0.1242 |
| LOG(EMPLOYEE) | -0.0243 | | 0.0381 | 0.5241 | -0.0264 | | 0.0394 | 0.5027 |
| LISTED | -0.3645 | ** | 0.1431 | 0.0110 | -0.3651 | *** | 0.1248 | 0.0035 |
| HOMEOWNER | -0.0467 | | 0.1146 | 0.6835 | -0.0456 | | 0.1297 | 0.7249 |
| CEOAGE | 0.0021 | | 0.0027 | 0.4377 | 0.0022 | | 0.0028 | 0.4221 |
| OSAKA | -0.0205 | | 0.0622 | 0.7419 | -0.0200 | | 0.0635 | 0.7524 |
| KOBE | -0.0397 | | 0.0961 | 0.6796 | -0.0371 | | 0.0994 | 0.7087 |
| KYOTO | -0.0841 | | 0.0812 | 0.3010 | -0.0899 | | 0.0867 | 0.3002 |
| CONST | 0.2051 | * | 0.1191 | 0.0855 | 0.1987 | | 0.1208 | 0.1002 |
| MANUFAC | 0.0058 | | 0.1008 | 0.9540 | -0.0011 | | 0.1042 | 0.9919 |
| WHOLE | 0.0989 | | 0.1079 | 0.3594 | 0.0926 | | 0.1100 | 0.3999 |
| RETAIL | 0.2900 | ** | 0.1373 | 0.0349 | 0.2791 | * | 0.1431 | 0.0514 |
| REALEST | 0.0998 | | 0.2238 | 0.6558 | 0.1054 | | 0.2207 | 0.6331 |
| RESTAU_HOTEL | 0.0630 | | 0.2119 | 0.7662 | 0.0644 | | 0.2433 | 0.7912 |
| SERVICES | 0.1155 | | 0.1185 | 0.3299 | 0.1153 | | 0.1209 | 0.3404 |
| VISITINC_OTHER | -0.0175 | | 0.0532 | 0.7415 | -0.0156 | | 0.0523 | 0.7649 |
| VISITINC_PA | -0.1605 | ** | 0.0731 | 0.0284 | -0.1630 | ** | 0.0689 | 0.0182 |
| Adjusted R-squared | 0.1235 | | | | 0.1232 | | | |
| Number of | 1057 | | | | 1057 | | | |

Note: ***, **, or * means that the coefficient is statistically significant at 1%, 5%, or 10% level. Standard errors in column (2) are White heteroskedasticity-consistent standard errors.

**Table 9. Benefit from Soft Information Production**
**(Dependent variable = INEXPENSIVE, Ordinary Least Squares)**

| | (1) | | | | (2) | | | |
|---|---|---|---|---|---|---|---|---|
| Variable | Coefficient | | Std. Error | Prob. | Coefficient | | Std. Error | Prob. |
| Intercept | 2.4402 | *** | 0.3821 | 0.0000 | 2.4275 | *** | 0.3810 | 0.0000 |
| **REGIONAL** | -0.1695 | ** | 0.0764 | 0.0268 | -0.1696 | ** | 0.0785 | 0.0310 |
| **UNION** | 0.0194 | | 0.1022 | 0.8494 | 0.0176 | | 0.0886 | 0.8421 |
| **SOFT** | -0.2811 | *** | 0.0230 | 0.0000 | -0.3009 | *** | 0.0386 | 0.0000 |
| **SOFT*REGIONAL** | | | | | 0.0303 | | 0.0616 | 0.6230 |
| **SOFT*UNION** | | | | | 0.0624 | | 0.0790 | 0.4299 |
| AUDIT | 0.0068 | | 0.0334 | 0.8377 | 0.0089 | | 0.0336 | 0.7921 |
| LOG(ASSET) | 0.1193 | | 0.1089 | 0.2737 | 0.1214 | | 0.0956 | 0.2046 |
| PERFORMANCE_DS | -0.0420 | | 0.1098 | 0.7023 | -0.0399 | | 0.1086 | 0.7130 |
| PERFORMANCE_SD | 0.0337 | | 0.1217 | 0.7823 | 0.0305 | | 0.1209 | 0.8011 |
| PERFORMANCE_DD | 0.2375 | *** | 0.0622 | 0.0001 | 0.2368 | *** | 0.0637 | 0.0002 |
| NODIVIDEND | -0.0116 | ** | 0.0055 | 0.0345 | -0.0121 | ** | 0.0058 | 0.0384 |
| FIRMAGE | 0.0001 | ** | 0.0001 | 0.0376 | 0.0001 | | 0.0001 | 0.0525 |
| FIRMAGE^2 | -0.0141 | | 0.0416 | 0.7337 | -0.0149 | | 0.0414 | 0.7197 |
| LOG(EMPLOYEE) | -0.2185 | | 0.1394 | 0.1172 | -0.2210 | | 0.1554 | 0.1554 |
| LISTED | -0.1645 | ** | 0.0703 | 0.0194 | -0.1643 | ** | 0.0676 | 0.0153 |
| HOMEOWNER | -0.1084 | | 0.1062 | 0.3080 | -0.1057 | | 0.1044 | 0.3115 |
| CEOAGE | -0.0531 | | 0.0869 | 0.5413 | -0.0545 | | 0.0882 | 0.5367 |
| OSAKA | 0.2895 | ** | 0.1167 | 0.0133 | 0.2918 | ** | 0.1244 | 0.0192 |
| KOBE | 0.0023 | | 0.0029 | 0.4210 | 0.0024 | | 0.0029 | 0.4072 |
| KYOTO | 0.0819 | | 0.1313 | 0.5332 | 0.0763 | | 0.1290 | 0.5545 |
| CONST | -0.1159 | | 0.1047 | 0.2687 | -0.1223 | | 0.1091 | 0.2626 |
| MANUFAC | -0.0059 | | 0.1124 | 0.9585 | -0.0096 | | 0.1167 | 0.9343 |
| WHOLE | 0.1899 | | 0.1522 | 0.2123 | 0.1803 | | 0.1485 | 0.2250 |
| RETAIL | 0.0932 | | 0.1887 | 0.6213 | 0.0926 | | 0.2426 | 0.7028 |
| REALEST | 0.0058 | | 0.2546 | 0.9819 | 0.0041 | | 0.2298 | 0.9857 |
| RESTAU_HOTEL | 0.0144 | | 0.1223 | 0.9062 | 0.0115 | | 0.1286 | 0.9288 |
| SERVICES | -0.0266 | | 0.0568 | 0.6399 | -0.0269 | | 0.0578 | 0.6423 |
| VISITINC_OTHER | -0.1789 | ** | 0.0738 | 0.0155 | -0.1794 | ** | 0.0794 | 0.0241 |
| VISITINC_PA | 0.0896 | | 0.0878 | 0.3079 | 0.0919 | | 0.0848 | 0.2789 |
| Adjusted R-squared | 0.1231 | | | | 0.1220 | | | |
| Number of | 1056 | | | | 1056 | | | |

Note: ***, **, or * means that the coefficient is statistically significant at 1%, 5%, or 10% level. Standard errors in column (1) are White heteroskedasticity-consistent standard errors.