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Same Information, Different Valuation:

New Evidence on the Value of Voluntary Assurance

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ABSTRACT

In this paper, we examine whether banks place different values on the same voluntary assurance on a firm's financial statements by an independent auditor. Specifically, we investigate whether the effect of assurance on the interest rates of banks' loans differs because of the strength of their relationship with the client. We use a within-firm estimator in the examination, and find that interest rates decrease because of the effect of voluntary assurance and the effect becomes stronger as the relationship becomes longer. This finding suggests that the value of assured financial statements differs depending on the availability of soft information that the user has. In additional analyses, we also find that the auditor's tenure has a nonlinear effect on the value of assurance in terms of both the tenure of the partner doing the audit and the audit firm's tenure with the client. These findings shed light on unexplored aspects of the economic effect that auditors' assurance has on firms, and have implications for the argument on auditor rotation.

Keywords: Auditor assurance; auditor rotation; hard information; lending technology

JEL Classifications: M40; M42; G18; G21

1 Introduction

Many auditing studies have investigated whether or not the assurance of financial statements by auditors has economic value. The established stylized fact from these studies is that auditors' assurance does have value (Blackwell et al. 1998; Allee and Yohn 2009; Kim et al. 2011; Lennox and Pittman 2011; Minnis 2011; Dedman and Kausar 2012; Kausar et al. 2016). Building on this fact, we aim to examine a further

question: whether or not the value of the voluntarily assured financial statement differs among the same type of users.

Although prior studies do not highlight the possibility that the value differs among the same type of users, there is a good reason to argue that it does. For the firms' stakeholders, financial statements are not the sole source of information. For example, the banks that are important stakeholders of firms can collect their clients' information on their own. It is then plausible to predict that the value of assured financial statements differs because of the availability of other information. To explore this possibility, we use a unique data set of private firms in Japan to examine whether banks with different levels of access to other information evaluate the same voluntarily assured financial statements differently.

The focus on banks is advantageous. First, banks are among the most important users of accounting information. They need information on their clients' creditworthiness as an integral input in making lending decisions. Quantitative and verifiable information is called hard information, and financial statements are an important source of such information. If these financial statements are audited by independent auditors, the assurance improves their credibility. Therefore, assurance should be valuable to banks.

Second, information other than that from assured financial statements is also available to banks, and the degree of this availability might differ among them. In their screening and monitoring process, banks collect their clients' important information that is qualitative and unverifiable: so-called soft information, such as the competence of a firm's chief executive officer (CEO) or the future prospects of the firm's business. Many studies argue that banks accumulate soft information through strong bank-borrower relationships. This

information is especially valuable for opaque private firms with high informational asymmetry (e.g., Berger and Udell 2002; Boot 2000). Many empirical studies lend support to this value creation by finding reduced loan costs or greater credit availability (e.g., see, Degryse et al. 2009, chapter 4 for a survey of empirical studies). Thus, the value of voluntarily assured financial statements should differ across banks because of the availability of valuable soft information, or the lack thereof. We test this hypothesis in this paper.

In addition to whether there is a difference in the value of voluntarily assured financial statements because of the level of soft information, we also examine the direction of the difference, if any. Whether the availability increases or decreases the value is a priori indeterminate, because soft and hard information could both substitute for or complement each other. On the one hand, banks might need as much information as possible to resolve a significant informational wedge, and there might be synergy in using both types of information to accurately predict borrowers' future profitability or in assuring the information of one type using the other. On the other hand, to the extent that the content of the information is similar, soft and hard information might be a substitute for each other, where using both types of information might create costs from duplicated information production. Furthermore, theory argues that soft information might also be disadvantageous because of the so-called hold-up problem (Sharpe 1990; Rajan 1992). In this case, the assurance of financial statements might mitigate this problem by signaling that the firms are good borrowers. On balance, whether the presence of soft information increases or decreases the value of assured financial statements is an empirical question.

To examine whether, and how if any, the value of voluntary assurance differs because of the availability of soft information, we follow a unique approach. While we measure the value as a reduction in firms' interest rates on loans due to the presence of the voluntarily assured financial statements, the uniqueness lies in our investigation of whether this reduction differs depending on the availability of soft information. We use the duration of the bank-borrower relationships as a proxy for this availability, which is a conventional measure of the strength of this relationship.

Also, we use unique data from a corporate survey conducted in Japan in 2010. Data from Japan are suitable for our testing because Japan's financial system is bank oriented, and there are strong bank-borrower relationships called main bank relationships.[1] These relationships contribute to the banks' acquisition of sufficient soft information on their clients that facilitates the extraction of its effect on the value of voluntary assurance, if any.

In addition to this suitability, our data have uniqueness for analytical purposes as well. The data set includes loan information from firms' first- as well as second-largest lenders that allows us to use a within-firm estimator that recent papers in the field of finance have successively used (e.g., Khwaja and Mian 2008). The within-firm estimator estimates the effect of an independent variable that varies within each firm after controlling for firm fixed effects. In our case, because the fixed effects pick up the effects of both observable and unobservable firm-level factors on the interest rates, the within-firm estimator can extract a

[1] For the main bank relationships in Japan, see, for example, Aoki and Patrick (1994) and Uchida and Udell (2014).

within-firm-cross-bank variation in the interest rates. Using this estimator, we focus on cross-bank differences in the interest rates of firms with voluntarily assured financial statements that stem from differences in the durations of their relationships with their banks.[2]

From our analysis, we consistently find that interest rates decrease because of the effect of voluntary assurance and the effect becomes stronger for longer bank-client relationships. This finding indicates that even among banks lending to the same firm, the assurance of the statements is more valuable for a bank with a longer relationship. This finding means that the values of voluntarily assured financial statements differ depending on the amount of soft information. The finding is robust to different specifications and to controlling for differences in bank characteristics. We can thus conclude that the soft information that banks accumulate through a long relationship and the hard information in assured financial statements complement each other.

In additional analysis, we also examine whether auditor tenure affects the difference in the effect of the availability of soft information on the value of assured financial statements, since tenure is one of the most important factors that can influence audit quality. By measuring tenure at both the firm and the partner levels, we find evidence of a nonlinear effect. Our findings indicate that ceteris paribus, the assurance decreases the rate when the tenure is relatively short (up to 16.62 years of a partner's tenure or 19.41 years of the audit firm's tenure), but it increases the rate for a tenure longer than that.

[2] The within-firm estimator also controls for the endogeneity that could arise when, for example, assurance services are obtained by firms with particular (observable or unobservable) characteristics and the choice to obtain assurance or not is not random (i.e., self-selection). This is because by controlling for the firm fixed effects, we do not have to control for any firm-level factors, including those that might influence managers' decisions to voluntarily acquire assurance on their financial statements.

Our study contributes to three strands of the literature. First, it adds to the literature on the economic value from auditors' assurance of financial statements. Many studies in this strand report the presence of this value, but to the best of our knowledge, ours is the first to find that there is a difference in the value of the same voluntarily assured financial statements because of the availability of other information to users.[3] Among studies on the value of voluntarily assured financial statements, Kim et al. (2011) is methodologically similar to ours, because they control for firm fixed effects using multiple observations for each sample firm. However, their multiple observations are for different years (i.e., panel data) and not for different banks as in our paper (although our data are cross-sectional). Thus, they cannot use the within-firm estimator to examine whether banks place different values on the same voluntarily assured financial statement.[4]

Second, this paper contributes to the studies on the effect of auditor tenure on audit quality. Our results indicate that ceteris paribus, the extent of a reduction in interest rates decreases in the auditor tenure, and for a longer tenure, the rates rather increases. This finding means that auditor rotation in the short run might not improve the audit's quality for private firms. The literature overwhelmingly investigates the link between auditor tenure and the quality of audits for public firms, since it is an urgent issue for such firms, given the controversy over the efficacy of auditor rotation (PCAOB 2011; Ewelt-Knauer et al. 2012). However, the effect of tenure on audit quality is just as important for private firms, since a nonnegligible number of private firms

[3] Our results also have an implication for the literature on the auditing expectation gap. Miller et al. (1993) show that loan officers from large and small banks understand the content of audit reports differently. Although the authors discuss this difference in the context of the expectation gap, their results could indicate that the information technologies the bank officers use differ depending on the bank's size, which is consistent with our expectations.

[4] The primary interest of Kim et al. (2011) is whether banks value voluntary assurance by Big 4 auditors differently from that by non-Big 4 auditors.

voluntarily purchase assurance services, possibly with an expectation for benefits from improved credibility in their financial statements.

Third, this study is closely related to the banking literature, especially the literature on lending technologies that classify loans into different types based on factors such as information sources and screening and underwriting policies and procedures (Berger and Udell 2002; 2006). In this classification, there are two main lending technologies, transaction lending and relationship lending, that base their lending decisions on, respectively, hard quantitative information and soft qualitative information. Recent empirical studies find that banks focus on (or value) both types of information in their screening, which indicates that the two technologies are complementary (Uchida 2011; Bartoli et al. 2013). However, when and how the use of both types of information creates value is still unclear. Using a different and more powerful approach, our paper provides evidence that the complementarity exists and creates value when banks accumulate sufficient soft information.

The remainder of this paper is structured as follows: The next section presents the institutional background of financial reporting and auditing systems in Japan. Section 3 reviews the literature and develops the hypothesis. Section 4 describes the data and sample, and section 5 explains the empirical procedures. The results are reported in section 6. The final section concludes the paper.

2 Institutional background

To provide a context for our analysis, this section briefly reviews the auditing and financial reporting systems in Japan.[5] The democratization policy of the Allied Powers' occupation forces after World War II established the present system in 1948. The present regulations on audits for financial statements require firms that issue publicly traded securities to prepare and disclose audited financial statements in accordance with the Financial Instruments and Exchange Act. The Companies Act also requires public or large private firms to prepare audited financial statements.[6] For small and medium enterprises (SMEs), audits of the financial statements are not mandatory, but some of them voluntarily acquire assurance from independent auditors for better access to external funds and other purposes.

The regulators in Japan have revised the accounting standards several times to be consistent with their international counterparts (e.g., Mizuno 2004). This movement mostly targeted public firms. Therefore, it created the need for separate standards for SMEs because the purpose of their financial reporting differs from that of large public firms, e.g., for tax accounting or to establish effective management control systems. In response to this increased need, regulators established two sets of accounting standards that specifically targeted SMEs: the Accounting Guidance for SMEs or the Basic Accounting Guidance for SMEs.[7]

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[5] Further detailed accounts for the accounting and auditing systems in Japan can be found in JICPA(2010), for example.

[6] The Companies Act defines large companies as any stock company that satisfies either of the following criteria: (1) the amount of stated equity capital on the balance sheet is at least 500 million Japanese yen and (2) total liabilities are at least 20 billion Japanese yen.

[7] The Accounting Guidance for SMEs was first issued in 2005 by the Japanese Institute of Certified Public Accountants, the Japan Federation of Certified Public Tax Accountants' Association, the Japan Chamber of Commerce and Industry, and the Accounting Standards Board of Japan. However, because many Japanese SMEs did not apply this guidance, probably due to its high cost. the Basic Accounting Guidance for SMEs, a

As for audits on financial statements in Japan, the Auditing Standards stipulates the standard regardless of firm size or whether the audit is mandatory or voluntarily. For private firms, Auditing Standard Board Reports 800 and 805, which are the Japanese counterparts to ISA 800 (Special Considerations – Audits of Financial Statements Prepared in Accordance with Special Purpose Frameworks) and 805 (Special Considerations – Audits of Single Financial Statements and Specific Elements, Accounts or Items of a Financial Statement) are likely to be relevant, because they are applied when the object to be audited is not a full set of financial statements.

3 Literature and hypothesis development

Since Blackwell et al. (1998), the research has comprehensively investigated the economic value of auditor assurance for the financial statements of private firms. The agency theory predicts that firms voluntarily acquire assurance for their financial statements from auditors, because it reduces the cost of debt financing through mitigation of the ex ante informational asymmetry between firms and lenders and the ex post moral hazard behavior of the firms' managers (Jensen and Meckling 1976), or through emitting a signal of being a good borrower (Lennox and Pittman 2011; Kausar et al. 2016). Empirical tests find evidence for the economic value of auditor assurance for private firms in various countries (Blackwell et al. 1998; Alee and Yohn 2009; Kim et al. 2011; Lennox and Pittman 2011; Minnis 2011; Dedman and Kausar 2012; Kausar et al. 2016).

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simpler set of standards, was issued in 2012. This guidance targets small entities that do not undertake complicated accounting transactions or that have employee with limited accounting literacy. For more details on accounting standards for Japanese SMEs, see Urasaki (2014).

Although these studies focus on the presence of such value, they do not take into account the possibility that the value might differ among the same type of users of financial statement information. There is good reasons for predicting such a difference, especially among lenders to firms, because various sources of information are available to them. Specifically, the banking literature shows that in addition to hard information (such as financial statements), banks accumulate soft information through various transactional relationships with borrowers (Berger and Udell 2002; Stein 2002).

Theory argues that soft information is valuable because it mitigates the problem of informational asymmetry. Many empirical studies report evidence that borrowers with stronger relationships with their banks can benefit from lower interest rates or a lower likelihood of pledging collateral.[8] Based on these studies, the value of voluntarily assured financial statements should differ because of the difference in the availability of valuable soft information across banks. We thus establish the following hypothesis:

HYPOTHESIS: *The value of a voluntarily assured financial statement differs across banks because of the availability of soft information.*

Although this hypothesis is reasonable, the direction of the difference is a priori indeterminate because the availability of soft information can both increase and decrease the value of the auditor assurance. On the one hand, soft and hard information might complement each other, and the availability of soft

[8] See Degryse et al. (2009, chapter 4) for a survey on empirical studies. Building on these studies, Kysucky and Norden (2016) conduct a meta analysis.

information might increase the value of voluntarily assured financial statements. This could be the case for highly opaque private firms, because for such firms, banks might want to obtain as much information as possible. In this case, the use of both types of information could have a synergetic effect in more accurately evaluating the competence of the CEO, predicting the firm's future profitability, or by assuring one type of information with the other.

On the other hand, soft and hard information might be substitutes for each other, and the availability of soft information might decrease the value of assured financial statements. This might be the case when soft and hard information are similar, and banks that accumulate a great deal of soft information through stronger relationships with their borrowers do not have to rely on hard information.[9] In this case, using both types of information could create costs from the duplication of information production. This view is also similar to the relationship banking perspective of Kim et al. (2011), which predicts that, due to banks' own information production, the information role of external assurance is of second-order importance.[10]

The difference in the value of assured financial statements might also stem from a reason other than the complementarity or substitutability of soft and hard information. As for the value of soft information, there is also a theory that argues that banks with more soft information could charge higher interest rates due to the

[9] Minnis and Sutherland (2017) provide evidence that supports this substitution view by showing that banks are less likely to require clients' financial statements as the duration of their relationship becomes longer.

[10] Kim et al. (2011) develop this perspective as theoretical grounds for the absence of value for voluntarily assured financial statements and test it against the opposing information perspective that predicts value due to the alleviation of informational asymmetry between lenders and borrowers through informative assured financial statements. Although the authors use the relationship banking perspective to predict no value to auditor assurance (or an extensive margin), we use a similar argument to predict a difference in the value (or an intensive margin).

so-called hold-up problem or information monopoly (Sharpe 1990; Rajan 1992). This is because to the extent that soft information is proprietary and cannot be used by other banks, borrowers might have difficulty changing banks and become captured. Based on this theory, good borrowers might want to avoid such rent extraction by emitting a signal on their creditworthiness to other banks through voluntarily having their financial statements assured (Lennox and Pittman 2011; Kausar et al. 2016). In this case, the value of voluntarily assured financial statements takes the form of a reduction in the costs due to the hold-up problem.

On balance, how the value of assured financial statements differs because of the availability of soft information is an important empirical question. In our empirical analysis, we try to answer this question using a unique data set that detects the differences in the valuation of financial statement assurance by different banks.

4 Data and sample

The data in this paper comes from the Survey on Corporate Finance in Japan, which a group of researchers conducted in October 2010 to collect information on different characteristics of firms.[11] The survey was outsourced to Tokyo Shoko Research, a business credit information provider in Japan that is similar to Dun & Bradstreet in the United States. The sample firms are 13,579 firms, which are randomly selected from firms that are recorded in the database of Tokyo Shoko Research, and satisfy two criteria: (1) firms for which financial statements were available for the two accounting years of 2007 and 2009; and (2) firms that transact with one of

[11] For details of the survey and its results, see Nakaoka et al. (2011a, 2011b). Hattori et al. (2015) use these data to examine information production within bank organizations.

286 prespecified regional financial institutions.[12] The target firms were mostly SMEs and 92.6% of them had 50 or fewer employees, which is reflective of firms in Japan. A total of 2,703 firms responded for a response rate of 19.91%. After eliminating observations with missing data, 2,687 firms remained in the sample.

As for questions about loans from banks, the survey asks for the bank that lends the most to a firm at the time of the survey (the largest lender) as well as the bank that lends the second most (the second-largest lender). Thus, we have two bank-firm observations for one firm. These observations mean that notwithstanding that our data are cross-sectional, we can take into account fixed effects by using dummies for the firms that then controls for any observable or unobservable firm-level factors that could affect our dependent variable. This control allows us to use the within-firm estimator that recent papers in the finance field have adopted (e.g., Khwaja and Mian 2008).[13]

[insert Table 1 around here]

After eliminating large firms and firms for which the borrowing interest rate is not available for both the largest or second-largest lenders, we have 592 observations at the firm-bank level (296 observations at the firm level).[14] These observations are used as our baseline sample. The characteristics of the firms in our baseline sample are reported in Table 1.

[insert Table 2 around here]

[12] These criteria were adopted to collect data for studies that differ from ours.
[13] Note that, because our sample firms are private firms that rarely obtain syndicated loans, we can rule out the possibility that these banks cooperatively set interest rates.
[14] We eliminate large firms whose equity capital is at least 500 million yen or whose total debt outstanding is at least 20 billion yen, because the Companies Act requires the auditing of the financial statements for such firms.

To describe the characteristics of our sample firms, Table 2 compares the distribution of the firms in our baseline sample with those in the sample before selection and with those in the 2009 Economic Census (compiled by the Ministry of Internal Affairs and Communications of the Government of Japan) that represent the universe of firms in Japan. Consistent with the distribution of the responding firms, our baseline sample includes a large number of firms in the construction sector (Panel A). This dominance reflects one of the criteria for selecting the target firms in the survey, i.e., the availability of financial statements for two accounting years, because firms in the construction sector in Japan need to produce financial statements if they participate in competitive bidding for public construction. However, the criterion of the availability of financial statements is rather advantageous for this study, because we are interested in the value of assurance on financial statements.[15] Meanwhile, the size distribution of the baseline sample indicates that the firms in our sample are relatively larger than the universe of firms in Japan (Panel B).

5 Empirical procedure

5.1 Regression and main variables

We use a regression analysis to examine the differences in the value of voluntarily assured financial statements among banks with different accumulations of soft information. The variables used in our analysis are listed in Table 3 together with their definitions and summary statistics.

[15] Also, we confirmed that our results are qualitatively unchanged when we exclude observations in the construction sector, although the statistical significance of the main variables weakens in some specifications.

[insert Table 3 around here]

Our dependent variable *INTEREST_RATE* is the interest rate on loans from the bank (the largest or the second-largest lender). As shown in Table 3, the average interest rate is 2.13%, with a minimum of 0.5% and a maximum of 5.0%.[16]

Our main independent variable is the interaction between the variable to indicate the acquisition of assurance services from auditors and the variable for the accumulation of soft information. As for the former, we use a dummy, *ASSURANCE*, that is defined at the firm level. This variable takes the value of one if the firm acquires assurance services from an auditor (based on survey responses). As reported in Table 3, 14% of our sample (41 out of 296 firms) have auditors assure their financial statements. This finding is reasonable, because most of our sample firms are small and medium-sized private firms whose financial statements do not have to be assured.

As a variable to interact with *ASSURANCE*, we use *B_DURATION* that measures the duration (in years) of the bank-firm relationship. This variable is a measure of the strength of the bank-firm relationship. Since the seminal papers of Petersen and Rajan (1994) and Berger and Udell (1995), studies have used this variable as a proxy for the extent to which the bank accumulates soft information on the borrower. By interacting this proxy with *ASSURANCE*, we can examine whether the effect of the availability of assured financial statements on the interest rate differs depending on the availability of more soft information for the

[16] To deal with outliers, we winsorize observations whose interest rates are below the 0.5th or above the 99.5th percentile.

bank. The hypothesis established in section 2 predicts that the interaction term has a nonzero effect on interest rates. In the analysis, we use the natural logarithm of the duration, *Log*(*1 + B_DURATION*), to take into account its nonlinear effect. As reported in Table 3, the average duration of a bank-borrower relationship is 14.62 years.

5.2 Firm fixed effects and the within-firm estimator

The other important independent variables are dummies to control for firm fixed effects. The unit of observation in our data is at the firm-bank level for which we have two observations for one firm: one for the largest lender and one for the second-largest lender. Thus, we can use firm dummies notwithstanding that our data are cross-sectional.

When accompanied by these firm dummies, the estimator of the coefficient for the interaction between *ASSURANCE* and *Log*(1 + *B_DURATION*) is called the within-firm estimator (e.g., Khwaja and Mian 2008). The firm dummies control for all observable and unobservable firm-level factors that could affect the interest rates for the relevant firm. With these controls, the interaction term extracts any cross-bank (or relative) difference in the value of audited financial statements, which differs depending on the duration of the bank-borrower relationship.

The use of the within-firm estimator is advantageous also because it addresses potential endogeneity. When regressing a measure of the economic value of auditor assurance on an indicator for obtaining assurance services, the conventional approach is to run ordinary least squares tests using a cross-sectional sample.

However, whether to obtain assurance services might depend on certain (unobservable) firm characteristics, and might thereby produce endogeneity. The within-firm estimator deals with this self-selection problem as well.[17]

5.3 Control variables

Because we control for firm fixed effects, we do not have to (and cannot) use any firm-level control variables. We only need control variables at the bank or firm-bank level. We first use the natural logarithm of the duration of bank-borrower relationship, *Log(1 + B_DURATION*), in isolation (i.e., not interacting with *ASSURANCE*). We also use variables for bank characteristics. First, we use bank-type dummies: *B_REGIONAL* for regional banks; *B_SHINKIN* for Shinkin banks; *B_COOPERATIVE* for credit cooperatives; and *B_OTHERS* for other types of banks; with the default being city banks.[18] Second, we use variables from banks' financial statements: *B_ASSET*, the bank's total assets; *B_ROA*, the bank's return on assets; *B_CAPITAL_RATIO*, the bank's capital ratio; and *B_NPL_RATIO*, the nonperforming loan ratio.[19] Table 3 provides more detailed accounts for these control variables. The banks' financial statement data are available only for a limited

[17] These advantages come at the expense of a small sample due to a smaller number of firms transacting with two banks. To compensate for this disadvantage, we follow recent studies and replicate the analysis by replacing the firm fixed effects with location-size-sector fixed effects (e.g., Degryse et al. 2016; De Jonghe et al. 2016). Untabulated results indicate that the effect of the main independent variables is qualitatively unchanged, but loses statistical significance due to increased standard errors. This result suggests that our main result might be weakly observed for firms that transact with one bank only, but it can also suggest that the control for location-size-sector fixed effects is less powerful than that for firm fixed effects.

[18] City banks are the largest banks, have complex organizational structures, and operate nationwide. Regional banks are middle sized and operate in one or a few prefectures. Shinkin banks and credit cooperatives are, respectively, larger and smaller cooperative banks operating in a limited area. See Uchida and Udell (2014) for more on bank types in Japan.

[19] The data sources for banks' financial statements are the Nikkei Financial Quest Database (Nikkei Inc.) for city, regional, and Shinkin banks and the Financial Statements of Credit Cooperatives in Japan (Kin-yu Tosho Consultant Sha) for credit cooperatives.

sample.[20] We thus use two types of specifications in our regression analysis: those with and without the bank financial variables.

We also do not use variables for loan terms, such as maturity. Because these terms are simultaneously determined with the interest rate, their inclusion produces endogeneity (Brick and Paria 2007). However, even if we nevertheless run the regression with the maturity as an additional independent variable, we find that the main results are qualitatively unchanged.

6 Results

6.1 Baseline results

Table 4 reports our baseline results. The dependent variable is the interest rate on loans and the main independent variable is the interaction term *ASSURANCE* × *Log(1 + B_DURATION*). The first column reports the results without using banks' financial variables and the second column reports the results with them. We control for firm fixed effects in both specifications. For each variable, we report two standard errors: an ordinary one and one that takes into account clustering. We report the latter because the ordinary standard errors could be biased because our sample has two observations for one firm (e.g., Petersen 2009).[21] As shown in the table, however, the statistical significance of the variables does not qualitatively change.

[20] More specifically, they are available for borrowers of city, regional, or Shinkin banks or credit cooperatives, which are 220 (out of 296) firms (see Table 3).

[21] In doing so, we need to distinguish the least squares dummy variable (LSDV) estimator and the within estimator. The LSDV estimator controls for firm fixed effects using the dummy variables to identify each firm, while the (ordinary) within estimator does so by subtracting the mean from each variable. In ordinary cases, the two estimators are theoretically equivalent to each other. However, they produce different robust standard errors

[Table 4 is inserted around here]

Focusing first on the results for the control variables, column (1) of Table 4 shows that the interest rate is higher for firms that transact with smaller banks (the highest for Shinkin banks or credit cooperatives and the second highest for regional banks). This is a reasonable finding, because these firms are smaller and more opaque. When we add the financial variables to column (2), the bank's asset size (*Log(B_ASSET)*) absorbs the effect of bank types and we find that the interest rate is higher when banks have more nonperforming loans.

As for the main independent variables, we find that *ASSURANCE* × *Log(1 + B_DURATION)* has a negative and statistically significant effect on the interest rate. This effect means that obtaining assurance services reduces the interest rate for the firm and that this effect increases with the duration of the bank-firm relationship. This finding has important implications for the value of auditor assurance. Although prior studies do not take into account the possibility that the value of auditor assurance on financial statements differs among the same types of users, our result indicates that the value does differ among banks due to the strength of the bank-borrower relationships.

In contrast, *Log(1 + B_DURATION)* has no significant effect by itself, which means that the accumulation of soft information does not matter on its own. This finding is in contrast with prior findings of a negative effect of the duration on interest rates (e.g., Berger and Udell 1995; Berger et al. 2007). By taking into

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when taking into account clustering. Cameron and Miller (2015) demonstrate that when the number of observations in each cluster is small, which is case in our analysis where the number is two, the LSDV estimator produces an upward bias in the computed clustered robust standard errors due to the small sample correction. We thus report the results based on the within estimator. For more details on this clustering issue, see Cameron and Trivedi (2005) as well.

account the availability of assured financial information, we find a negative effect only when the client voluntarily acquires the assurance. This finding indicates that the two types of information on clients (i.e., soft information and audited financial statements) or the two types of lending technologies (i.e., financial statement lending and relationship lending) complement each other.

6.2 Effects of auditor longer tenure

In this subsection, we extend our analysis by examining whether these effects differ depending on the tenure of the auditors. The focus on tenure is important because it is a critical factor that can influence audit quality. Banks might monitor auditor-client relationships and thereby precisely scrutinize changes in the audit quality due to an auditor's longer tenure.

Whether longer tenure influences audit quality positively or negatively is not theoretically straightforward. While longer tenure might enable the auditor to make more precise assessments of the fairness of the firm's financial statements based on accumulated information, it could also jeopardize the quality because strengthened intimacy between the auditor and the firm might make the auditor (consciously or unconsciously) less independent. These mixed predictions imply that periodic auditor rotation could be a double-edged sword.

The empirical evidence is also mixed. Some studies report a positive relation between tenure and audit quality (e.g., Geiger and Raghunandan 2002; Myers et al. 2003; Mansi et al. 2004), some report a negative relation (e.g., Carey and Simnett 2006), and others find a nonlinear relation (e.g., Davis et al. 2009; Bell et al. 2015). However, prior studies focus almost exclusively on public firms, and evidence on private firms is scarce.

Exceptions are Fortin and Pittman (2007), Svanström (2013), and Bell et al. (2015), but they do not take into account the possibility that the same voluntarily assured financial statements might have different values between banks. In this subsection, we examine the relation between auditor tenure and audit quality as perceived by the real users of such information, that is, banks (with distinction between those with shorter and longer relationships with their clients).

In examining this tenure-quality nexus in auditing, our survey data provide information on the tenure at two different levels: tenure at the level of the audit firm and at the level of the current audit partner assigned to the client. Using this information, we create two measures for tenure: *FIRM_TENURE* and *PARTNER_TENURE*. To the best of our knowledge, prior studies on the relation between tenure and audit quality for private firms focus only on the audit firm tenure. The effect of the audit partner tenure on quality could differ from that of the audit firm because the firm's quality controls might enable them to regularly monitor client-partner relationships, but newly assigned partners might have an informational disadvantage.

Information on the firm's and partner's tenures is available, respectively, for 284 and 281 firms. Their means (medians) are 21.98 (20.00) and 16.14 (13.00) years and their standard deviations are 14.19 and 12.38, respectively. The minimum tenure is one year for both and the maximum is 63 (for audit firms) and 60 years (for audit partners). We interact *FIRM_TENURE* and *PARTNER_TENURE* with *ASSURANCE* × *Log(1 + B_DURATION)*. Both *FIRM_TENURE* and *PARTNER_TENURE* are firm-level variables and so we cannot use them in isolation as independent variables.

In the analysis, we first add the triple interaction term *Log(1 + FIRM_TENURE)* × *ASSURANCE* × *Log(1 + B_DURATION)* or *Log(1 + PARTNER_TENURE)* × *ASSURANCE* × *Log(1 + B_DURATION)* to the specifications in the previous section. However, we find no significant effect for these variables as well as for our main variable *ASSURANCE* × *Log(1 + B_DURATION)* (results not tabulated here). These findings indicate that the triple interaction term has a high correlation with *ASSURANCE* × *Log(1 + B_DURATION)*, which produces multicollinearity.

Thus, we proceed with the second specification, where we replace the double interaction term *ASSURANCE* × *Log(1 + B_DURATION)* with the triple interaction term *Log(1 + FIRM_TENURE)* × *ASSURANCE* × *Log(1 + B_DURATION)* or *Log(1 + PARTNER_TENURE)* × *ASSURANCE* × *Log(1 + B_DURATION)*. Table 5 shows the results. We find that the replacement variable has a negative and statistically significant effect at the 5% level. The results are qualitatively unchanged even when we consider the clustering of standard errors at the firm level when using the within estimator. Our findings show that given the duration of the bank-borrower relationship, the reduction in the interest rate due to the assurance services increases with the audit firm's and partner's tenures.

[Table 5 is inserted around here]

Prior studies (e.g., Davis et al., 2009) report a nonlinear effect of auditor tenure on audit quality, which indicates that the value of assurance services decreases as the tenure gets longer. To test this possibility, we use a third specification where we replace the triple interaction term in the second specification with two triple interaction terms, the first of which is linear, *FIRM_TENURE* × *ASSURANCE* × *Log(1 + B_DURATION)*

(or *PARTNER_TENURE* × *ASSURANCE* × *Log(1 + B_DURATION)*), and the second of which is quadratic, *FIRM_TENURE*^{2} × *ASSURANCE* × *Log(1 + B_DURATION)* (or *PARTNER_TENURE*^{2} × *ASSURANCE* × *Log(1 + B_DURATION)*).

Table 6 reports the results. Except for the first specification, we consistently find that the negative effect from assurance services on the interest rates for banks with a longer relationship decreases for longer tenures of the audit firm or auditing partner. This nonlinearity is robust to the use of clustered standard errors.[22] If we compare the magnitudes of the coefficient, the nonlinearity (or the curvature) is stronger when using the auditing partner's tenure than when using the audit firm's tenure.

[insert Table 6 around here]

Our result has important implications for auditor rotation. The results in columns (3) and (4) of Table 6 indicate that the effect of the voluntary assurance for longer bank-client relationships on the interest rates is negative for shorter tenures, but becomes positive at 19.41 years for the audit firm's tenure or 16.62 years for the auditing partner's tenure.[23] These results show that in the short run, periodic auditor rotation would jeopardize the economic value of auditor assurance for private firms.

[22] When we add the double interaction term *ASSURANCE* × *Log(1 + B_DURATION)* to these specifications, we find no statistically significant effect for the added term and the triple interaction terms. These findings are consistent with those for the first specification.

[23] For example, the results in column (4) of Table 6 indicate that the effect of the audit firm's tenure on the interest rate is -0.0607 + 2×0.0018×*PARTNER_TENURE*, the sign of which changes from negative to positive when *PARTNER_TENURE* = 16.62.

7 Conclusion

In this paper, we investigate whether the economic value of voluntarily acquired auditor assurance for financial statements differs among banks. We establish a hypothesis that the value differs depending on the availability of soft information that the banks obtain through their relationships with their borrowers. Using unique data from a survey of Japanese private firms, we test this hypothesis by examining the difference in the effect of voluntary assurance on interest rates because of the duration of the bank-borrower relationships.

Our main finding is that the effect of voluntary assurance on interest rates is negative and stronger for banks with longer relationships with their borrowers. This finding implies that the value of auditor assurance differs among banks because of the availability of soft information on their borrowers, and that hard and soft information complement each other. Furthermore, by examining whether the value of auditor assurance differs because of tenure, we find evidence of a nonlinear effect from both the auditing partner's tenure and the audit firm's tenure. This finding implies that auditor rotation in the short run might not improve the audit's quality for private firms.

Although our evidence is based on a unique empirical approach and is robust to a battery of additional tests, it is based on survey data from Japan. Whether or not the same results hold for other data or data from other countries remains an important research question. In addition, although this paper focuses on the value of voluntary assurance for financial statements in terms of the interest rates on loans, the data availability prevents us from comparing this value with the cost of obtaining assurance. Future studies in this direction are also called for.

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TABLE 1

Summary statistics of firm-level observations

Firm-Specific Variables	Definition	No. of Obs.	Mean	Median	Std. Dev.	Min	Max
Age (years)	Firm's age as of the closing date in 2009	294	33.1	33.4	15.6	3.4	86.8
Asset Size (million yen)	Total assets	296	891.2	482.4	1390.6	8.6	12169.9
ROA (%)	Return on assets (= net income divided by total assets).	296	-0.70	0.33	6.25	-35.57	16.33
Sales Growth (%)	3-year geometric average of annual percentage growth in sales	295	-3.83	-4.57	18.93	-50.86	106.76
Debt Ratio (%)	= Total liabilities divided by total assets	296	79.00	81.74	25.52	9.12	219.64
Cash Ratio (%)	= Cash and marketable securities divided by total assets	296	19.15	16.15	13.16	0.45	77.89
Tangible Ratio (%)	= Tangible assets divided by total assets	296	30.74	28.35	20.70	0.00	79.62

The variables *ROA*, *Sales Growth*, *Debt Ratio*, *Cash Ratio*, and *Tangible Ratio* are winsorized at the 0.5% and 99.5% levels.

TABLE 2

Sample characteristics

Panel A: Industries

Industry Classification	Economic Census in 2009		Survey respondents		Baseline sample	
	No. of obs.	%	No. of obs.	%	No. of obs.	%
Construction	331,359	18.4%	1,512	56.3%	134	45.3%
Manufacturing	277,066	15.3%	341	12.7%	51	17.2%
Information and Communications	47,969	2.7%	26	1.0%	1	0.3%
Transportations	56,695	3.1%	52	1.9%	8	2.7%
Wholesales	191,314	10.6%	353	13.1%	48	16.2%
Retail	282,036	15.6%	113	4.2%	8	2.7%
Real Estate	182,363	10.1%	94	3.5%	19	6.4%
Restaurants and hotels	97,583	5.4%	16	0.6%	4	1.4%
Other services	292,005	16.2%	160	6.0%	17	5.7%
Others	47,155	2.6%	20	0.7%	6	2.0%
Total	1,805,545	100.0%	2,687	100.0%	296	100.0%

Panel B: Number of employees

Number of Employees	Economic Census in 2009		Original Sample		Baseline sample	
	No. of obs.	%	No. of obs.	%	No. of obs.	%
0–4	1,067,825	59.1%	485	18.0%	20	6.8%
5–9	309,445	17.1%	668	24.9%	56	18.9%
10–19	200,451	11.1%	762	28.4%	83	28.0%
20–29	75,974	4.2%	326	12.1%	52	17.6%
30–49	62,940	3.5%	234	8.7%	40	13.5%
50–99	46,090	2.6%	139	5.2%	27	9.1%
100–299	30,218	1.7%	60	2.2%	16	5.4%
300–	12,602	0.7%	13	0.5%	2	0.7%
Total	1,805,545	100.0%	2,687	100.0%	296	100.0%

TABLE 3

Variable definitions and summary statistics

Variables (Observation Level)	Definition	No. of Obs.	Mean	Median	Std. Dev.	Min	Max
Dependent variable (firm–bank pair)							
INTEREST_RATE (%)	Borrowing interest rate (winsorized at the 0.5% and 99.5% levels)	592	2.13	2.00	0.79	0.50	5.00
Audit variables (firm)							
ASSURANCE	= 1 if the firm obtains assurance services from its auditor	296	0.14	0	0.35	0	1
Loan-specific variables (firm–bank pair)							
B_DURATION (years)	Duration of firm–bank relationships	592	14.62	8.00	14.88	0.00	80.00
B_CITY	Dummy for bank type (= 1 for city banks, the default)	592	0.08	0.00	0.28	0.00	1.00
B_REGIONAL	Dummy for bank type (= 1 for regional banks)	592	0.47	0.00	0.50	0.00	1.00
B_SHINKIN	Dummy for bank type (= 1 for Shinkin banks)	592	0.39	0.00	0.49	0.00	
B_COOPERATIVE	Dummy for bank type (= 1 for credit cooperatives)	592	0.05	0.00	0.21	0.00	1.00
B_OTHERS	Dummy for bank type (= 1 for other lenders)	592	0.01	0.00	0.08	0.00	1.00
Bank financial variables (bank)							
B_ASSET (million yen)	Total assets	220	3,175,179	704,171	13,400,000	50,960	154,000,000
B_ROA (%)	Return on assets (= net business profits divided by total assets)[a]	220	0.45	0.43	0.17	-0.08	1.38
B_CAPITAL_RATIO (%)	Capital ratio by Basel capital standards (domestic standards if the Basel standards do not apply to the bank)	220	12.25	11.10	5.53	6.19	65.15
B_NPL_RATIO (%)	Non-performing loan ratio, equals amount of non-performing loans ((sum of legally bankrupt loans, past due loans, and renegotiated loans) divided by the total loan amount)	220	5.48	4.55	3.30	1.23	25.99

[a] Net business profits are a measure of operating profits from core business minus operating costs from gross income. This measure is commonly used to evaluate firm performance in the Japanese banking sector.

TABLE 4

Baseline regression results

	(1)		(2)	
Assurance × bank–firm duration				
ASSURANCE×Log(1 + B_DURATION)	-0.3704		-0.3502	
	(0.1556)	**	(0.1528)	**
	[0.1550]	**	[0.1518]	**
Loan-specific variables				
Log(1 + B_DURATION)	0.0515		0.0455	
	(0.0424)		(0.0444)	
	[0.0423]		[0.0441]	
B_REGIONAL	0.1621		-0.0660	
	(0.0786)	**	(0.1330)	
	[0.0784]	**	[0.1321]	
B_SHINKIN	0.3191		-0.0764	
	(0.0771)	***	(0.1887)	
	[0.0768]	***	[0.1874]	
B_COOPERATIVE	0.3188		-0.1927	
	(0.1100)	***	(0.2544)	
	[0.1097]	***	[0.2527]	
B_OTHERS	-0.0221			
	(0.3892)			
	[0.3878]			
Bank's financial variables				
Log(B_ASSET)			-0.0615	
			(0.0360)	*
			[0.0357]	*
B_ROA(%)			0.0114	
			(0.1616)	
			[0.1605]	
B_CAPITAL_RATIO (%)			-0.0010	
			(0.0055)	
			[0.0055]	
B_NPL_RATIO (%)			0.0211	
			(0.0124)	*
			[0.0123]	*
No. of Observations	592		520	
Adj. R^2	0.74		0.73	

See Table 2 for the variable definitions. All regressions include firm fixed effects. Heteroscedasticity-robust standard errors are reported in parentheses and robust standard errors clustered at the firm level by using the within-firm estimator are reported in square brackets. The superscripts ***, **, and * correspond to statistical significance at the 1%, 5%, and 10% levels, respectively.

TABLE 5

Regression results: Effects of auditor tenure on the borrowing interest rate

	(1)	(2)	(3)	(4)
Audit tenure × bank–firm duration				
Log(1 + FIRM_TENURE)×ASSURANCE×Log(1 + B_DURATION)	-0.1146		-0.1016	
	(0.0505) **		(0.0487) **	
	[0.0503] **		[0.0484] **	
Log(1 + PARTNER_TENURE)×ASSURANCE×Log(1 + B_DURATION)		-0.1574		-0.1405
		(0.0673) **		(0.0689) **
		[0.0671] **		[0.0684] **
Loan-specific variables				
Log(1 + B_DURATION)	0.0489	0.0476	0.0368	0.0389
	(0.0437)	(0.0424)	(0.0459)	(0.0440)
	[0.0436]	[0.0423]	[0.0456]	[0.0437]
B_REGIONAL	0.1427	0.1475	-0.1026	-0.1013
	(0.0768) *	(0.0807) *	(0.1350)	(0.1406)
	[0.0766] *	[0.0804] *	[0.1341]	[0.1395]
B_SHINKIN	0.3046	0.3040	-0.1111	-0.1193
	(0.0768) ***	(0.0780) ***	(0.1969)	(0.2059)
	[0.0765] ***	[0.0777] ***	[0.1955]	[0.2044]
B_COOPERATIVE	0.2689	0.2778	-0.2631	-0.2610
	(0.1060) **	(0.1080) **	(0.2621)	(0.2711)
	[0.1056] **	[0.1076] **	[0.2602]	[0.2691]

TABLE 5 (continued)

B_OTHERS	-0.0383	-0.0377		
	(0.3891)	(0.3891)		
	[0.3877]	[0.3877]		
Bank's financial variables				
Log(B_ASSET)			-0.0661	-0.0691
			(0.0377) *	(0.0391) *
			[0.0375] *	[0.0388] *
B_ROA(%)			-0.0403	-0.0319
			(0.1607)	(0.1628)
			[0.1596]	[0.1616]
B_CAPITAL_RATIO (%)			-0.0005	-0.0004
			(0.0055)	(0.0055)
			[0.0055]	[0.0055]
B_NPL_RATIO (%)			0.0176	0.0168
			(0.0123)	(0.0124)
			[0.0122]	[0.0123]
No. of Observations	568	562	500	496
Adj. R^2	0.73	0.72	0.72	0.71

See Table 2 for the variable definitions, except for the two audit tenure variables *FIRM_TENURE* and *PARTNER_TENURE*, which are, respectively, the tenure of the audit firm and that of the audit partner (both in years). All regressions include firm fixed effects. Heteroscedasticity-robust standard errors are reported in parentheses and robust standard errors clustered at the firm level by using the within-firm estimator are reported in square brackets. The superscripts ***, **, and * correspond to statistical significance at the 1%, 5%, and 10% levels, respectively.

TABLE 6
Regression results: Effects of longer tenure on the borrowing interest rate

	(1)	(2)	(3)	(4)
Audit tenure × bank–firm duration				
FIRM_TENURE×ASSURANCE×Log(1 + B_DURATION)	-0.0383		-0.0483	
	(0.0218) *		(0.0184) ***	
	[0.0217] *		[0.0182] ***	
FIRM_TENURE^2×ASSURANCE×Log(1 + B_DURATION)	0.0008		0.0012	
	(0.0006)		(0.0005) **	
	[0.0006]		[0.0005] **	
PARTNER_TENURE×ASSURANCE×Log(1 + B_DURATION)		-0.0720		-0.0607
		(0.0252) ***		(0.0267) **
		[0.0251] ***		[0.0265] **
PARTNER_TENURE^2×ASSURANCE×Log(1 + B_DURATION)		0.0022		0.0018
		(0.0009) **		(0.0009) *
		[0.0009] **		[0.0009] *
Loan-specific variables				
Log(1 + B_DURATION)	0.0477	0.0528	0.0382	0.0414
	(0.0434)	(0.0419)	(0.0452)	(0.0436)
	[0.0432]	[0.0417]	[0.0448]	[0.0433]
B_REGIONAL	0.1448	0.1305	-0.1008	-0.1119
	(0.0774) *	(0.0819)	(0.1356)	(0.1417)
	[0.0771] *	[0.0815]	[0.1345]	[0.1406]
B_SHINKIN	0.3069	0.2781	-0.1124	-0.1271
	(0.0770) ***	(0.0789) ***	(0.1985)	(0.2073)
	[0.0767] ***	[0.0785] ***	[0.1969]	[0.2056]

TABLE 6 (continued)

B_COOPERATIVE	0.2721		0.2517		-0.2640		-0.2612	
	(0.1065)	**	(0.1069)	**	(0.2631)		(0.2718)	
	[0.1060]	**	[0.1064]	**	[0.2609]		[0.2695]	
B_OTHERS	-0.0362		-0.0605					
	(0.3898)		(0.3900)					
	[0.3880]		[0.3882]					
Bank financial variables								
Log(B_ASSET)					-0.0677		-0.0680	
					(0.0376)	*	(0.0390)	*
					[0.0373]	*	[0.0387]	*
B_ROA(%)					-0.0487		-0.0321	
					(0.1568)		(0.1614)	
					[0.1555]		[0.1601]	
B_CAPITAL_RATIO (%)					-0.0003		-0.0004	
					(0.0055)		(0.0055)	
					[0.0054]		[0.0054]	
B_NPL_RATIO (%)					0.0166		0.0143	
					(0.0119)		(0.0115)	
					[0.0118]		[0.0114]	
No. of Observations	568		562		500		496	
Adj. R^2	0.73		0.72		0.73		0.72	

See Table 2 for the variable definitions, except for the two audit tenure variables *FIRM_TENURE* and *PARTNER_TENURE*, which are, respectively, the tenure of the audit firm and that of the audit partner (both in years). All regressions include firm fixed effects. Heteroscedasticity-robust standard errors are reported in parentheses and robust standard errors clustered at the firm level by using the within-firm estimator are reported in square brackets. The superscripts ***, **, and * correspond to statistical significance at the 1%, 5%, and 10% levels, respectively.