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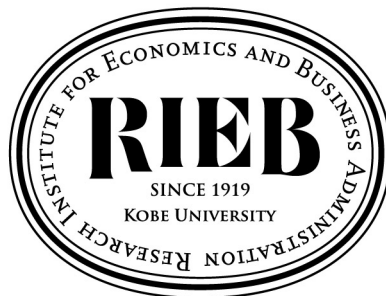
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**The Effect of Corporate Governance
on the Relationship between
Accounting Quality and Trade
Credit: Evidence from Japan**

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The Effect of Corporate Governance on the Relationship between Accounting Quality and Trade Credit: Evidence from Japan

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The Effect of Corporate Governance on the Relationship between Accounting Quality and Trade Credit: Evidence from Japan

Abstract

This study investigates the effect of shareholdings on the relationship between accounting quality and trade credit in Japan. It focuses on cross- and stable shareholdings, which are well-known features of Japanese corporate governance, as a private information sharing system. The relationship between cross- and stable shareholdings, accounting quality, and trade credit is tested. The results reveal that trade credit of customers without either cross- or stable shareholdings increases with accounting quality and that such shareholdings weaken the relationship between accounting quality and trade credit. The findings suggest that a close tie to cross- and stable shareholders results in reducing the importance of accounting information through sharing private information.

Keywords: trade credit; accounting quality; cross-shareholdings; stable shareholdings

JEL Classifications: G34; M41

Data Availability: Data are available from sources indicated in the text.

1. Introduction

Trade credit is a major source of short-term financing for firms in many countries. For example, Chen, Liu, Ma, and Martin (2017) report that the ratio of trade credit to total assets averages 11 percent among their U.S. sample firms.¹ Given trade credit's economic importance, this study investigates the effect of corporate governance on the relationship between accounting quality and trade credit in Japan.² Specifically, this study reveals whether the importance of accounting quality to trade credit reduces because of the supplier's access to a customer's private information resulting from their close ties to stakeholders.

¹ Levine, Lin, and Xie (2021) show the average ratio of trade credit to total debt liabilities is 25 percent using over 3,500 firms across 34 countries from 1990 to 2011. Li et al. (2021) report that the ratio of trade credit to cost of goods sold is, on average, 26.4 percent for the International Financial Reporting Standards (hereafter IFRS) sample of 36,180 firm-years from 30 countries between 2000 and 2014, and 22.4 percent for the non-IFRS sample using 36,227 firm-years from six countries.

² In 2016, the trade credit of listed firms in Japan constituted an average of 12.2 percent of total assets, making it 1.38 times the ratio of short-term debts to total assets in this study's sample.

Japanese corporate governance is characterized by close ties to stakeholders such as cross-stable and stable shareholdings. Additionally, it offers an interesting avenue for research on the relationship between accounting quality and trade credit from the viewpoint of sharing private information. Japan has the third largest stock market in the world, and is characterized by stakeholder corporate governance under code law. In code-law countries, major groups such as banks, business associations, and labor unions form the firm's agents, and insider communication between managers and stakeholders tends to be the primary resolution system for any information asymmetry (Ball, Kothari, and Robin 2000).

Previous studies imply high-quality accounting information mitigates information asymmetry and reduces agency costs. These studies document that debt and equity providers tend to offer financing to firms with high-quality accounting information, which allows these firms to obtain favorable contract terms (e.g., Bharath, Sunder, and Sunder 2008; Francis, LaFond, Olsson, and Schipper 2004, 2005; Ge and Kim 2014; Hasan, Park, and Wu 2012; Lambert, Leuz, and Verrecchia 2007). However, despite its economic importance, there are only a few studies in the field of accounting that examine the association between accounting information and trade credit financing, and they report mixed results. Garcia-Teruel, Martínez-Solano, and Sanchez-Ballesta (2014) demonstrate the positive relationship between accounting quality and trade credit among non-listed Spanish firms. Furthermore, Elemen and Filip (2021) report a similar relationship for private firms in five European countries. Conversely, Chen et al. (2017) report negative relationships among listed U.S. firms. This study extends previous research by examining how a corporate governance structure that leads to the sharing of private information affects the importance of accounting quality to trade credit. To date, it is unclear what factors influence this relationship.

This study mainly focuses on cross- and stable shareholdings as factors influencing the relationship between trade credit and accounting quality. Cross- and stable

shareholdings (and the main bank), which previous literature has paid attention to, are well-known features of Japanese corporate governance (e.g., Aoki, Jackson, and Miyajima 2007; Aoki and Patrick 1994; Hoshi and Kashyap 2001).³ Cross-shareholders reciprocally hold each other's shares and rarely trade their shares. Many Japanese firms have some kind of transactional relationship with cross-shareholders including suppliers, customers, and banks. In addition, the firms and banks also hold (not reciprocally) the shares of other firms with whom they have a business relationship.⁴ They form stable shareholders with cross-shareholders (Sheard 1994).⁵ Moreover, from managers' perspective, they play a similar role as cross-shareholders do. In most cases, they act as friendly shareholders for incumbent managers, although they do not necessarily offer as much protection as cross-shareholders (Ikeda, Inoue, and Watanabe, 2018). In this study, therefore, cross- and stable shareholders are assumed to have a similar effect on the relationship between accounting quality and trade credit.

Cross- and stable shareholders play a crucial role in Japanese corporate groupings, industrial groups known as *keiretsu*, and an important role in business economies. Cross- and stable shareholders can be viewed as friendly or sympathetic, allowing managers to protect themselves from the external takeover market. Moreover, they comprise principally long-term transaction partners (including financial institutions) (Sheard 1989, 409).

They regularly collect private information to facilitate their transactions under the relationships. Sharing private information means that accounting information tends to play a lesser role within cross-shareholdings groups. Previous literature demonstrates that the role of accounting information is reduced by private information that is often exchanged between firms and stakeholders (e.g., Ball and Shivakumar 2005; Beatty, Liao,

³ The influence of cross- and stable shareholdings in Japan is said to have weakened around the middle of the 1990's. However, in Miyajima and Kuroki's (2007) sample, the ratio of cross- and stable shareholdings stabilized after around 2005. In this study's sample, the ratio has also levelled off after around 2005.

⁴ This type of shareholding is referred to as "other stable shareholdings."

⁵ This paper posits that stable shareholders consist of cross-shareholders and other stable shareholders.

and Weber 2010; Biddle and Hilary 2006). Biddle and Hilary (2006) argue that bank financing and *keiretsu*, as important sources of financing, could serve as a private channel to reduce information asymmetry in Japan. Their research offers the opportunity to explore the role of private information with respect to trade credit financing.

Several studies argue that private information exchanged between managers and cross-shareholders is spread to outside investors (e.g., Bae and Kim 1998; Jiang and Kim 2000). They present evidence that greater cross-shareholdings result in less information asymmetry in Japanese capital markets. They claim that private information is more prevalent for firms with higher cross-shareholdings than for those with lower cross-shareholdings. Based on their studies, this study posits that cross-shareholdings could reduce information asymmetry between firms and suppliers.

Given that the pervasiveness of private information under the relationship between firms and cross- and stable shareholders reduces the importance of accounting information, this study predicts that a strong tie to them weakens the effect of accounting quality on trade credit. Garcia-Teruel et al. (2014) and Chen et al. (2017) have not investigated the effects that stem from the close tie to shareholders. The regression models in this study are designed following Chen et al. (2017) and incorporate cross- and stable shareholdings. As a measure of accounting quality, three abnormal accruals measures are summarized using principal component analysis. Cross- and stable shareholders are derived from the NRL (NLI Research Institute) database.

Based on 27,794 firm-years from Japanese firms between 2001 and 2016, this study finds that trade credit of firms without stable shareholdings increases with accounting quality. However, stable shareholdings reduce the association of accounting quality with trade credit, consistent with this study's prediction. When splitting stable shareholdings into cross- and other stable shareholdings, cross-shareholdings have a similar effect on the association. Cross and stable shareholdings have a positive association with trade credit. This means that the customers who are in the same business

group as suppliers can receive more trade credit. In additional tests, cross- and stable shareholdings are replaced with bank shareholding variables (banks and the main banks' shareholdings, and cross-shareholdings by banks). This is because banks are the center of *keiretsu* and play a key role in obtaining private information among cross-shareholders. Bank shareholdings variables have a similar effect on the association.

This study makes three contributions to the existing literature. First, to the best of the author's knowledge, this is the first study indicating that a close tie to shareholders, which are cross- and stable shareholdings, weakens the relationship between accounting quality and trade credit financing. The results are robust to the separation of bank cross-shareholdings. This study extends the literature on the substitution between private and accounting information by focusing on trade credit. Considering the importance of trade credit in financing, this study contributes to a growing body of literature on accounting quality and financing.

Second, the positive relationship between accounting quality and trade credit financing among firms without cross- and stable shareholdings complements previous studies that demonstrate the same relationship between accounting quality and debt and equity financing (e.g., Bharath et al. 2008; Francis et al. 2004, 2005). The substitution of private information for public information, which is highlighted by Ball et al. (2000) and Biddle and Hilary (2006), through close ties to stakeholders is not necessarily dominant in Japanese firms. The findings of this study document that the phenomenon is observed in proportion to cross- or stable shareholdings.

Finally, primary results are consistent with Garcia-Teruel et al. (2014), who used a sample from Spanish private firms, but inconsistent with Chen et al. (2017), who used U.S. listed firms. Japan and Spain are characterized as having code-law and bank-oriented financial systems in common, which is different from the U.S. Although Garcia-Teruel et al. (2014) do not have the interaction term of accounting quality with bank variables, under the bank-oriented financial system, the results of this current study could show

similar phenomena. The results suggest that the features of corporate governance at the country level could affect the role of accounting quality.

The remainder of this paper is organized as follows. Section 2 describes the institutional setting in Japan, literature review, and development of hypotheses. Section 3 presents the research design, data, and sample selection procedures used in this study. Section 4 provides the empirical results. Section 5 reports additional and robustness tests and Section 6 concludes this paper.

2. Literature Review and Hypothesis Development

2.1. Relationship between trade credit and accounting quality

Two conflicting hypotheses and results from previous studies has shown the relationship between accounting quality and trade credit. Suppliers could provide trade credit to firms with better accounting quality, because previous studies (e.g., Francis et al. 2004, 2005; Bharath et al. 2008) indicate that high accounting quality lowers information risk, thereby reducing the cost of debt and capital. Based on this relationship, suppliers offer more trade credit to customers with better accounting quality. Customers, therefore, have an incentive to improve accounting quality to receive more trade credit. Using a sample of 8,396 firm-years from Spanish private firms between 1995 and 2005, Garcia-Teruel et al. (2014) report that firms with higher accrual quality tend to obtain more trade credit from suppliers. Elemen and Filip (2021) document the positive relationship between trade credit and accrual quality for 423,434 private firms in five European countries, and the results are promoted by information asymmetry and uncertainty about future cash flows.⁶

However, trade credit typically has higher interest rates than short-term debt, which leads to an opposite prediction regarding the relationship between accounting

⁶ Li et al. (2021) assume that mandatory adoption of IFRS improves financial reporting transparency and find that IFRS adoption increases trade credit. Financial reporting transparency is a concept that closely relates to accounting quality used in this study. Li et al. (2021) do not directly show the relationship between the improvement of financial reporting transparency and the increase in trade credit.

quality and trade credit. Previous research suggests that firms with higher accounting quality can finance short-term debt from financial institutions more easily and cheaply. Customers with low accounting quality appear to have difficulty accessing debt and equity financing. Thus, the customers may need to increase trade credit due to their financial constraints. If so, trade credit is negatively related to accounting quality. Chen et al. (2017) present evidence that accounting quality is negatively associated with trade credit, based on a U.S. sample of 115,703 firm-years between 1985 to 2011.

Accounting quality may have a positive or negative effect on the amount of trade credit. Basically, financial information is used to facilitate transactions between suppliers and customers. In particular, it is a major source of credit rating that suppliers usually rely on for offering trade credit. Pike and Cheng (2001) report that credit rating is the most popular source of information for credit risk. Moreover, based on a questionnaire survey of Japanese private firms, Uesugi et al. (2009) find that only 6.3 percent of trade credit contracts include early payment discounts. This tendency is similar to the case of Spanish firms (Garcia-Teruel and Martinez-Solano 2010; Garcia-Teruel et al. 2014). Early payment discounts tend to be offered to risky customers (Klapper, Laeven, and Rajan 2012). The percentage (6.3 percent) in Uesugi et al. (2009) is much less than that of U.S. firms in Ng, Smith, and Smith (1999) (24.5 percent), and in Giannetti, Burkart, and Ellingsen (2011) (21.3 percent). This could lead to suppliers in Japan focusing on accounting quality if offering trade credit without discount. Thus, this study predicts that the positive effect is likely to dominate the negative effect.⁷

2.2. Hypothesis Development

A number of studies have focused on cross- and stable shareholdings as characteristics of the corporate governance of Japanese firms (e.g., Aoki and Patrick

⁷ Li et al. (2021) also predict that the positive effect of accounting quality on trade credit is likely to outweigh the negative effect in a similar manner.

1994; Hoshi and Kashyap 2001; Aoki et al. 2007). Cross-shareholders comprise suppliers, customers, and banks; they tend to rarely trade reciprocally held shares. Japanese industrial groupings (*keiretsu*) typically consist of extensive cross-shareholdings among firms and banks (Berglof and Perotti 1994; Gilson and Roe 1993; Sheard 1994). Member firms actively transact with each other on a regular basis in the long term and strongly rely on trade credit financing within the group (Berglof and Perotti 1994). They typically have a strong network between suppliers and customers and often construct relationships through value or supply chains (e.g., Yoshikawa and Phan 2001). In addition to cross-shareholders, the firms and banks stably hold the shares of other firms within the business relationship. They form stable shareholders networks with cross-shareholders. Cross- and stable shareholdings are a mechanism for protecting firms from hostile takeovers and pressure from the capital market (Osano 1996; Sheard 1989, 1991). This is a system of interlocking shareholdings between firms and makes managerial positions stable.

Under such an environment, managers may have less incentive to provide high-quality public information to outside stakeholders. Instead, they can exchange private information within a cross- and stable shareholdings group and thereby alleviate information asymmetry. Specifically, the information sharing comes through interlocking directorates and “presidential club” (*Shacho-kai*) meetings that are held regularly to exchange inside information in affiliated firms (Cooke 1996; Douthett and Jung 2001; Goto 1982; Sheard 1991).⁸ Through this mechanism, cross-shareholders can gain access to strategic information, such as the performance and business plans of associated firms, develop strategic or business relationships, and mutual support (McGuire and Dow 2003, 2009). For Japanese firms, cross-ownership of stock and access to information is particularly prevalent among firms in the same industrial group (*keiretsu*) (Jacobson and Aaker 1993, 403). Given that this kind of information sharing system lowers information

⁸ Goto (1982) reports the coordination of R&D within member firms. He also states that member firms undertake various types of interfirm coordination.

asymmetry, cross- and stable shareholders may rely on inside information rather than accounting information to make their decisions or to monitor each other.

The exchange of private information has been investigated in previous research. Ball and Shivakumar (2005) highlight that private information tends to resolve information asymmetry by comparing the conservatism of listed firms with that of non-listed firms. Biddle and Hilary (2006) and Beatty et al. (2010) refer to debtholders as stakeholders that enhance the role of private information. Beatty et al. (2010) suggest that accounting quality plays a less important role in investment efficiency when outside fund suppliers can access private information. Biddle and Hillary (2006) argue that firms with higher accounting quality invest more efficiently through better access to financing. However, in their international study, they fail to find such a relationship for Japanese firms. They assert that the reason is that bank financing and *keiretsu*, in which cross-shareholdings are a crucial element, as important sources of financing could serve private channels to mitigate information asymmetry and reduce the importance of accounting information. However, whether cross-shareholdings has an effect on suppliers' offer of trade credit has not been investigated in previous studies. With the communication of private information under cross-shareholdings, such shareholdings could cause a similar effect on suppliers that are included in the cross-shareholdings group.

Turning to the information availability of firms with cross-shareholdings for outside suppliers, it is useful to focus on the literature on the role of accounting information for market participants under Japanese corporate governance. Jacobson and Aaker (1993) provide evidence that Japanese capital markets have lower information asymmetry between managers and investors than the U.S. Bae and Kim (1998) and Jiang and Kim (2000) claim that cross-shareholdings networks are an influential factor for the mitigation of information asymmetry under Japanese corporate governance. Jiang and Kim (2000) report that stock prices for firms with higher cross-shareholdings incorporate more private information about future business prospects or strategies, concluding that

more cross-corporate shareholdings lead to more information sharing or less information asymmetry between the firm and market participants (outside investors). Considering the evidence for the positive effect of cross-shareholdings on the availability of private information in the Japanese stock market and generally, lower information asymmetry between the firm and its suppliers than among investors in the market, I predict that outside suppliers can (at least partly) rely on non-accounting information from firms with cross-shareholdings to monitor customers. Information sharing through stable shareholdings can also be explained in the same way as cross-shareholdings.

Accordingly, the relationship between trade credit and accounting quality would be weaker for firms with more cross-shareholdings. I therefore formulate the following hypothesis:

Hypothesis: The increase of cross- and stable shareholdings reduces the relationship between accounting quality and trade credit.

It should be noted that suppliers can obtain private information through business relationships and are likely to offer an amount of trade credit to customers based on private and public information. Suppliers may meet with customers more regularly than banks to access information regarding business plans, industry and demand trends, R&D, and financial information. Moreover, suppliers are able to know the size and timing of customer orders through daily operating activities (Miwa and Ramseyer 2008; Petersen and Rajan 1997; Uesugi et al. 2009). Access to customers' private information could make the relationship between accounting quality and trade credit ambiguous, thereby imposing a bias that weakens the relationship.⁹ A supplier's collection of private information occurs regardless of the presence of cross- and stable shareholder relationships.

⁹ Along with this argument, suppliers' collection of private information weakens the relationship even when trade credit decreases with accounting quality. Specifically, an effect of private information on the relationship is also described in footnote 19.

This study mainly focuses on the effect of private information sharing on cross-and stable shareholdings, in addition to the above relationships.

3. Research Design, Sample Selection Procedure, and Data

3.1. Research design

Baseline model to test this study's hypothesis is equation (1).

$$\begin{aligned} TradeCredit_{it} = & \beta_0 + \beta_1 AQ_{it-1} + \beta_2 LiquidCost_{it} + \beta_3 InfoAsym_{it} + \beta_4 Log(Asset)_{it} + \\ & \beta_5 Log(Age + 1)_{it} + \beta_6 MktShare_{it} + \beta_7 POS_ChgSale_{it} + \beta_8 NEG_ChgSale_{it} + \\ & \beta_9 ROA_{it} + \beta_{10} MTB_{it} + \beta_{11} AltmanZ_{it} + \beta_{12} Leverage_{it} + \beta_{13} CA_{it} + \beta_{14} CL_XTrade_{it} \\ & + \beta_{15} CashHold_{it} + \beta INDUSTRY + \beta YEAR + \varepsilon_{it}, \end{aligned} \quad (1)$$

AQ = accounting quality measure.

Hypothesis 2 is tested by running the regression model on equations (2) to (3).

$$\begin{aligned} TradeCredit_{it} = & \beta_0 + \beta_1 AQ_{it-1} + \beta_2 AQ_{it-1} \times StableSH_{it-1} + \beta_3 StableSH_{it-1} + \beta_4 LiquidCost_{it} + \\ & \beta_5 InfoAsym_{it} + \beta_6 Log(Age + 1)_{it} + \beta_7 MktShare_{it} + \beta_8 POS_ChgSale_{it} + \\ & \beta_9 NEG_ChgSale_{it} + \beta_{10} ROA_{it} + \beta_{11} MTB_{it} + \beta_{12} AltmanZ_{it} + \beta_{13} Leverage_{it} + \\ & \beta_{14} CA_{it} + \beta_{15} CL_XTrade_{it} + \beta_{16} CashHold_{it} + \beta INDUSTRY + \beta YEAR + \varepsilon_{it}, \end{aligned} \quad (2)$$

$$\begin{aligned} TradeCredit_{it} = & \beta_0 + \beta_1 AQ_{it-1} + \beta_2 AQ_{it-1} \times CrossSH_{it-1} + \beta_3 AQ_{it-1} \times OtherStableSH_{it-1} + \beta_4 \\ & CrossSH_{it-1} + \beta_5 OtherStableSH_{it-1} + \beta_6 LiquidCost_{it} + \beta_7 InfoAsym_{it} + \beta_8 Log(Age \\ & + 1)_{it} + \beta_9 MktShare_{it} + \beta_{10} POS_ChgSale_{it} + \beta_{11} NEG_ChgSale_{it} + \beta_{12} ROA_{it} + \\ & \beta_{13} MTB_{it} + \beta_{14} AltmanZ_{it} + \beta_{15} Leverage_{it} + \beta_{16} CA_{it} + \beta_{17} CL_XTrade_{it} + \\ & \beta_{18} CashHold_{it} + \beta INDUSTRY + \beta YEAR + \varepsilon_{it}. \end{aligned} \quad (3)$$

StableSH = the sum of *CrossSH* and *OtherStableSH*,

CrossSH = the ratio of shares mutually held by financial institutions and other business corporations, and

OtherStableSH = the ratio of shares held by financial institutions, trust banks (for trading through their own account), and the parent company.¹⁰

The next approach, with a dummy variable of shareholdings, assesses the average effect of *AQ* on trade credit under stable and cross-shareholdings.

$$\begin{aligned} TradeCredit_{it} = & \beta_0 + \beta_1 AQ_{it-1} + \beta_2 AQ_{it-1} \times StableSHD_{it-1} + \beta_3 StableSHD_{it-1} + \beta_4 LiquidCost_{it} \\ & + \beta_5 InfoAsym_{it} + \beta_6 \text{Log}(Age + 1)_{it} + \beta_7 MktShare_{it} + \beta_8 POS_ChgSale_{it} + \\ & \beta_9 NEG_ChgSale_{it} + \beta_{10} ROA_{it} + \beta_{11} MTB_{it} + \beta_{12} AltmanZ_{it} + \beta_{13} Leverage_{it} + \\ & \beta_{14} CA_{it} + \beta_{15} CL_XTrade_{it} + \beta_{16} CashHold_{it} + \beta INDUSTRY + \beta YEAR + \varepsilon_{it}, \quad (4) \end{aligned}$$

$$\begin{aligned} TradeCredit_{it} = & \beta_0 + \beta_1 AQ_{it-1} + \beta_2 AQ_{it-1} \times CrossSHD_{it-1} + \beta_3 AQ_{it-1} \times OtherStableSHD_{it-1} + \\ & \beta_4 CrossSHD_{it-1} + \beta_5 OtherStableSHD_{it-1} + \beta_6 LiquidCost_{it} + \beta_7 InfoAsym_{it} + \\ & \beta_8 \text{Log}(Age + 1)_{it} + \beta_9 MktShare_{it} + \beta_{10} POS_ChgSale_{it} + \beta_{11} NEG_ChgSale_{it} + \\ & \beta_{12} ROA_{it} + \beta_{13} MTB_{it} + \beta_{14} AltmanZ_{it} + \beta_{15} Leverage_{it} + \beta_{16} CA_{it} + \beta_{17} CL_XTrade_{it} \\ & + \beta_{18} CashHold_{it} + \beta INDUSTRY + \beta YEAR + \varepsilon_{it}. \quad (5) \end{aligned}$$

StableSHD = one if *StableSH* > 0 and zero otherwise,

CrossSHD = one if *CrossSH* > 0 and zero otherwise, and

OtherStableSHD = one if *OtherStableSH* > 0 and zero otherwise.

Equations (2)–(5) are based on Chen et al.'s (2017) model.¹¹ The independent variable,

¹⁰ Considering data availability, the definitions of both cross-shareholdings and other stable shareholdings follow those in the *Data Package of Cross-Shareholding and Stable Shareholding* (NLI Research Institute).

¹¹ The regression models in this study follow Chen et al. (2017) because both Chen et al.'s (2017) and this studies' samples are based on listed firms.

TradeCredit, is the ratio of trade credit to total assets. *AQ* is an accounting quality measure. *AQ* is calculated using principal component analysis in line with Bharath et al. (2008) and Chen et al. (2017).¹² Three types of abnormal accruals measures (*AA1*, *AA2*, and *AA3*) are used for principal component analysis. For *AA1*, the absolute value of the residual of Dechow and Dichev's (2002) accrual model is standardized after multiplying by -1. *AA2* is calculated based on Teoh, Welch, and Wong's (1998) model and *AA3* is computed based on Dechow, Sloan, and Sweeney's (1995) model in a similar vein. All three accrual models are estimated by industry-year, where industries are identified by the Tokyo Stock Exchange classification codes.¹³ *AQ* is computed as the first principal component score of *AA1*, *AA2*, and *AA3*.

According to Chen et al. (2017), accounting accruals are computed using the data from the balance sheet and income statement because the calculation of accruals is modified to reduce the influences of change in accounts payable. Change in accounts payable is removed from the calculation of accruals. Because change in accounts payable is associated with the change in inventories, the changes in inventory are regressed on the changes in accounts payable and the residuals of the regression are used as the modified change in inventories.¹⁴

Control variables in equation (1) are similar to Chen et al. (2017) and the

¹² This study assumes that suppliers offer trade credit based on the accounting quality and shareholdings that have already been disclosed to the public. Therefore, shareholding variables and *AQ* are incorporated with a lag. This mitigates concerns about reverse causality. When using *AQ* and shareholdings variables without a lag in equations from (1) to (5) the results are similar to those presented in Table 3.

¹³ Sample firms are divided into 33 industries according to Tokyo Stock Exchange classification codes. At least 20 observations in each industry-year group are required to calculate abnormal accruals. As a result, the primary test uses 25 industries for the estimation of equation (1).

¹⁴ Accruals is defined as $(\Delta \text{current asset} - \Delta \text{cash} - \Delta \text{trading securities} - \Delta \text{short-term loans receivable}) - (\Delta \text{current liability} - \Delta \text{short-term loan payable} - \Delta \text{note payable for PPE} - \Delta \text{accrued amount payable for PPE}) - \Delta \text{long-term allowance} - \text{depreciation}$; PPE = the amount of property, plant, and equipment: all of the items are divided by total assets at the end of year $t-1$. To modify change in accounts payable, the change in accounts payable and the change in inventories are excluded and the residuals of regression of the change in inventories on the changes in accounts payable are added. For Dechow and Dichev's (2002) and Teoh et al.'s (1998) models, working capital accruals are used after eliminating non-working capital items. Because of the adjustments of accounts payable and inventories, accruals are calculated from balance sheet and income statements.

definitions of them are in the Appendix.¹⁵ Positive β_1 indicates that accounting quality promotes the offering of trade credit from suppliers. Negative β_1 means that customers with low accounting quality might have difficulty accessing debt and equity financing, and thus, need to increase trade credit due to their financial constraints.

To test hypothesis 2, equation (2) includes corporate governance variables *StableSH*, *CrossSH*, and *OtherStableSH*. First, *TradeCredit* is regressed on *AQ* and its interaction with *StableSH* in equation (2). As stable shareholdings can be split into cross-shareholdings and other stable shareholdings ($StableSH = CrossSH + OtherStableSH$), *StableSH* is replaced with *CrossSH* and *OtherStableSH*. *CrossSH* is the ratio of shares held by financial institutions to other business corporations. *OtherStableSH* consist of the ratio of shares held by financial institutions, the trust banks (for trading through their own account), and the parent company. This variable, therefore, is regarded as stable shareholdings by financial institutions for firms without a parent company, because many banks, including non-main banks, hold the shares of listed firms for the purposes of lending and the strength of the relationship. Equation (2) and (4) allows the coefficients to differ between firms with and without stable shareholders, the differences in the effect of accounting quality between the two is tested. As previously described, stable shareholdings are predicted to weaken the relationship between accounting quality and trade credit. Then, a positive (negative) coefficient of *AQ* suggests that firms with high *AQ* and without stable shareholdings increase (decrease) the amount of trade credit, and a negative (positive) coefficient of $AQ \times CrossSH$ (β_2) means that close ties to stakeholders cancels out the effect of *AQ*.¹⁶ Similarly, this study focuses on the coefficients of the two interaction terms, β_2 and β_3 in equation (3) and (5). This study also

¹⁵ One exception from Chen et al's (2017) model is *AltmanZ*. They use as S&P credit rating (*PredRating*) instead of *AltmanZ*. The database (*Nikkei NEEDS-FinancialQUEST*) does not include credit rating in it.

¹⁶ β_1 in the equation (2) shows the mixed results of (a) the positive effects of accounting quality on the amount of trade credit and (b) the weakening effect of presence of private information between suppliers and customers (without stable shareholdings) on (a). Positive β_1 shows that the former effect dominates the latter one. β_3 represents the direct effect of stable shareholdings on trade credit. When the close tie to stable shareholdings could increase the credibility of a firm, the expected sign of β_3 is positive.

predicts that the sign of β_1 in equation (3) and (5) is positive and that β_2 and β_3 is negative in opposite to β_1 .

3.2. Sample selection procedure and data

The initial sample consists of non-financial firms with consolidated financial statement data from 2001 to 2016. Firm-years in which total assets and/or sales growth exceeds 100 percent are excluded to avoid the effect of major changes to business fundamentals, such as large M&As (Almeida, Campello, and Weisbach 2004; Hribar and Collins 2001). Firm-years that do not have the data to calculate accounting accrual are also excluded. Lastly, firm-years without data on cross- and stable shareholdings or without the data to calculate control variables are deleted. The final sample yields 27,794 firm-year observations. The sample selection procedures are summarized in Table 1.

[Insert Table 1 about here]

Data are obtained from three databases. All of the data on financial statements is obtained from *Nikkei NEEDS-FinancialQUEST* (Nikkei Media Marketing). The data on cross- and stable shareholdings are derived from the *Data Package of Cross-Shareholding and Stable Shareholding* (NLI Research Institute). Stock price data is obtained from *NPM* (Financial Data Solutions).

4. Results

Table 2 reports descriptive statistics on dependent and all independent variables used in the analysis of the relationship between accounting quality and trade credit. The mean value of *TradeCredit* is 0.144 (the median is 0.122). Cross-shareholders hold approximately 10 percent of shares on average and stable shareholders hold over 20 percent, implying that cross- and stable shareholders still have a substantially influence

on corporate governance in Japan. Table 3 shows the correlation matrix. Since no high correlation coefficient is observed within independent variables, the results of the regressions in this section will not be influenced by multicollinearity.¹⁷

[Insert Table 2 about here]

[Insert Table 3 about here]

Table 4 presents the regression results of equation (1)–(5).¹⁸ In column (1), the coefficient of *AQ* is not significant. Columns (2) and (3) test Hypothesis 2 with the interaction effect of *AQ* with *StableSH*, *CrossSH*, and *OtherStableSH*. Column (2) reports that the coefficient of *AQ* is significantly positive, indicating the positive effect of accounting quality on trade credit when stable shareholdings is zero.¹⁹ The results are consistent with my expectation and can be interpreted to mean that the higher accounting quality of firms without stable shareholders increases the amount of trade credit. The results of this study are in contrast to those of Chen et al. (2017). The coefficient of interaction term, $AQ \times StableSH$ has a significantly negative sign. The finding supports Hypothesis 2 and show that the increase in stable shareholdings decreases the importance of accounting quality for supply and/or demand of trade credits. In other words, a close tie to stakeholders, including suppliers, could encourage the exchange of private information instead of public disclosure. Column (4) shows a significantly negative coefficient of $AQ \times StableSHD$, suggesting a decrease in the effect of accounting quality

¹⁷ The VIFs (variance inflation factor) for the primary tests are below ten, the multicollinearity does not appear to affect the results.

¹⁸ All continuous variables at the top and bottom 1 percent are winsorized to limit the influence of outliers.

¹⁹ In Japan and Spain, the majority of trade credit contracts do not have cash discounts contracts in common (Uesugi et al. 2009; García-Teruel et al. 2014). In the U.S., Ng et al. (1999, 1110) report that "2/10 net 30" contracts are frequently observed in their sample. This contract means the combination of 2 percent discount for payment within 10 days and a net period of 30 days. The implicit interest rate is 43.9 percent. The results of this study imply that Japanese and Spanish suppliers pay attention to accounting quality when offering trade credit without discount. Meanwhile U.S. firms with little access to traditional financing due to low accounting quality would seek to obtain trade credit in spite of the high-interest rate.

due to the existence of stable shareholdings. With respect to control variables, the almost all of the control variables are significant except *CashHold*.

[Insert Table 4 about here]

In column (3), *StableSH* is replaced with *CrossSH* and *OtherStableSH*. The coefficients of $AQ \times CrossSH$ and $AQ \times OtherStableSH$ are significantly negative, indicating that a close tie to cross-shareholdings and other financial shareholders reduces the association between accounting quality and trade credit.²⁰ Column (5) reports the similar results.

The coefficients of *StableSH*, *CrossSH*, *OtherStableSH*, and *StableSHD* are significantly positive in columns (2), (3), and (4). The results indicate that, in total, a close tie to stable shareholders increases trade credit.²¹ Essentially, when customers are in the same business group as suppliers, they can receive more trade credit from their suppliers.²²

The aforementioned results can be interpreted in another way. Given that either accounting quality or stable shareholdings increase the amount of trade credit, the effects of accounting quality and stable shareholdings cancel each other out because of the negative sign of their interaction term ($AQ \times StableSH$). The reason for cancelling out is the substitution between public and private information.

²⁰ The coefficient of $AQ \times CrossSH$ is significantly negative when *CrossSH* and *OtherStableSH*-related variables are incorporated separately.

²¹ The coefficients of *CrossSH*, *OtherStableSH*, *CrossSHD* and *OtherStableSHD* are significantly positive when they are incorporated separately.

²² The results are consistent with Hoshi, Kashyap, and Scharfstein (1990), which state that financial links between Japanese firms could encourage suppliers to extend trade credit to customers and customers to buy from suppliers within the industrial group.

5. Additional Tests and Robustness Checks

5.1. Additional tests: *Effect of bank shareholdings*

As the first additional test, this study analyzes bank shareholdings as another feature of Japanese-style shareholdings.²³ Japanese banks supply funds to lender firms with whom they have a long-term relationship, very often hold their shares, and are involved in their management, especially when the lender firms are in financial difficulties (Douthett and Jung 2001; Hoshi and Kashyap 2001; Jacobson and Aaker 1993; Sheard 1994). The main bank is a bank that has the closest link to the client firms and provides daily and primary financial services. As a result, the main bank holds a prominent position for providing financing to the client firm and is at the core of the cross-shareholder group; in many cases, it has close ties to the lender firm. Main banks, thus, acquire private information on lender firms through daily activities. Some other banks also hold the lender's shares, and they can therefore also obtain private information on the lender firm.

Such a close tie to lender firms would encourage communication of private information with lender firms. Shuto, Kitagawa, and Futaesaku (2017) report the acquisition of private information and the monitoring effect under the main bank. They document that bondholders delegate monitoring to the bond issuers' main bank that shares their private information.²⁴ Suppliers could therefore utilize not only their own private information but also the banks' monitoring with private information owned by banks. Previous studies on trade credit have not focused on this phenomenon.

In line with the above argument, this study focuses on bank shareholdings to observe the bank's effect on trade credit by including three bank-related variables. Instead

²³ In Japan, banks are permitted to hold shares in non-financial firms up to a specified ratio (five percent), as in European countries. Based on previous studies, Ono, Suzuki, and Uezugi (2018, 1) explain two reasons why banks, both the main bank and non-main bank, hold the equity claim of borrowers. They summarize that the motivation of holding borrower's shares is to (1) obtain a competitive advantage from complementary effect between shareholdings and lending activity and (2) mitigate the conflict of interest between shareholder and borrowers.

²⁴ Nagata and Nguyen (2017) report that bank shareholdings lead to lower disclosure quality due to the accessibility of private information. The results of this study also provide evidence regarding the possibility of sharing private information.

of cross and stable shareholdings in equation (2), the following variables are incorporated: the ratio of bank shareholdings (*BankSH*), the ratio of main bank shareholdings (*MainBankSH*), and the ratio of other bank shareholdings except main bank shareholding (*OtherBanksSH*). In line with the primary tests, I also include the ratio of shares held by cross-shareholding banks (*BankCrossSH*) and the ratio of other bank shareholdings, except for bank cross-shareholdings (*OtherBanksSH*). *BankSH* is a proxy for the strength of all bank shareholdings, comprising main and non-main banks. *MainBankSH* represents the main bank's influence as a shareholder. *BankCrossSH* extracts a particularly strong (cross-holding) relationship between banks and firms. Higher values indicate stronger ties to banks and thus increase the potential use of private information instead of public information. Each firm's "main bank" is defined as the top-ranked bank on the list of *Nikkei primary trading banks* (Nikkei Shuyo-Torihiki-Ginko), which is compiled via a questionnaire survey distributed to all listed firms regarding the trading banks of each firm.²⁵

The following regressions are run to test the bank relationship:

$$TradeCredit_{it} = \beta_0 + \beta_1 AQ_{it-1} + \beta_2 AQ_{it-1} \times BankSH_{it-1} + \beta_3 BankSH_{it-1} + \beta Cntorols + \beta INDUSTRY + \beta YEAR + \varepsilon_{it}, \quad (6)$$

$$TradeCredit_{it} = \beta_0 + \beta_1 AQ_{it-1} + \beta_2 AQ_{it-1} \times MainBankSH_{it-1} + \beta_3 AQ_{it-1} \times OtherBanksSH_MB_{it-1} + \beta_4 MainBankSH_{it-1} + \beta_5 OtherBanksSH_MB_{it-1} + \beta Cntorols + \beta INDUSTRY + \beta YEAR + \varepsilon_{it}, \quad (7)$$

$$TradeCredit_{it} = \beta_0 + \beta_1 AQ_{it-1} + \beta_2 AQ_{it-1} \times BankCrossSH_{it-1} + \beta_3 AQ_{it-1} \times$$

²⁵ In this questionnaire survey, each firm ranks the banks from which it receives primary financial services, irrespective of shareholdings or loan shares. This study posits that the bank at the top of the list serves as the main bank. Similar procedures are used in other research on the main bank.

$$\begin{aligned}
& \text{OtherBanksSH_BCSH}_{it-1} + \beta_4 \text{BankCrossSH}_{it-1} + \beta_5 \text{OtherBanksSH_BCSH}_{it-1} \\
& + \beta \text{Cntrols} + \beta \text{INDUSTRY} + \beta \text{YEAR} + \varepsilon_{it}
\end{aligned} \tag{8}$$

Along with the primary tests, I replace bank shareholdings variables with dummy variables.

$$\begin{aligned}
\text{TradeCredit}_{it} = \beta_0 + \beta_1 \text{AQ}_{it-1} + \beta_2 \text{AQ}_{it-1} \times \text{BankSHD}_{it-1} + \beta_3 \text{BankSHD}_{it-1} + \beta \text{Cntrols} + \beta \\
\text{INDUSTRY} + \beta \text{YEAR} + \varepsilon_{it},
\end{aligned} \tag{9}$$

$$\begin{aligned}
\text{TradeCredit}_{it} = \beta_0 + \beta_1 \text{AQ}_{it-1} + \beta_2 \text{AQ}_{it-1} \times \text{MainBankSHD}_{it-1} + \beta_3 \text{AQ}_{it-1} \times \\
\text{OtherBanksSHD_MB}_{it-1} + \beta_4 \text{MainBankSHD}_{it-1} + \beta_5 \text{OtherBanksSHD_MB}_{it-1} + \\
\beta \text{Cntrols} + \beta \text{INDUSTRY} + \beta \text{YEAR} + \varepsilon_{it},
\end{aligned} \tag{10}$$

$$\begin{aligned}
\text{TradeCredit}_{it} = \beta_0 + \beta_1 \text{AQ}_{it-1} + \beta_2 \text{AQ}_{it-1} \times \text{BankCrossSHD}_{it-1} + \beta_3 \text{AQ}_{it-1} \times \\
\text{OtherBanksSHD_BCSH}_{it-1} + \beta_4 \text{BankCrossSHD}_{it-1} + \beta_5 \\
\text{OtherBanksSHD_BCSH}_{it-1} + \beta \text{Cntrols} + \beta \text{INDUSTRY} + \beta \text{YEAR} + \varepsilon_{it},
\end{aligned} \tag{11}$$

where

BankSH = the ratio of shares held by banks,

MainbankSH = the ratio of shares held by the main bank,

OtherBanksSH_MB = $\text{BankSH} - \text{MainBankSH}$,

BankCrossSH = the ratio of shares held by cross-shareholding banks,

OtherBanksSH_BCSH = $\text{BankSH} - \text{BankCrossSH}$,

BankSHD = one if $\text{BankSH} > 0$ and zero otherwise,

MainbankSHD = one if $\text{MainbankSH} > 0$ and zero otherwise,

OtherBanksSHD_MB = one if $\text{OtherBanksSH_MB} > 0$ and zero otherwise,

$BankCrossSHD = one\ if\ BankCrossSH > 0\ and\ zero\ otherwise,$ and

$OtherBanksSHD_BCSH = one\ if\ OtherBanksSHD_BCSH > 0\ and\ zero\ otherwise.$ ²⁶

The coefficients of the interaction terms, which are β_2 in equation (6) and (9) and β_2 and β_3 in equation (7), (8), (10), and (11), are predicted to have a negative sign, as in the primary tests.

Table 5 presents the results from equations (6)–(11). All the coefficients of the interaction terms of AQ with bank shareholdings variables are significantly negative. The results are consistent with those of cross- and stable shareholdings. The tie to banks (the main bank) with shareholdings also appears to lower the importance of accounting information for trade credit.²⁷ The additional findings imply that suppliers as a financing provider may delegate the monitoring of customers to banks that are closely tied to them.

[Insert Table 5 about here]

5.2. Robustness checks

Four sensitivity tests were conducted to confirm the robustness of the primary results. First, to alleviate concerns over problems of correlated omitted variables, I replace the industry-fixed effects with firm-fixed effects in the regressions, which control for time-invariant firm-specific characteristics. The primary results in Table 3 are robust to the

²⁶ As previously mentioned, an upper limit on holding shares in non-financial firms is five percent for banks. Hence, the sample excludes the firm-year observations in which a bank holds shareholdings over five percent.

²⁷ Thus, in addition to capital ties, main bank dependency is tested as a borrowing tie ($MainBankBorrowing = bank\ borrowing\ from\ the\ main\ bank / total\ borrowings$) to the main bank to consider another type of main bank tie. However, the coefficient of the interaction term of AQ with $MainBankBorrowings$ is not significant. Although the strengthening of the main bank tie to shareholdings increases trade credit, the tie by debt dependency does not have an effect on trade credit. This result can be interpreted as follows. The increase of bank borrowing strengthens a tie to banks. On one hand, the increase could reduce the importance of accounting figures according to strengthening the tie through bank borrowings. On the other hand, the increase could make banks pay more attention to accounting information. Thus, the mixed effect could make the results ambiguous.

replacement of industry-fixed effects with firm-fixed effects, except for the coefficients of AQ and $AQ \times OtherStableSH$.

[Insert Table 6 about here]

The results in columns (3) and (4) show that firms that unwinded stable shareholdings and/or cross-shareholdings reduce the relationship between accounting quality and trade credit, compared to firms that maintain stable shareholdings.²⁸

Second, cross-shareholdings with banks are considered to address the possibility that the primary results may be driven by banks' cross-shareholdings, as described in additional tests. To exclude the competing explanation, the bank's cross-shareholdings are subtracted from $CrossSH$, and equation (3) is re-estimated.²⁹ The coefficient of the interaction term of AQ with the part of cross-shareholdings excluding those of banks remains significantly negative (not tabulated). Hence, the primary results are robust, even when banks collect private information.

Third, two alternative accrual models are employed: Jones (1991) and Kothari, Leone, and Wasley's (2005) models. When using both models, the results remain unchanged. Finally, three accounting quality measures were used separately before summarizing them by principal component analysis (non-tabulated). For $AA1$ and $AA2$, the coefficients of AQ , $AQ \times StableSH$, and $AQ \times CrossSH$ are consistent with Hypotheses 1 and 2. When using $AA3$, only the coefficient of $AQ \times CrossSH$ is significantly negative.

²⁸ The results can be interpreted as those for difference-in-difference approach because firm-fixed dummy and shareholdings dummies are included.

²⁹ Specifically, the following regression is estimated;

$$TradeCredit_{it} = \beta_0 + \beta_1 AQ_{it-1} + \beta_2 AQ_{it-1} \times CrossSH_{excludingBanks_{it-1}} + \beta_3 AQ_{it-1} \times BankCrossSH_{it-1} + \beta_5 AQ_{it-1} \times OtherStableSH_{it-1} + \beta_6 CrossSH_{excludingBanks_{it-1}} + \beta_7 BankCrossSH_{it-1} + \beta_8 OtherStableSH_{it-1} + \beta Controls + \beta INDUSTRY + \beta YEAR + \varepsilon_{it}$$

where,

$CrossSH_{excludingBanks} = CrossSH - BankCrossSH$, and

$BankCrossSH$ = the ratio of shares held by banks who mutually hold the shares.

When the value of $BankCrossSH$ is more than that of $CrossSH$ all three $CrossSH$ -related variables are replaced with missing values. This is because $BankCrossSH$ are calculated based on *Nikkei-FinancialQUEST* ($CrossSH$ is derived from *Data Package of Cross-Shareholding and Stable Shareholding*).

In total, the results for the other accounting quality measures are consistent with those in Table 4.

6. Conclusion

This study investigates the effect of a close tie to stakeholders on the relationship between accounting quality and trade credit in Japan, which is an important extension of previous studies on accounting quality and debt. This study uses well-known features of Japanese corporate governance, that is, cross- and stable shareholdings. They closely relate to each other through shareholdings and it is posited that they exchange private information through its mechanism.

This study highlights that cross- and stable shareholdings weaken the relationship between accounting quality and trade credit. The findings suggest that a close tie to cross- and stable shareholders results in reducing the importance of accounting information through sharing private information. This study also reports that trade credit of customers without cross- or stable shareholdings increases with accounting quality. The results are contrary to those for U.S. firms shown in Chen et al. (2017), but consistent with Garcia-Teruel et al. (2014).

In an additional test, the replacement of cross- and stable shareholdings with bank shareholdings results in similar results to the primary ones. The results imply the possibility of the delegation of the monitoring effect to banks under bank-firm relationships in Japan. However, this does not mean that bank shareholding effects dominate those of cross- and stable shareholdings because primary results are robust to the test that isolates bank's cross-shareholding from total cross-shareholdings. Another additional test suggests that trade credit appears to be sensitive to accounting information among firms with weak bargaining power.

Cross-shareholdings intimately relate to the Japanese bank system, which is also well-known for Japanese corporate governance. From the viewpoint of the exchange of

private information, more detailed research on banks' role in trade credit would be one of interesting avenue for future research. The analyses of this study could be extended to research on other corporate governance structures to establish whether the structure increases the importance of accounting information.

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Appendix. Definition of variables

Variable	Definition
Independent variable	
<i>TradeCredit</i>	= Accounting payable divided by total assets
Accounting quality variables	
<i>AQ</i>	= Accounting quality measure, the first principal component score of <i>AA1</i> , <i>AA2</i> , and <i>AA3</i>
<i>AA1</i>	= Abnormal accruals, which is computed as the absolute value of the residual of Dechow and Dichev's (2002) accrual model. The absolute value of residual is multiplied by -1 and standardized.
<i>AA2</i>	= Abnormal accruals, which is computed as the absolute value of the residual of Teoh et al.'s (1998) model. The absolute value of residual is multiplied by -1 and standardized.
<i>AA3</i>	= Abnormal accruals, which is computed as the absolute value of the residual of Dechow et al.'s (1995) model. The absolute value of residual is multiplied by -1 and standardized.
Shareholders variables	
<i>StableSH</i>	= The ratio of shares held by stable shareholders, which are sum of <i>CrossSH</i> and <i>OtherStableSH</i>
<i>CrossSH</i>	= The ratio of shares mutually held by financial institutions and other business corporations
<i>OtherStableSH</i>	= The ratio of shares held by financial institutions, the trust banks (for trading through their own account), and the parent company
<i>StableSHD</i>	= One if <i>StableSH</i> > 0 and zero otherwise.
<i>CrossSHD</i>	= One if <i>CrossSH</i> > 0 and zero otherwise
<i>OtherStableSHD</i>	= One if <i>OtherStableSH</i> > 0 and zero otherwise.
Control variables	
<i>CA</i>	= Non-cash current assets divided by total assets
<i>CashHold</i>	= The sum of cash to marketable securities divided by total assets
<i>CL_XTrade</i>	= Current liabilities subtracting accounting payable divided by total assets
<i>InfoAsym</i>	= Decile rankings of mean bid-ask spread in year <i>t-1</i>
<i>Leverage</i>	= Long-term debt and debt in current liabilities divided by total assets
<i>LiquidCost</i>	= Raw material divided by total assets

<i>Log(Age + 1)</i>	= Natural logarithm of firm age plus 1
<i>Log(Asset)</i>	= Natural logarithm of total assets
<i>MktShare</i>	= Market share, which is the ratio of a firm's sales to total sales in the same industry. Tokyo stock exchange classification codes are used to divide the sample into industries.
<i>MTB</i>	= Market value of equity to the book value of net assets.
<i>NEG_ChgSale</i>	= Negative sales change divided by total assets
<i>POS_ChgSale</i>	= Positive sales change divided by total assets
<i>AltmanZ</i>	= Altman Z-score in Altman (1968)
<i>ROA</i>	= Net income over total assets

Bank variables

<i>BankSH</i>	= The ratio of shares held by banks
<i>MainBankSH</i>	= The ratio of shares held by the main bank
<i>OtherBanksSH_MB</i>	= <i>BankSH</i> – <i>MainBankSH</i>
<i>BankCrossSH</i>	= The ratio of shares held by cross-shareholding banks,
<i>OtherBanksSH_BCSH</i>	= <i>BankSH</i> – <i>BankCrossSH</i> ,
<i>BankSHD</i>	= One if <i>BankSH</i> > 0 and zero otherwise.
<i>MainbankSHD</i>	= One if <i>MainbankSH</i> > 0 and zero otherwise.
<i>OtherBanksSHD_MB</i>	= One if <i>OtherBanksSH_MB</i> > 0 and zero otherwise.
<i>BankCrossSHD</i>	= One if <i>BankCrossSH</i> > 0 and zero otherwise.
<i>OtherBanksSHD_BCSH</i>	= One if <i>OtherBanksSH_BCSH</i> > 0 and zero otherwise.

Table 1.

Sample selection procedure

	Firm-years
Firm-years not included in banks, securities firms, insurance firms and other financial institutions industries from 2001 to 2016.	46,613
(Less) Firm-years whose total assets or sales growth is over 100 percent	(476)
(Less) Firm-years without sufficient data for calculating accounting quality	(8,671)
(Less) Firm-years without cross- and stable shareholdings data	(5,958)
(Less) Firm-years without data for control variables	(3,714)
Firm- years observations for our primary analysis	27,794

Table 2.**Descriptive statistics of dependent and independent variables**

Variables	Mean	Q1	Median	Q3	SD
<i>TradeCredit</i>	0.144	0.063	0.122	0.195	0.110
<i>AQ</i>	0.062	-0.378	0.474	0.951	1.343
<i>StableSH</i>	0.230	0.084	0.195	0.339	0.178
<i>CrossSH</i>	0.096	0.018	0.076	0.148	0.089
<i>OtherStableSH</i>	0.134	0.019	0.060	0.158	0.172
<i>StableSHD</i>	0.950	1	1	1	0.218
<i>CrossSHD</i>	0.854	1	1	1	0.353
<i>OtherStableSHD</i>	0.865	1	1	1	0.342
<i>CA</i>	0.376	0.263	0.375	0.485	0.167
<i>CashHold</i>	0.159	0.072	0.128	0.212	0.120
<i>CL_XTrade</i>	0.205	0.119	0.184	0.269	0.114
<i>InfoAsym</i>	5.498	3.000	5.000	8.000	2.872
<i>Leverage</i>	0.202	0.045	0.169	0.321	0.175
<i>LiquidCost</i>	-0.017	-0.027	-0.004	0.000	0.024
<i>Log(Age + 1)</i>	3.952	3.786	4.075	4.251	0.511
<i>Log(Asset)</i>	11.113	10.148	10.981	11.972	1.431
<i>MktShare</i>	0.011	0.001	0.003	0.009	0.024
<i>MTB</i>	1.310	0.655	0.968	1.523	1.143
<i>NEG_ChgSale</i>	-0.036	-0.033	0.000	0.000	0.079
<i>POS_ChgSale</i>	0.062	0.000	0.020	0.084	0.098
<i>AltmanZ</i>	1.121	0.757	0.990	1.346	0.568
<i>ROA</i>	0.022	0.007	0.022	0.043	0.046

Variable definitions are in the Appendix. N = 27,794.

Table 3.**Correlation matrix**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	
(1) <i>TradeCredit</i>	1																						
(2) <i>AQ</i>	-0.09	1																					
(3) <i>StableSH</i>	0.21	-0.03	1																				
(4) <i>CrossSH</i>	0.12	0.09	0.31	1																			
(5) <i>OtherStableSH</i>	0.15	-0.08	0.87	-0.20	1																		
(6) <i>StableSHD</i>	0.14	0.09	0.30	0.25	0.18	1																	
(7) <i>CrossSHD</i>	0.11	0.11	0.18	0.45	-0.04	0.55	1																
(8) <i>OtherStableSHD</i>	0.12	0.05	0.38	0.16	0.31	0.58	0.25	1															
(9) <i>CA</i>	0.64	-0.19	0.19	0.03	0.18	0.09	0.05	0.09	1														
(10) <i>CashHold</i>	-0.20	0.00	-0.30	-0.23	-0.19	-0.26	-0.24	-0.26	-0.23	1													
(11) <i>CL_XTrade</i>	-0.02	-0.11	0.02	-0.05	0.05	-0.04	-0.06	0.03	0.12	-0.23	1												
(12) <i>InfoAsym</i>	0.14	-0.10	0.09	0.03	0.07	-0.06	-0.08	-0.02	0.11	0.00	0.15	1											
(13) <i>Leverage</i>	-0.10	-0.02	0.00	0.06	-0.03	0.03	0.04	0.08	-0.09	-0.42	0.67	0.09	1										
(14) <i>LiquidCost</i>	0.06	0.01	-0.02	-0.05	0.00	-0.08	-0.07	-0.06	-0.17	0.08	0.01	-0.01	-0.03	1									
(15) <i>Log(Age+1)</i>	0.13	0.08	0.26	0.39	0.07	0.35	0.42	0.27	0.10	-0.34	-0.06	-0.04	0.07	-0.16	1								
(16) <i>Log(Asset)</i>	0.02	0.14	0.10	0.14	0.02	0.23	0.26	0.16	-0.04	-0.28	-0.02	-0.67	0.15	-0.01	0.28	1							
(17) <i>MktShare</i>	-0.06	0.07	-0.01	0.04	-0.03	0.07	0.10	0.07	-0.08	-0.15	0.03	-0.39	0.15	0.00	0.12	0.64	1						
(18) <i>MTB</i>	-0.11	-0.09	-0.14	-0.22	-0.03	-0.24	-0.24	-0.16	-0.10	0.18	0.24	-0.15	0.11	0.09	-0.23	-0.03	0.05	1					
(19) <i>NEG_ChgSale</i>	-0.07	0.15	-0.01	0.05	-0.04	0.04	0.05	0.02	-0.11	-0.03	-0.09	-0.10	-0.06	0.03	0.04	0.12	0.06	0.04	1				
(20) <i>POS_ChgSale</i>	0.19	-0.13	-0.06	-0.11	-0.01	-0.11	-0.13	-0.09	0.16	0.07	0.02	-0.01	-0.08	0.03	-0.18	-0.06	-0.03	0.24	0.29	1			
(21) <i>PredRating</i>	0.50	-0.12	0.01	-0.10	0.07	-0.04	-0.11	-0.03	0.33	-0.02	0.09	0.09	-0.11	0.12	-0.20	-0.14	-0.09	0.05	-0.12	0.35	1		
(22) <i>ROA</i>	-0.06	0.02	-0.08	-0.08	-0.04	0.00	-0.04	-0.05	-0.03	0.21	-0.23	-0.19	-0.31	0.02	-0.07	0.07	0.02	0.18	0.30	0.29	0.05	1	

Variable definitions are in the Appendix. N = 27,794.

Table 4.**Accounting quality and trade credit: Main results**

Variable	(1)	(2)	(3)	(4)	(5)
<i>Intercept</i>	-0.193*** (0.023)	-0.188*** (0.023)	-0.182*** (0.023)	-0.194*** (0.023)	-0.189*** (0.023)
<i>AQ</i>	0.001 (0.000)	0.003*** (0.001)	0.004*** (0.001)	0.010*** (0.002)	0.010*** (0.002)
<i>AQ</i> × <i>StableSH</i>		-0.008*** (0.003)			
<i>AQ</i> × <i>CrossSH</i>			-0.027*** (0.006)		
<i>AQ</i> × <i>OtherStableSH</i>			-0.007** (0.003)		
<i>StableSH</i>		0.021*** (0.008)			
<i>CrossSH</i>			0.063*** (0.016)		
<i>OtherStableSH</i>			0.018** (0.008)		
<i>AQ</i> × <i>StableSHD</i>				-0.010*** (0.002)	
<i>AQ</i> × <i>CrossSHD</i>					-0.005*** (0.001)
<i>AQ</i> × <i>OtherStableSHD</i>					-0.006*** (0.002)
<i>StableSHD</i>				0.013*** (0.005)	
<i>CrossSHD</i>					0.005 (0.003)
<i>OtherStableSHD</i>					0.005 (0.003)
<i>CA</i>	0.301*** (0.012)	0.299*** (0.012)	0.301*** (0.012)	0.301*** (0.012)	0.301*** (0.012)
<i>CashHold</i>	-0.001 (0.011)	0.007 (0.011)	0.007 (0.011)	0.001 (0.011)	0.001 (0.011)
<i>CL_XTrade</i>	-0.170*** (0.015)	-0.172*** (0.015)	-0.170*** (0.015)	-0.170*** (0.015)	-0.171*** (0.015)
<i>InfoAsym</i>	0.007*** (0.001)	0.006*** (0.001)	0.006*** (0.001)	0.006*** (0.001)	0.006*** (0.001)
<i>Leverage</i>	0.020* (0.010)	0.025** (0.010)	0.023** (0.010)	0.020** (0.010)	0.020** (0.010)
<i>LiquidCost</i>	0.351*** (0.047)	0.344*** (0.047)	0.348*** (0.047)	0.361*** (0.047)	0.360*** (0.047)
<i>Log(Age + 1)</i>	0.017*** (0.003)	0.016*** (0.003)	0.014*** (0.003)	0.015*** (0.003)	0.015*** (0.003)
<i>Log(Asset)</i>	0.015***	0.014***	0.014***	0.014***	0.014***

	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
<i>MktShare</i>	-0.247***	-0.227***	-0.213***	-0.234***	-0.236***
	(0.053)	(0.054)	(0.054)	(0.054)	(0.054)
<i>MTB</i>	0.006***	0.006***	0.006***	0.007***	0.007***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
<i>NEG_ChgSale</i>	0.034***	0.033***	0.030***	0.032***	0.031***
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
<i>POS_ChgSale</i>	0.026***	0.028***	0.029***	0.028***	0.028***
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
<i>PredRating</i>	0.063***	0.062***	0.062***	0.063***	0.063***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
<i>ROA</i>	-0.183***	-0.183***	-0.182***	-0.193***	-0.190***
	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)
<i>Industry FE</i>	<i>included</i>	<i>included</i>	<i>included</i>	<i>included</i>	<i>included</i>
<i>Year FE</i>	<i>included</i>	<i>included</i>	<i>included</i>	<i>included</i>	<i>included</i>
Adjusted R-squared	0.648	0.649	0.650	0.649	0.650
Observations	27,794	27,794	27,794	27,794	27,794

The *t*-statistics in parentheses are based on robust standard errors clustered by firm. ***, **, and * indicate significance at 1 percent, 5 percent, and 10 percent levels respectively (two-tailed). The dependent variable is *TradeCredit*. Variable definitions are provided in the appendix.

Table 5.**Accounting quality and trade credit: Results of bank variables**

Variable	(1)	(2)	(3)	(4)	(5)	(6)
<i>Intercept</i>	-0.195*** (0.023)	-0.197*** (0.023)	-0.198*** (0.023)	-0.197*** (0.023)	-0.199*** (0.023)	-0.199*** (0.023)
<i>AQ</i>	0.004*** (0.001)	0.005*** (0.001)	0.004*** (0.001)	0.007*** (0.001)	0.006*** (0.001)	0.006*** (0.001)
<i>AQ × BanksSH</i>	-0.064*** (0.011)					
<i>AQ × MainBankSH</i>		-0.106*** (0.033)				
<i>AQ × OtherBanksSH_MB</i>		-0.046*** (0.015)				
<i>AQ × CrossBankSH</i>			-0.063*** (0.013)			
<i>AQ × OtherBanksSH_BCSH</i>			-0.066*** (0.017)			
<i>BankSH</i>	0.034 (0.029)					
<i>MainBankSH</i>		0.143** (0.071)				
<i>OtherBanksSH_MB</i>		-0.007 (0.036)				
<i>CrossBankSH</i>			0.012 (0.032)			
<i>OtherBanksSH_CBSH</i>			0.102** (0.040)			
<i>AQ × BankSHD</i>				-0.008*** (0.002)		
<i>AQ × MainBankSHD</i>					-0.004*** (0.001)	
<i>AQ × OtherBanksSHD_MB</i>					-0.003*** (0.001)	
<i>AQ × CrossBankSHD</i>						-0.005*** (0.001)
<i>AQ × OtherBanksSHD_BCSH</i>						-0.004*** (0.001)
<i>BankSHD</i>				0.010*** (0.003)		
<i>MainBankSHD</i>					0.005** (0.003)	
<i>OtherBanksSHD_MB</i>					0.003 (0.003)	
<i>CrossBankSHD</i>						0.001 (0.003)
<i>OtherBanksSHD_CBSH</i>						0.006***

						(0.002)
<i>Control Variables</i>	<i>included</i>	<i>included</i>	<i>included</i>	<i>included</i>	<i>included</i>	<i>included</i>
<i>Industry FE</i>	<i>included</i>	<i>included</i>	<i>included</i>	<i>included</i>	<i>included</i>	<i>included</i>
<i>Year FE</i>	<i>included</i>	<i>included</i>	<i>included</i>	<i>included</i>	<i>included</i>	<i>included</i>
Adjusted R-squared	0.649	0.650	0.650	0.650	0.650	0.650
Observations	25,973	25,854	25,973	25,973	25,854	25,973

The *t*-statistics in parentheses are based on robust standard errors clustered by firm. ***, **, and * indicate significance at 1 percent, 5 percent, and 10 percent levels respectively (two-tailed). The dependent variable is *TradeCredit*. Variable definitions are provided in the appendix.

Table 6.**Accounting quality and trade credit: Firm-fixed effect**

Variable	(1)	(2)	(3)	(4)	(5)
<i>Intercept</i>	-0.193*** (0.023)	-0.188*** (0.023)	-0.182*** (0.023)	-0.194*** (0.023)	-0.189*** (0.023)
<i>AQ</i>	0.001 (0.000)	0.003*** (0.001)	0.004*** (0.001)	0.010*** (0.002)	0.010*** (0.002)
<i>AQ</i> × <i>StableSH</i>		-0.008*** (0.003)			
<i>AQ</i> × <i>CrossSH</i>			-0.027*** (0.006)		
<i>AQ</i> × <i>OtherStableSH</i>			-0.007** (0.003)		
<i>StableSH</i>		0.021*** (0.008)			
<i>CrossSH</i>			0.063*** (0.016)		
<i>OtherStableSH</i>			0.018** (0.008)		
<i>AQ</i> × <i>StableSHD</i>				-0.010*** (0.002)	
<i>AQ</i> × <i>CrossSHD</i>					-0.005*** (0.001)
<i>AQ</i> × <i>OtherStableSHD</i>					-0.006*** (0.002)
<i>StableSHD</i>				0.013*** (0.005)	
<i>CrossSHD</i>					0.005 (0.003)
<i>OtherStableSHD</i>					0.005 (0.003)
<i>Controls</i>	<i>included</i>	<i>included</i>	<i>included</i>	<i>included</i>	<i>included</i>
<i>Firm FE</i>	<i>included</i>	<i>included</i>	<i>included</i>	<i>included</i>	<i>included</i>
<i>Year FE</i>	<i>included</i>	<i>included</i>	<i>included</i>	<i>included</i>	<i>included</i>
Adjusted R-squared	0.648	0.649	0.650	0.649	0.650
Observations	27,794	27,794	27,794	27,794	27,794

The *t*-statistics in parentheses are based on robust standard errors clustered by firm. ***, **, and * indicate significance at 1 percent, 5 percent, and 10 percent levels respectively (two-tailed). The dependent variable is *TradeCredit*. Variable definitions are provided in the appendix.